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Awareness about Dementia and Healthcare Needs of Old Persons

Mohsin Masud Jan

Editor

Dementia is a disease of ageing (prevalence: 12 percent among the 65 - 74 age bracket; 20 - 25 percent among the 75 - 84 age bracket; and 45 percent for age 85 and above). It is important to recognise the burden on patient and caregivers for the course of this disease. Stroke is another disease common among older adults and can lead to significant disability and requirement of specialised care. Dementia caused by Alzheimer's disease may not be curable, but stroke can be prevented by treating its causes like hypertension and diabetes early in the course of disease.

Burden to caregivers for persons with dementia and disability caused by stroke is significant, leading to caregiver stress and can be detrimental to their health. While families with means can afford homecare, poor families cannot, which can lead to loss of income for these families.

Consider another element: there is no system in place for the support of psychosocial needs of older people dealing with disease burden and their caregivers.

Countless families across socioeconomic strata are dealing with this burden, and there is no formal support from healthcare. While there are a few geriatric centres in Karachi and Lahore, there is no formal structure of geriatrics training in Pakistan. It is important for us to advocate for post graduate training of doctors in the field of geriatrics. And not just doctors, we also need to train nurses, homecare workers, rehab therapists and psychologists to provide care for an ageing population across the continuum of care.

It is also important to increase awareness among general population regarding healthcare needs of older people and focus more on prevention. Only one third of dysfunction for ageing persons is caused by pure physiological changes, *e.g.*, hearing impairment, and vision impairment *etc*. One third are diseases of ageing like diabetes, high blood pressure, stroke, osteoporosis, osteoarthritis, certain cancers *etc*. One third are due to misuse or disuse – we lose around 40 percent muscle mass between the ages 40 - 60. Diseases like hypertension, diabetes, osteoarthritis, and osteoporosis can also be better managed with modification in lifestyle. In essence, two thirds of health-related problems can be prevented or delayed with focus on prevention measures.

In many countries around the world, we have become familiar with the term 'dementia'. Dementia is the loss of cognitive functioning — thinking, remembering, and reasoning — to such an extent that it interferes with a person's daily life and activities. We now know what this disease is, what its common symptoms are, how it progresses and why is it becoming a burden for not just patients but also for their family caregivers and healthcare services. All of this means that on the whole we are getting better at recognising the challenges associated with the diagnosis, treatment and care of dementia.

We also need to implement programmes where focus is on awareness and provision of resources for caregivers, so they don't end up seeing their elders as a burden. Public health measures like ad campaigns in print, electronic and social media will help families deal with healthcare issues and make life easier.

Depression and social isolation are other major healthcare related issues faced by older persons. Serotonin depletion leads to higher depression prevalence among older populations and lack of resources like social support of peers leads to downward spiralling. Families need to understand that social activities with peers and friends are a key to functional and healthy ageing.

Community and academic physicians, geriatricians and other professionals volunteer their time at these centres to provide educational awareness talks and health screenings for older adults. In most metropolitan cities in the US, there are groups of volunteers who are young professionals, and they engage with vulnerable homebound seniors and do their chores for them. Some just provide socialisation like reading the newspaper for them or playing card games *etc*. We could create such programmes in Pakistan and reach out to academic institutions to create awareness campaigns.

However, in Pakistan there is a dire need for a better understanding about dementia, especially since our formal health and social care system is underdeveloped. It is believed that dementia will affect us strongly, especially since the number of older persons is increasing fast, our general awareness is poor and the required resources to meet this public health challenge are scarce. The informal care burden, especially for women, is also high because round-the-clock care is essential for those with advanced stages of dementia, many family members find that they are unable to cope without formal help.

Senior citizens helped build foundations of the society, and their continued presence leads to robust younger generations. Healthy ageing is possible by implementing better healthcare programmes and providing better resources for patients and caregivers.

A greater emphasis on research and evidence-informed health policy is essential, with knowledge translation from research on dementia in Pakistan and from different regions of the world.

Oral Health Status and Oral Health-Related Behaviors of Patients Visiting Tertiary Care Hospital in Quetta, Pakistan

Oral Health Associated to Oral Healthcare Practices

Muhammad Azad Khan, Tippanart Vichayanrat and Yaowaluk Ngoenwiwatkul

ABSTRACT

Objective: To determine the oral health status and oral health practices among patients visiting a tertiary care hospital in Quetta, Pakistan.

Study Design: Cross-Sectional Study

Place and Duration of Study: This study was conducted at Sandeman Provincial Civil hospital Quetta, Pakistan in March 2021.

Materials and Methods: The target population of this study was patients aged 18 to 65 years visiting the dental OPD of the hospital. Four hundred patients, including 210 males and 190 females, participated in the study. According to WHO oral health survey methods (5th edition). The face-to-face interview was carried out to examine the socio-demographic factors, attitude, behavior, and oral health practices of the patients. Descriptive statistics were reported for participants' characteristics, oral health practice, and oral health status. Logistic regression was performed to analyze the association of multiple variables with a significance level of 0.05.

Results: Results of this study revealed that 77.0% of the participants had high DMFT scores (DMFT$\geq$5), 95.5% had gingival bleeding, 52.5% had periodontal pocket (4-5mm or above), 85.5% had poor/fair oral hygiene, and 16.5% had some kind of oral lesions. Socio-economic factors, tooth brushing frequency, use of toothbrushes and toothpaste, dental visits, and tobacco use were significantly associated with patients' poor oral health status, including dental caries and periodontal diseases.

Conclusion: After adjusting for age and education, low tooth brushing frequency, no use of toothbrush and toothpaste, less frequent dental visits, and tobacco use were the contributing factors for the poor oral health status of the participants.

Key Words: Oral Health, Adults, Oral Hygiene Practices, Pakistan

INTRODUCTION

Oral health is considered an essential element for people's overall well-being; despite its necessity, oral health is neglected and not given importance, especially in developing countries[1]. For good oral health, there is crucial to have good oral hygiene and freedom from oral disorders like tooth decay, tooth loss, periodontal diseases, oral cancer, and chronic facial pain[2]. The Global Burden of Disease Study 2017 has estimated that oral diseases have affected almost 3.5 billion people worldwide, with caries of permanent teeth being the most common condition.

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Globally, it is estimated that 2.3 billion people suffer from caries of permanent teeth and more than 530 million children suffer from caries of primary teeth[3]. This seems to be even more affected owing to the repercussions of the COVID-19 pandemic [4]. The factors to poor oral health may include inadequate oral hygiene, unhealthy eating habits, persistent use of tobacco, and poor access to oral healthcare facilities[5].

Oral health care is a missing component in Pakistan, where oropharyngeal cancer is the second most common cancer in country among women and third most common cancer in men[6]. A recent study revealed that 60% of Pakistani population at national level has dental caries[7]; a survey of Punjab province has shown the prevalence of periodontal disease as 34.5% among patients with CPI score$\geq$3[8]. Maintaining good oral hygiene is also a missing link among Pakistani population; a study in Sindh province has released that 62.2% of males and 52.1% of females had poor oral hygiene, respectively [9].

Limited data is available at subnational level of Pakistan to assess oral health status of population, Balochistan in particular. The scarcity of available literature in the province has led to lacking knowledge and a poor attitude of healthcare practitioners. The

present study was designed to assess oral health status of people of Balochistan visiting a tertiary care hospital in Quetta City.

MATERIALS AND METHODS

The study is descriptive and cross-sectional, conducted in Sandeman Provincial Civil Hospital Quetta, Pakistan in March 2021. Four hundred patients aged 18 to 65 years visiting Dental OPD were recruited, and sample size was calculated using formula $n = [Z^2 P(1-P)]/ E^2$. Patients either mentally or physically challenged or having any systemic disease were excluded. The participants only included people residing in the Balochistan province. A dental chair, mouth mirrors, and periodontal probes were used for oral examination of the patients by a trained dentist.

WHO Oral health assessment form and modified WHO Oral Health Questionnaire[10] were used for data collection. Values of all of the variables were transferred to SPSS version 24.0 for descriptive and statistical analysis of data. Bivariate analysis including Chi-square test, and Kruskal-Wallis test were used to analyse association between characteristics, oral health status, and oral health behaviours. The relationship between participants' oral health status and multiple variables including age, education, tobacco use, dental visits, and teeth cleaning frequency, were analysed by logistic regression.

This research followed the Declaration of Helsinki. The Ethical Review Board of Bolan Medical College approved and permitted the study protocol in Civil hospital Quetta, Pakistan (No. BUHMS/Reg/2020/424). Written informed consent was obtained from all the participants.

RESULTS

Participants' characteristics are shown in table 1. Total population of Quetta city is 2.276 million[11]; so the sample size was 400 participants. Male-to-female ratio of district Quetta is 1.09[11]; therefore, 210 males and 190 females were selected. 49% participants were middle-aged (35-50 years). Only 29% had completed high school and 93% had yearly income (>$10,000). Only 11.8% of respondents cleaned their teeth once a day; 91.2% cleaned their teeth less frequently, 15.3% never received dental care, and 67.7% were current tobacco users.

Table 2 shows oral health status of participants with respect to their socio-economic status. The results showed that 77% of participants had high DMFT scores (DMFT$\geq$5), with mean values 8.40 and 9.02 among males and females. Location, age, and education were significantly associated with dental caries status (p<0.001). 95% males and 96% females had gingival bleeding; 57.5% males and 47% females had periodontal pocket 4mm-or-more. Presence of periodontal pocket and gingival bleeding was

significantly associated with patients' socio-economic status (p<0.001), with pre-aging group (55%) being highly susceptible to it. Participants with no or less-education had high DMFT mean values (12.63) and periodontal disease. Overall, 16.5% of respondents had oral lesions; with high prevalence among males (20%) and low-income group (25%).

Table No.1: Characteristics of the participants (N = 400)

Participant's Details	Numbers	%
Gender		
Male	210	52.5
Female	190	47.5
Age (Years)		
Young(18-34)	103	25.7
Middle-aged(35-50)	196	49.0
Pre-ageing(51-65)	101	25.3
Educational level		
No education	84	21.0
Primary school	114	28.5
Secondary school	86	21.5
High school or above	116	29.0
Annual income		
Low(<$1,000)	24	6.0
Middle($1,000-10,000)	348	87.0
High(>$10,000)	28	7.0
Tobacco use		
Yes	271	67.7
No	129	32.3
Tooth cleaning		
Never	56	14.0
Sometime	297	74.3
Once a day	47	11.7
Last dental visit		
Less than 2-year	252	63.0
2-year or more	87	21.7
Never received dental care	61	15.3

Table 3 shows oral health-related behaviour of participants including tuse of toothbrushes, toothpaste, tooth-brushing frequency, dental visit, and tobacco use by participants' characteristics. Toothbrush use and brushing frequency were associated with living location, age, education, and income (p<0.01). The report of using toothbrushes and brushing at least once a day was high among city residents, young-age group, high education and high income. 30% of participants with no education used toothbrushes with toothpaste for teeth cleaning compared to 98% with high education. Overall, 37% of participants had not visited dentist in last two years, with high response among low-income group (42%). Gender, age and socio-economic status were associated with tobacco use (p<0.001). More than two-thirds (67.7%) of participants reported using tobacco, where 91% were outside city residents. The prevalence was high among participants with no education (89.0%), and low income (100%).

Table No.2: Oral health status of participants

Characteristics	N	DMFT (mean±S.D)	CPI- Frequency (%)					OHI-S (mean±S.D)	Oral lesions
			Bleeding		Pocket				
			Yes	No	Pocket 4-5mm	6mm or more	No		
Gender									
Male	210	8.40±4.4	199(95%)	11(5%)	100(48%)	20(9.5%)	90(42.5%)	2.22±0.78	42(20%)
Female	190	9.02±4.7	183(96%)	7(4%)	69(36%)	21(11%)	100(53%)	2.27±0.76	24(13%)
p-value		0.221[a]	0.454[b]		0.072[b]			0.512[a]	0.047[b]
Location									
Quetta City	291	7.65±3.9	278(96%)	13(4%)	112(38%)	17(6%)	162(56%)	2.13±0.77	47(16%)
Out of Quetta City	109	11.50±4.9	104(95%)	5(5%)	57(52%)	24(22%)	28(26%)	2.54±0.69	19(17%)
p-value		<0.001[a]	0.959[b]		<0.001[b]			<0.001[a]	0.759[b]
Age Group									
Young (18-34)	103	7.11±4.5	94(91%)	9(9%)	35(34%)	7(7%)	61(59%)	2.01±0.87	9(9%)
Middle Aged (35-50)	196	8.19±4.2	190(97%)	6(3%)	78(39.5%)	15(7.5%)	103(53%)	2.22±0.73	32(16%)
Pre-Aging (51-65)	101	11.32±4.3	98(97%)	3(3%)	56(55%)	19(19%)	26(26%)	2.54±0.64	25(25%)
p-value		<0.001[c]	0.055[b]		<0.001[b]			<0.001[c]	0.009[b]
Education									
No Education	84	12.63±4.1	84(100%)	0(0%)	54(64%)	21(25%)	9(11%)	2.62±0.55	16(19%)
Primary School	114	9.62±4.4	110(96%)	4(4.0%)	57(50%)	13(11%)	44(39%)	2.51±0.78	16(14%)
Secondary School	86	6.87±4.0	78(91%)	8(9%)	21(24%)	4(5%)	61(71%)	1.97±0.84	25(29%)
High School or Above	116	6.3±3.0	110(95%)	6(5%)	37(32%)	3(2.5%)	76(65.5%)	1.92±0.71	9(8%)
p-value		<0.001[c]	0.01[b]		<0.001[b]			<0.001[C]	<0.001[b]
Income									
Low (<$1,000)	24	10.17±4.2	24(100%)	0(0%)	21(88%)	1(4%)	2(8%)	2.80±0.57	6(25%)
Middle ($1,000-10,000)	348	8.68±4.6	330(95%)	18(5%)	138(40%)	34(9.5%)	176(50.5%)	2.19±0.78	56(16%)
High (>$10,000)	28	7.64±3.7	28(100%)	0(0%)	10(36%)	6(21%)	12(43%)	2.44±0.62	4(14%)
p-value		0.353[c]	0.245[b]		<0.001[b]			0.006[C]	0.497[b]

[a]Mann-Whitney U test, [b]Chi-square test, [c] Kruskal-Wallis test

Table No.3: Oral health-related behaviors and patients' characteristics

Characteristics	N	Use of tooth-cleaning product	Brushing frequency		Dental visit		Tobacco use	
		Toothbrush with toothpaste	< once a day	once a day	2 years or more	Less than 2-year	Yes	No
Gender								
Male	210	157(75%)	188(90%)	22(10%)	81(39%)	129(61%)	158(75%)	52(25%)
Female	190	139(73%)	165(87%)	25(13%)	67(35%)	123(65%)	113(59%)	77(41%)
p-value		0.715	0.226		0.494		<0.001	
Location								
Quetta City	291	240(82%)	249(86%)	42(14%)	112(38%)	179(62%)	172(59%)	119(41%)
Other	109	56(51%)	104(95%)	5(5%)	36(33%)	73(67%)	99(91%)	10(9%)
p-value		<0.001	<0.001		0.314		<0.001	
Age Group								
Young (18-34)	103	84(81%)	86(83%)	17(17%)	51(50%)	52(50%)	64(62%)	39(38%)
Middle Aged (35-50)	196	156(79%)	172(88%)	24(12%)	74(38%)	122(62%)	122(62%)	74(38%)
Pre-Ageing(51-65)	101	56(55%)	95(94%)	6(6%)	23(23%)	78(77%)	85(84%)	16(16%)

p-value		<0.001	0.027		<0.001		<0.001	
Education								
No Education	84	25(30%)	83(99%)	1(1%)	16(19%)	68(81%)	75(89%)	9(11%)
Primary School	114	75(66%)	112(98%)	2(2%)	22(19%)	92(81%)	89(78%)	25(22%)
Secondary School	86	82(95%)	83(97%)	3(3%)	47(55%)	39(45%)	48(56%)	38(44%)
High School or above	116	114(98%)	75(65%)	41(35%)	63(54%)	53(46%)	59(51%)	57(49%)
p-value		<0.001	<0.001		<0.001		<0.001	
Income								
Low(<$1,000)	24	7(29%)	24(100%)	0(0%)	10(42%)	14(58%)	24(100%)	0(0%)
Middle($1,000-10,000)	348	264(76%)	304(87%)	44(13%)	128(37%)	220(63%)	223(64%)	125(36%)
High(>$10,000)	28	25(89%)	25(89%)	3(11%)	10(36%)	18(64%)	24(86%)	4(14%)
p-value		<0.001	<0.001		0.882		<0.001	

Table No.4: Relationships between oral health behaviors and oral health status

Oral health behaviors	N	DMFT		Periodontal Pocket		OHI-S	
		High (DMFT≥5)	Low (DMFT<5)	Yes	No	Poor	Good/Fair
Use of toothpaste and toothbrush							
No toothpaste and toothbrush used	104	102(98.1%)	2(1.9%)	94(90.4%)	10(9.6%)	103(99%)	1(1.0%)
Using toothbrush with toothpaste[a]	296	206(69.6%)	90(30.4%)	116(39.2%)	180(68.8%)	239(80.7%)	57(19.3%)
Adjusted Odds ratio[b] (95% CI)		9.30(2.12-40.76)		7.57(3.59-15.97)		5.77(0.72-46.48)	
p-value		0.003		<0.001		0.100	
Brushing frequency							
Less than once a day	353	284(80.5%)	69(19.5%)	209(59.2%)	144(40.8%)	315(89.2%)	38(10.8%)
Once a day [a]	47	24(51.1%)	23(48.9%)	1(2.1%)	46(97.9%)	27(57.4%)	20(42.6%)
Adjusted Odds ratio[b] (95% CI)		2.06 (1.05-4.04)		38.89 (5.18-292.09)		3.02(1.49-6.16)	
p-value		0.036		<0.001		0.002	
Last Dental visit							
2 years or more	252	241(95.6%)	11(4.4%)	176(69.8%)	76(30.2%)	243(96.4%)	9(3.6%)
Less than 2 years [a]	148	67(45.3%)	81(54.7%)	34(23.0%)	114(77.0%)	99(66.9%)	49(33.1%)
Adjusted Odds ratio[b] (95% CI)		19.72(9.73-39.94)		5.32(3.23-8.76)		8.14(3.75-17.70)	
p-value		<0.001		<0.001		<0.001	
Tobacco use							
Yes	271	236(87.1%)	35(12.9%)	185(68.3%)	86(31.7%)	254(93.7%)	17(6.3%)
No[a]	129	72(55.8%)	57(44.2%)	25(19.4%)	104(80.6%)	88(68.2%)	41(31.8%)
Adjusted Odds ratio[b] (95% CI)		3.44(2.03-5.53)		6.26(3.67-10.68)		4.14(2.16-7.93)	
p-value		<0.001		<0.001		<0.001	

[a] Reference group　[b] Adjusted for age and education

Table 4 shows relationship between oral health behaviours of participants and their oral health status after adjusting for education and income. Participants not using toothbrush were 9.3 times more likely having high DMFT scores and 7.5 times more likely having periodontal pockets (p<0.001). Participants not cleaning their teeth daily were 38.8 times at higher risk of having periodontal pockets (p<0.001). Tobacco users were 6.2 times more susceptible to having periodontal pockets and 4.4 times more at risk of having poor oral hygiene status (p<0.001).

DISCUSSION

This study showed significantly poor oral health status of patients of Balochistan, Pakistan. 77% of participants were having DMFT score ≥5. The common responsible factors for poor oral health of patients were low education and income level, low frequency of brushing, use of tobacco, and less frequent dental visits. The study showed that 88.2% of patients did not clean their teeth daily, and 67.7% were active tobacco users.

Studies held in different parts of Pakistan have recorded other DMFT scores among Pakistani population. A systemic-review study of existing literature showed prevalence of dental caries as 60% at national level in Pakistan [7]; another study in Punjab hospital showed 19.13% prevalence of dental caries [12].

A global analysis of periodontal disease released that nearly 100% of adults had periodontal disease among adults and older persons in India and China[13]; compared to our study, which showed 95.5% and 52% of gingival bleeding and pocket 4mm or more among participants. A meta-analysis study of India showed prevalence of periodontal disease as 51% and gingivitis as 46.6% among adults with older persons having a higher proportion of periodontitis (32.7%)[14]. A study

in Karachi hospital considered poor oral hygiene and low education levels as common risk factors for periodontitis among the adult population[15].

In our study, oral healthcare practices such as less frequency of teeth cleaning, dental visits, and tobacco use are related factors affecting oral health. The participants who used tobacco and had fewer dental visits greatly influenced the high DMFT score, poor oral hygiene, and presence of periodontal disease. The incidence is quite similar to the previous studies[16, 17], which show tobacco use as a responsible parameter for poor oral health. A study in Peshawer revealed that regular dental checkups are uncommon among participants (65%), and 73% used toothbrushes and toothpaste to clean teeth, similar to our study (74%)[18].

CONCLUSION

The prevalence of dental caries, periodontal disease, poor oral hygiene status, and oral lesions among patients of Balochistan in Civil hospital, Quetta, was significantly associated with patients' oral healthcare practices, behaviors, and socio-demographic characteristics. Low education and income levels, low frequency of brushing and tobacco use were contributing factors for poor oral health conditions of the patients.

Author's Contribution:

Concept & Design of Study:	Muhammad Azad Khan, Tippanart Vichayanrat, Yaowaluk Ngoenwiwatkul
Drafting:	Muhammad Azad Khan
Data Analysis:	Muhammad Azad Khan, Tippanart Vichayanrat
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Conflict of Interest: The study has no conflict of interest to declare by any author.

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The Surgical Management of Early Carcinoma Breast

Gul Sher Khan[1], Asif Mehmood[1] and Nazli Gul[2]

ABSTRACT

Objective: The purpose of this study was to compare the oncological outcomes of oncologic breast surgery and the conventional breast conservative surgery in the patients with early breast carcinoma.

Study Design: A retrospective study

Place and Duration of Study: This study was conducted at the Surgical Department of Khalifa Gul Nawaz Teaching Hospital Bannu from January 2014 to January 2017 in collaboration with BINOR (Bannu Institute of Nuclear Medicine Oncology and Radiotherapy) and was compiled in August 2021.

Materials and Methods: A total of 220 patients (all females) with early breast carcinoma (T_1, T_2, N_0, N_1 & M_0) with the age ranged from 26-85 years with the mean age 47 years were included in this retrospective study.

Results: Out of the 220 patients with early breast carcinoma (T_1= 90, T2= 130 patients), 160 patients were treated by Modified radical mastectomy (MRM) and 60 patients subjected to Breast conservative therapy/surgery (BCS). After a follow up period of 5 years, there were no significant differences in the overall survival (86.7% vs. 88%, p= 0.62), disease free survival (67% vs. 70%, p= 0. 63) or the mortality (13.3% vs. 11.8%, p= 0.61) of patients treated with breast conservative surgery (BCS) or modified radical mastectomy (MRM) However, there was a significant difference in the rate of local recurrences (32.7% vs. 16.3%, p= 0. 001) of patients treated with BCS or MRM.

Conclusion: BCS is a suitable/standard alternative for MRM in selected cases of early carcinoma breast, with comparable overall survival, disease free survival and mortality rates in BCS and MRM. BCS was associated with increased local recurrences. BCS maintains the quality of life and have a good cosmetic value.

Key Words: Breast conservative therapy/surgery (BCT/BCS), modified radical mastectomy (MRM), follow up, breast carcinoma, lumpectomy, overall survival, disease free survival and recurrence.

INTRODUCTION

The optimal type of surgery for breast carcinoma continues to be a controversial topic. A revolutionary change in the surgical management of breast carcinoma has occurred during the 20th century, from radical to minimal surgery [1].

The Halstedian`s mastectomy has been the treatment of choice for breast cancer of any size, type or any age of the patients, for 80 years. The results of several trails were published, indicating that the breast conservative surgery plus radiotherapy was a valid alternative for many women.

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By 1985, a consensus report came stating that BCS was a standard alternative for certain patients with early breast carcinoma [2]. Several randomized controlled studies worldwide have demonstrated that BCS and MRM have comparable results [3,4].

Breast conservative therapy (composed of lumpectomy, axillary lymph nodes dissection and radio-therapy) is a well-defined alternative to modified radical mastectomy (MRM) in early breast carcinoma. For those who do not opt for BCS, skin sparing mastectomy with breast reconstruction is a safe technique for better cosmetic outcome without compromising oncological safety [5].

Mastectomy (radical or modified) has been a treatment of historical importance for the stage I & stage II breast carcinoma for decades and still mastectomy is commonly used in secondary and some tertiary care hospitals where radiation facilities are not easily available.

In the Milan Cancer Institute Trails in 1973 showed that mastectomy and breast conservative therapy were equally affective for properly selected patients with early breast carcinomas [6,7]. In Milan 1 trail, the survival benefit was not significant in axiliary lymph node positive patients treated with quadrantectomy and radiotherapy compared with MRM [8]. The overall rate of recurrences in the treated cases with BCS ranged from 3-19%. Most failures in the BCS were salvaged by

mastectomy. Survival after such treatment was 70% at 5 years follow up.

MRM does not immune the patients from local recurrence in stage I & stage II diseases. Local recurrences after mastectomy occurs in 4-14% of the cases. Disease free survival after 10 years is 70% [9].

For patients with negative resection margin, the risk of recurrence is 10% after 10 years follow up [10,11,12].

Sentinel lymph node biopsy (SLNB) has been adopted as an alternative for axillary lymph node dissection (ALND) for staging axilla [13] with improved quality of life in the nodes negative patients.

In UK, a survey revealed 14% decrease in mastectomy and 42% increase in the immediate breast reconstruction [14].

The management of breast cancer has evolved into multidisciplinary evidence based surgical specialty with emphasis on conservative surgery.

MATERIALS AND METHODS

A total of 220 female patients with early breast cancer, with the age ranged from 26-85 years with a mean age of 47 years were included in this study. Information on patients and their treatment was obtained from the hospital record, which included patient age, sex, date of admission and date of discharge. Patients were investigated through ultra-sound, mammography, true cut biopsy and histopathology, CT-chest/abdomen and bone scans. Patients were divided into two groups. Group A was treated by breast conservative surgery and group B by modified radical mastectomy.

Breast conservative surgery included lumpectomy, quadrantectomy or a wide excision with biopsy and level I-II axillary dissection by a separate incision with post op radiotherapy to the whole breast. While in modified radical mastectomy, the whole breast and axillary lymph node dissection to the level I-II was done through the same incision. Patients with positive axillary lymph node were given 12 monthly cycles of chemotherapy 15-30 days after the operation. After a mean follow up of 5 years, there were no significant differences in the overall survival, disease free survival and mortality in the patients treated by MRM or BCT. However, there was a great difference in the local recurrences rate between the two. BCT was performed in 60 cases and MRM in 160 cases of early breast carcinoma.

Follow Up: patients were advised to attend surgical OPD or clinic every 3 months during the first year, every 6 months during the next 2 years and yearly during the next 2 years. During each visit, patients physical examination, chest and skeleton radiography, ultra-sound abdomen and mammography were done for the detection of recurrences or metastases.

Statistical Analysis: The overall survival curves for each treatment group were obtained using Kaplan-Meier method and compared by the log rank test.

Outcome analyses were conducted by SPSS version 20. Statistical analysis for significance between the variables was performed by the student t test, Fischer`s exact test and chi-square test. Significance was set at p< 0.05.

RESULTS

A total of 220 patients with early breast carcinoma, with age 26-80 years (mean 47yrs) were included in this study. 160 patients underwent modified radical mastectomy (MRM) and the remaining 60 patients had breast conservative surgery.

Table No.1: Patients Characteristics

Characteristics	MRM (160)	BCS (60)
Age (mean yrs)	45 year	40 year
< 40	35	15
40-50	50	25
51-60	55	15
>60	20	5
Histology		
Infiltrating ductal Ca breast	95%	98%
And others	5%	2%
Positive lymph nodes		
0	62	30
1-4	50	20
5-9	30	5
> 9	18	5
Tumour size		
< 2cm	70	35
2-4cm	60	20
≤5cm	30	5
Estrogen receptors		
Negative	70	20
Positive	60	25
Unknown	30	15

Table No.2: The Survival Figures for BCS & MRM after a 5 Years Follow Up.

	Number of cases	Alive	Alive with no evidence of disease	Alive with disease
BCS	60/220	52/60	41/52	11/52
MRM	160/220	141/160	116/141	25/141

Table No.3: Recurrences after 5 Years of Follow Up

	MRM (160 cases)	BCS (60 cases)
Local	3	10
Regional	4	2
Distant	16	5
Total	23/160	17/60

The overall survival rate for BCS was 86.7% while it was 88% for MRM (p= 0.62). The mortality rate for BCS was 13.3% while it was 11.8% for MRM (p= 0.61). The recurrence rate for breast conservative surgery (BCS) was 32.3% while it was 16.3% for modified radical mastectomy (p= 0.001). The disease free survivals between BCS and MRM were comparable between the patients of the two groups (67% vs. 70%, p= 0. 63).

Table No.4: Overall Survival, Disease free Survival and Mortality after 5 Years Follow Up

Overall survival		
MRM	88%	P= 0.62
BCS	86.7%	
Disease free survival		
MRM	70%	P= 0.63
BCS	67%	
Recurrence		
MRM	16.3%	p= 0.001
BCS	32.7%	
Mortality		
MRM	11.8%	p= 0.61
BCS	13.3%	

The 10 patients of local recurrence in the BCS group were treated by salvage MRM. In the MRM group the incidence of local recurrence was low and was not affected by the size of tumour or the age of the patient. The rate of recurrences was more in the women containing more than 3 positive axillary lymph nodes.

All the patients with positive axillary lymph nodes were given chemo-therapy. In the MRM group chemo-therapy was started 15-30 days after the operation while patients of BCS group, chemotherapy was started simultaneously with radiotherapy. For radio chemotherapy patients were referred to BINOR.
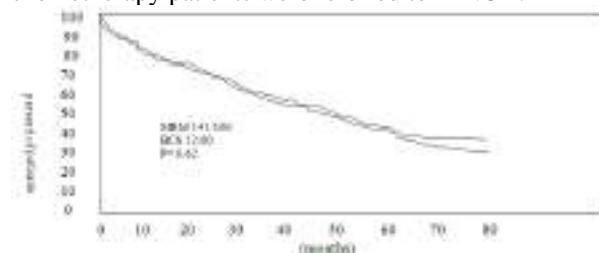
Figure No.1: Comparison of overall survival between MRM & BCS.

DISCUSSION

Breast conservative surgery is practiced in larger, teaching and urban hospitals where radiation facilities are available. Early stage (stage I & stage II) breast carcinomas are usually treated by breast conservative surgery [15,16]. But patient choice and surgeon judgment is required to select a patient for either breast conservative surgery or modified radical mastectomy. Black women with breast cancer have poor overall survival than white ones and breast conservative surgery is less commonly used for them.

6 randomized trials worldwide have shown comparable results between MRM and BCT in the term of overall survival and disease free survival [17-20]. Our study showed that the results of overall survival, disease free survival and mortality were almost the same in the patients treated by breast conservative surgery and modified radical mastectomy. There were more recurrences in the BCS than MRM after a 5 years follow up.

The rate of loco-regional recurrences was significantly higher in those who underwent BCS without radiation[17]. Inspite of the higher local recurrence rate in the BCS, there was no statistically significant difference in the long term survival. BCS is contraindicated in, a relatively small breast containing a large tumour, previously treated breast for malignancy, breast tumour with distant metastases and the presence of contra lateral breast carcinoma.

In our study we noticed that old age patients mostly opted for MRM as opposed to BCS which is in agreement to the other studies [21,22]. We also noticed that there was a persistent decrease in the incidence of local recurrence with the age.

Old age patients with lymph node negative and estrogen receptor positive status were put on Temoxifen 20mg daily for 3 years. Tumour size and palpability were associated with MRM as indicated in the other studies [15,16]. Lobular histology was associated with MRM in most of the cases. Patients with positive surgical margins and those female with central breast tumour required MRM as shown in the European studies [23].

Women should be fully informed of the treatment, its implications in both mastectomy and breast conservative surgery i.e. for the potential need for additional surgery and radio-therapy.

The risk factors for local recurrence included; young age, positive surgical margins, axillary lymph node positivity, negative estrogen receptors and absence of radio-therapy. Positive margins are associated with 2 fold increase in local recurrence[24]. 6 randomized controlled studies have established an absolute survival benefit with axillary lymph node dissection ranging from 4-16% which corresponds to 7-46% reduction in the risk of death.

Axillary lymph node dissection is the current standard of surgical care and in planning of adjuvant treatment. Axillary lymph node dissection to level I-III may result in lymph oedema upper limb.

Sentinel lymph node biopsy is a standard conservative care for assessing the axilla. Skin and nipple sparing mastectomies are being used in patients with less favorable tumour characteristics.

CONCLUSION

There is a continuous trend for innovation in the surgical management of breast carcinoma. Advances in the surgical management of breast Carcinoma have favored an increasingly the conservative approach. In this article we have reviewed the current trends in the management of breast Carcinoma. More efforts are required to improve public awareness and knowledge

about the Carcinoma breast for early detection and treatments.

Author's Contribution:

Concept & Design of Study:	Gul Sher Khan
Drafting:	Asif Mehmood
Data Analysis:	Asif Mehmood, Nazli Gul
Revisiting Critically:	Gul Sher Khan
Final Approval of version:	Gul Sher Khan

Conflict of Interest: The study has no conflict of interest to declare by any author.

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Prognostic Significance of

Biochemical and Hematological Features with Ca^{125} in Newly Diagnosed Patients of Ovarian Cancer

Shahida Parveen[1], Rubaida Mehmood[2] and Kainat Warraich[1]

ABSTRACT

Objective: To investigate the significance of biochemical and hematological features with Ca125 in newly diagnosed patients of ovarian cancer.

Study Design: A prospective study

Place and Duration of Study: This study was conducted at the Multan Institute of Nuclear Medicine and Radiotherapy (MINAR) from July 2018 to September 2019 for a period of one and a half year.

Materials and Methods: One hundred females patients with age ranging from 18 to >56 years with persistent malignant ovary tumor (untreated) were involved in this study. All biochemical tests were performed in (MINAR) lab. SPSS version 24.0 was used for data analysis. One way ANOVA test was used to investigate the variation among the groups (age & stage). Associations of Ca125 with CBC, LFT and RFT were assessed by Spearman correlation before checking the Normality or Normal distribution by D'Agostino test. The level of statistical significance was set at $p < 0.05$.

Results: Overall results showed the strong negative association of creatinine (r=-0.47, p=0.01) and positive association of eosinophil(r=0.40, p=0.03) with CA^{125}, while in age group-II positive association of PLT (r=0.62, p=0.01) with CA^{125} was calculated. In epithelial ovarian cancer there observed a significant negative association of Ca^{125} with MCV (r=-0.48, p=0.02) and also in seniors (age group-III, r=-0.76, p=0.03). Negative association of Ca125 was observed with RDWCV (r=-0.89, p=0.02) in stage-I, in stage-III negative association with MCV(r=0.66, p=0.02) while in stage-IV RBC indices RBC (r=0.76, p=0.01), HGB (r=0.67, p=0.03) and HCT (r=0.72, p=0.02) showed significant positive association with CA125.

Conclusion: Ca125 correlates with MCV in untreated epithelial ovarian cancer at senior age group and has no association in germ cell carcinoma. MCV and RDW-CV should be considered important diagnostic and prognostic factor in different stages of ovarian cancers.

Key Words: Bio-chemical parameters, Ca^{125}, Hematological parameters, Prognostic factor, RDW-CV.

INTRODUCTION

Cancer antigen-125 (Ca^{125}) is repeating peptide epitope of the mucin-16 (MUC-16), and commonly used tumor marker in ovarian cancer diagnosis[1]. Ca^{125} promotes cancerous cell proliferation and suppresses anti-cancer immune responses.

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About 90% ovarian cancer associated women have elevated level of Ca^{125} in their blood serum. Its level in serum is used to monitor the disease progression in response to chemotherapy in ovarian cancer. This biomarker is highly sensitive in advanced disease and useful as a detection tool to monitor the tumor load in epithelial ovarian cancer and for diagnosis of differential pelvic masses[2].

Ovarian cancer is the 8th most common cancer in women, causing 152,000 deaths annually around the globe[3]. Only 20% ovarian cancers are diagnosed in early stage while majority of cases are diagnosed at advanced stages (III and IV stages) and their 5-year survival rate is only 3–19%, while stage-I and stage-II patients have 5-year survival rates of 40–90%[4]. The poor survival rate due to late stage diagnosis, most cancerous patients remain asymptomatic until disease has metastasized[5]. Early stage detection of ovarian cancer is need for further treatment, which requires high sensitivity and precision screening tools. Ovarian cancer detection sensitivity could be improved via

hematological parameters studied through immunological serum marker Ca^{125}. CBC parameters are easily measured and inexpensive tool which can be potentially used in the diagnosis, prognosis, recurrence rates, and metastases in various types of cancer[6]. Recently published studies showed that inflammatory markers and some CBC parameters panel might have relationship with epithelial ovarian cancer[7]. Ovarian cancer patients have cellular abnormalities[8]. Hematological markers including white blood cells (WBCs) count is considered as prognostic factor for clinical outcomes and elevated platelets level, neutrophils and lymphocytes or neutrophils to lymphocyte ratio (NLR), platelet to lymphocyte ratio (PLR) and thrombocytosis has been reported in epithelial ovarian cancer[9].

Previous studies showed that renal insufficiency is not always associated with elevated level of Ca^{125} during treatment for ovarian cancer. Impaired renal functions parameters at the diagnostic stage of malignant diseases have been linked with postoperative morbidity and impair survival. Serum creatinine considered as prognostic factor in colorectal cancer, urothelial, liposarcoma and multiple myeloma[10].

Through this study we are able to evaluate the association of Ca^{125} (tumor marker) level with CBC, LFT and RFT parameters in age-wise and stage-wise groups of ovarian cancer. The correlation of Ca^{125} with CBC and biochemical parameters can be recommended as important diagnostic and therapeutic tool at highest risk of treatment toxicity.

MATERIALS AND METHODS

This prospective study after the approval of a local ethical committee was carried out at Multan Institute of Nuclear Medicine and Radiotherapy (MINAR) from July 2018 to September 2019. One hundred females patients with age ranging from 18 to >56 years (mean age=45.31±12.28) having completed structured form concerning demographic characteristics with persistent malignant ovary tumor (untreated) and after informed consent were included in this study. Patients during treatment or chemotherapy and after surgery were not involved in this study. Further exclusion criteria patient not supplemented with other medications which affect ovary gland.

All blood samples of patients were taken in K2-EDTA vials (BD-Vacutainers for CBC analysis) and red top vials (for LFTs and RFTs parameters). Ca125 was measured with an electrochemiluminescence immunoassay (Hitachi Modular E411; Roche Diagnostics, Mannheim, Germany), routine hematology testing was performed on the MEK9100 Celltac G Hematology Analyzer and LFTs and RFTs were performed on chemistry analyzer (P-500 Diatron, Hungary).

SPSS version 24.0 (SPSS Inc., Chicago, IL, USA) was used for data analysis. One way Anova test was used to investigate the variation among the groups (age & stage). Associations of Ca^{125} with CBC, LFT and RFT were assessed by Spearman correlation before checking the Normality or Normal distribution by D'A gostino test. The level of statistical significance was set at $p<0.05$.

RESULTS

Total hundred (100) patients of un-treated ovarian cancer age ranging from 18 to >56 years, mean age ±SD (45.31±12.28) were involved in the study, and their Serum tumor marker (Ca^{125}), Hematological parameters (WBC, RBC, HGB, HCT, MCV, MCH, MCHC, PLT, RDW, PCT, MPV, and PDW), Liver function test (ALP, ALT, AST& Total Bill.), renal function tests (Urea &Creatinine) were monitored.

The comprehensive results of Ca^{125}, CBC, LFT and RFT parameters are shown in table 1. The significance of the differences between the groups was assessed by one-way ANOVA. Significant difference were observed in Creatinine (p=0.00) in age-wise groups. Whereas, significant difference were observed in MCV (p=0.01), MCH (p=0.04), PLT (p=0.03), PDW (p=0.03) and NEA (p=0.04) in the stage-wise groups.

Table No. 2 indicates the correlation of serum tumor marker Ca^{125} with CBC, LFT, and RFT parameters in overall patients, age-wise groups and stage-wise groups. In overall results of the patients, significant positive correlation was observed in EO (r=0.40, p=0.02). There was no significant association found in age group-1 (18-36 years). In age group-2 (36-56 years) strongly significant positive correlation was assessed in PLT (r=0.62, p=0.01), while in age group-3 (>56y) strong negative correlation was observed in MCV(r=-0.76, p=0.02).

Table No.1: Comprehensive Results (Age and stage wise parameters)

Parameters	Age-wise Groups				Stage- wise groups				
	Group- 1 (18-35y)	Group- 2 (36-54y)	Group- 3 (55-69y)	P-value	Stage-1	State-2	Stage-3	Stage-4	P-value
MCV	83.8±6.93	80.71±8.32	84.58±10.3	0.53	89.5±9.07	90.46±1.30	78.36±5.74	80.36±8.45	0.01
PLT	300.8±85.89	409.66±135.84	345.6±165.2	0.20	253.5±64.55	322.66±62.16	366.90±140.99	449.1±140.4006	0.03
PDW	17.85±1.27	17.84±0.93	17.98±1.34	0.95	18.61±1.16	17.6±0.72	18.24±0.92	17.18±0.98	0.03
NEA	59.01±13.09	63.30±9.16	65.51±13.88	0.54	55.98±8.74	54.93±8.83	69.57±9.6	62.08±11.93	0.04
CREAT	0.78±0.12	0.92±	1.155±0.21	0.00	1.09±0.31	1.05±	0.89±0.16	0.93±0.21	0.33
Ca125	1022.7±1616.2	307.36±	121.3±185.9	0.12	766.3±181.9.3	104.16±	205.92±442.36	556.52±627.08	0.57

Table No.2: Correlation Table of Ca-125 with CBC, LFT'S and RFT

Parameters	Overall results	Age-wise groups (Ca-125)			Stage-wise groups (Ca-125)			
		Group 1 (18-35y)	Group 2 (36-54y)	Group 3 (55-69y)	Stage 1	Stage 2	Stage 3	Stage 4
RBCs	0.10(0.59)	-0.46(0.29)	0.21(0.44)	0.31(0.45)	0.14(0.78)	-0.86(0.33)	-0.25(0.45)	0.75*(0.01)
HGB	-0.00(0.98)	-0.17(0.70)	-0.15(0.57)	0.21(0.61)	0.71(0.11)	-0.86(0.33)	-0.37(0.259)	0.67*(0.03)
HCT	-0.05(0.77)	0.09(084)	-0.24(0.37)	0.00(1.00)	0.42(0.39)	-0.86(0.33)	-0.45(0.16)	0.72*(0.01)
MCV	-0.28(0.12)	0.25(0.58)	-0.46(0.08)	-0.76*(0.02)	0.14(0.78)	-0.86(0.33)	0.66*(0.02)	-0.17(0.62)
RDWCV	0.13(0.46)	0.00(1.00)	0.38(0.15)	0.38(0.35)	-0.88*(0.01)	-0.86(0.33)	0.10(0.77)	0.16(0.65)
PLT	0.25(016)	0.46(0.29)	0.62*(0.01)	-0.12(0.77)	0.48(0.32)	-0.86(0.33)	0.07(0.82)	0.09(0.80)
EO	0.40*(0.02)	0.34(0.45)	0.3.5(0.26)	0.67(0.06)	0.81(0.05)	-0.50(0.66)	0.08(0.80)	0.59(0.06)
Creatinine	-0.465*(0.01)	0.37(0.468)	-0.43(0.104)	-0.51(0.192)	-0.60(0.285)	-0.866(0.333)	-0.34(0.297)	-0.49(0.150)

Significant negative correlation of Ca[125] with RDW-CV (r=-0.88, p=0.01) was found in the stage-1. There was no significant correlation found in stage-2. At the stage-3 positive significant association was found in MCV (r=0.66, p=0.02), whereas in stage-4, strong positive correlation was observed in RBC (r=0.75, p=0.01), HGB (r=0.67, p=0.03) and HCT (r=0.72, p=0.01).

DISCUSSION

The ovary is an endocrine gland that is found in female reproductive system that produces ovum. Ovaries also produce female reproductive hormones (estrogen and progesterone) that play important role in the regulation and development of uterus. Ovarian cancer develops when errors occur in ovarian cells growth due to genetic abnormalities (mainly in NF1, BRCA1, BRCA2, and CDK12 genes) that cause them to grow excessively[11]. The production of excessive cells often forms a mass of tissue or tumor that start covering the outer lining of the ovaries however, some may form at the Fallopian tubes. Ovulatory dysfunction and excessive secretion of androgen and testosterone hormones may affect bone marrow cells[12]. Some tumor marker Ca125 protein released by some ovarian cancers, it circulates in the blood that may affect hematological and biochemical parameters. It is also important to evaluate the relationship between Ca[125] with CBC, liver and renal functions affected by malignant ovarian cancer.

Our comprehensive results indicate that creatinine level increases significantly with the increase in age of ovarian cancer patients, as Lafleur et.al in 2018 proved that elevated serum level is associated with patient age, creatinine level increases as patient age increases[10]. He also proved that creatinine is very important bio-chemical parameter in ovarian cancer patients, it act as a prognostic factor of ovarian cancer.

PLT also positively correlated with age group-2 (36-56y). This interaction involves platelet adhesion, platelet activation and degranulation and antagonistic signals for the ovarian cancer that can potentially promote ovarian cancer cell metastasis[13]. Neutrophil counts may be considered as systemic inflammation markers in cancer[14]. Our results also confirmed that neutrophil level increase significantly with stage of disease in untreated ovarian cancer patients similar to *Wang et al*[15]. PDW correlates with patient survival, and is an independent risk factor in cancer patients and MCH, RBC and MCV value deceases with the increase of disease stage in untreated patients similar to the study of Antonio et al[16].

Our results showed that Ca[125] significantly positively correlate with EO and negatively correlate with creatinine in overall patients as shown in figure 2. Eosinophil are important blood circulating granulocytes residing in blood and tissues in the breast, gastrointestinal (GI) and reproductive systems that are capable of phagocytosis associated with parasitic infections, inflammation and allergic reactions and previous studies observed that eosinophil level increased in oral squamous, prostate, colorectal, breast, cervical and ovarian cancer[17-18]. There also have been proved that Eosinophil is higher in malignant tumors as compared to benign. In this study, it has been proven that creatinine has a strong negative association with Ca125 conversely, a study proved that in female dialysis patients Ca125 have no association with creatinine levels although Ca[125] act as an important parameter in dialysis patients. However they correlate their parameter with Ca125 in dialysis patients whereas we correlate clinical parameters with Ca125 in untreated ovarian cancer patients[19].

CONCLUSION

The correlation of Ca125 with different hematological and bio-chemical parameters in all groups age-wise along with different stages is recommended as an important diagnostic tool in untreated ovarian cancer patients. The strongly significant negative association of RDW-CV with Ca[125] at stage-I should be considered as novel diagnostic and prognostic marker for the detection of ovarian cancer in early stages.

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Complications of Modified Radical Mastectomy

Early Complications of Modified Radical Mastectomy with Level II Axillary Clearance

Rab Nawaz Malik[1], Asim Shafi[1], Shabbir Ahmed[1], Bushra Ghulam[1], Umair Tahir[1] and Muhammad Aamir Shahzad[2]

ABSTRACT

Objective: To assess the early complications of Modified Radical Mastectomy (MRM) with Level II axillary clearance.

Study Design: Prospective Observational Study

Place and Duration of Study: This study was conducted at the Department of General surgery, Bakhtawar Amin Medical and Dental College, Multan from July 2019 to June 2021 for a period of two years.

Materials and Methods: Total patients with breast carcinoma with confirmed diagnosis were added in this study were 288. Under general anesthesia, patients had a MRM with level II axillary clearance. Drain was used and held in for 3 to 6 days and when amount produced decreased from 20ml the drain was removed. Follow up period was of one month in the outpatient department. Complications occurred after surgical procedure, were noted from day 4 to 7 during hospital stay, day 10 and one month of surgery. After 10 days of surgical procedure the stitches were removed. Predesigned form was used for collection of data and SPSS (version 16) was used for data analysis. Data was presented in descriptive statistics.

Results: The average tumor size of the patients was 6.34 ± 2.21 cm with the majority of the patients 191 (66.3%) had >5 cm. 197 (68.4%) patients had axillary nodes involvement and no any patients did not develop distant metastasis. (Table. I).Seroma collection was the most common 102 (35.4%) complication and lymphedema was the least common 5 (1.7%) complication. (Table. II). (Figure. I)

Conclusion: Following a modified radical mastectomy and axillary clearing, seroma development was the most prevalent consequence. Seroma formation leads to high risk of infection of wound, wound dehiscence, and skin flap necrosis, all of which increases morbidity and enhances the length of hospital stays.

Key Words: Complications, Modified Radical Mastectomy, Axillary Clearance, Seroma, Surgical site infection

INTRODUCTION

In women breast cancer is most common type of cancer with annual cases of 1.7 million diagnosed cases in 2012. Breast cancer is 2nd most common type of cancer overall, lungs cancer being first most common type of cancer in both men and women. In all types of cancers in women it contribute to about 25% while in all the new cases of cancer it contribute to about 12% [1]. At present, one hundred thousand cases are reported annually in India.

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In different regions of India, breast cancer contributes to about 19-45% among all types of cancers in women of India. In under developed countries the numbers of cases of breast cancer among women are increasing day by day. In a lifetime, every one out of twenty two Indian women is expected to have breast cancer, according to reports. In America this percentage is even higher in which one out of every eight woman is liable to have breast cancer[2]. Now-a-days management of breast cancer can be done by a number of different methods. These methods of management include surgery, chemotherapy, hormonal therapy, and radiotherapy[3]. Nonetheless, of all the management procedures via surgical procedure is the hallmark procedure of breast cancer management. Modified Radical Mastectomy (MRM) is most common method performed among all the surgical management procedures of breast cancer[4]. Along with oncological complications non-oncological complications can also occur. Some of major oncological complications that occur are occurrence of local or axillary again after curative surgical procedure and residual disease.

Modified Radical Mastectomy (MRM) contribute to the morbidity occurring in both early and late stages, also

causes increase in the length and cost of stay at hospital. MRM also causes delay in radiotherapy or chemotherapy, interfering with management of breast cancer. The complications that occur in the first 30 days after surgical procedures are said to early complications here. It is reported that the early complications of wound of surgery after MRM include infections of wound, chronic pain, lymphedema, flap necrosis, hematomas, and seromas. The reported rate of complications at surgical site after surgical procedures for breast cancer ranges from 0.8% to 26%, according to reports of different surveys conducted on breast cancer[5,6]. The formation of seroma is one of the most common complications after surgical procedure, modified radical mastectomy. The rate of seroma formation after modified radical mastectomy is 3%-85%[7]. The formation of seroma can cause development of infection which leads to increased morbidity which in turn increases the need of admission, imaging, drainage and use of antibiotics again[8]. There is variation in the rate of incidence of infection at the site of wound after surgical procedure. The range of wound infection rate is 3-19%, 20-30% for chronic pain, and between 3 to 32% for flap necrosis are reported cases [9]. After modified radical mastectomy, the rate of occurrence of lymphedema i.e. functionally significant, is less than 10%. With the help of different approaches the complications that occur after modified radical mastectomy can be reduced. These approaches can include preoperative examination, proper wound closure, hemostasis, and meticulous technique. Before surgical procedure examination must include complete assessment of physiologic conditions of patient along with standard oncological analysis. These evaluations of physiological conditions of patients must emphasis on hypertension, anemia, diabetic status, coagulopathy tolerability of anesthesia, or steroid therapy. In the current institute patients with breast cancer from both urban and rural setting were included in this study with increased body mass index (BMI) and advanced stage of malignancy, respectively. Therefore current study was conducted to learn the complications at the early stage after performing modified radical mastectomy.

MATERIALS AND METHODS

Current study was done during July 2019 to June 2021 in Department of Surgery, at General Surgery, Bakhtawar Amin Medical and Dental College, Multan. Study of Hadi et al was used as reference for calculation of sample size for this descriptive study [10]. Total patients with breast carcinoma with confirmed diagnosis were added in this study were 288. Patients with breast lumps were presented in the outdoors of the present institute. Triple examination approach was conducted on all the patients including clinical examination, mammography/ultrasound and core

biopsy or fine needle aspiration cytology. After diagnostic confirmation for breast cancer, the patients were admitted and complete history was taken mainly for patients with any co-morbidities e.g. coagulopathy, diabetes, hypertension, smoking, and steroid therapy. According to inclusion criteria of this study, patients with age of 20 years of more were included. Moreover, female patients with biopsy proven stage II and stage III infiltrating ductal breast carcinoma were included. On the other hand according to exclusion criteria of the study patients with stage IV carcinoma, inflammatory breast carcinoma, in need of anticoagulant therapy, and immunocompromised conditions with tuberculosis and positive HIV were not included in this study. To stage the cancer, chest X-ray abdominal ultrasound, general anesthesia, bones scan and alkaline phosphatase were done along with the primary processes of investigation. Under general anaesthesia, patients had a MRM with level II axillary clearance. Drain was used and held in for 3 to 6 days and when amount produced decreased from 20ml the drain was removed. Follow up period was of one month in the outpatient department. Complications occurred after surgical procedure, were noted from day 4 to 7 during hospital stay, day 10 and one month of surgery. After 10 days of surgical procedure the stitches were removed. Predesigned form was used for collection of data and SPSS (version 16) was used for data analysis. Data was presented in descriptive statistics.

RESULTS

Table No.1: Demographic and tumor characteristics of the study patients

Variable	Mean±S.D	N (%)
Age (years)	47.01±8.41	
25-40 years		78 (27.1)
41-60 years		203 (70.5)
61-75 years		7 (2.4)
Gender		
Male		164 (56.9)
Female		124 (43.1)
Tumor size (cm)	6.34±2.21	
T2 (2-5) cm		97 (33.7)
T3 (>5) cm		191 (66.3)
Nodal involvement		
N0 (no nodal involvement)		91 (31.6)
Axillary nodes involvement		197 (68.4)
Distant metastasis		
M0 (No)		288 (100.0)
M1 (Yes)		0 (0.0)

S.D: standard deviation

Two hundred and eighty-eight patients were included, in our study of both genders. The average age of the patients was 47.01±8.41 years with the majority 203

(70.5%) between 41-60 years. Male and female ratio was 1.3. The average tumor size of the patients was 6.34±2.21 cm with the majority of the patients 191 (66.3%) had >5 cm. 197 (68.4%) patients had axillary nodes involvement and no any patients did not develop distant metastasis. (Table. I).

Seroma collection was the most common 102 (35.4%) complication and lymphedema was the least common 5 (1.7%) complication. (Table 2).

Table No.2: Postoperative complication of the study patients

Variable	N (%)
Seroma collection	102 (35.4)
Wound infection	68 (23.6)
Altered sensation	50 (17.4)
Postoperative pain	32 (11.1)
Hematoma formation	24 (8.3)
Skin flap necrosis	18 (6.3)
Wound dehiscence	6 (2.1)

DISCUSSION

In this era, breast cancer management can be done by a number of different methods. The stage of breast cancer, patient's age, preferences of patients and choice of the surgeon are considered for surgical treatment. The most common surgical procedure of surgery i.e. MRM with axillary clearance is done for patients with breast cancer[11]. However, modified radical mastectomy is also associated to morbidity as well as mortality like other surgical procedures. In current study the most common postoperative complication was seroma formation comprising 25% of total 80 patients. These outcomes were compared to outcomes reported by other studies done including Chandrakar N et al (21.95%), Dahri FJ et al (33.3%), Bokhari I et al (38%), and Shaikh K et al (26.3%) (9, 11-13). According to the research, rates of seroma development for patients with undrained axilla and drained axilla range from 4.2 percent to 89 percent and up to 53 percent, respectively[14]. Improved surgical methods, as harvesting of suitable skin flaps, elimination of dead space, least use of diathermy, using tissue glue, insertion of closed suction drain deep to the mastectomy flaps and in the axilla, removing drain when empty for 24 hrs and no shoulder movements, can all help to prevent this complication[15,16]. Age of patient, size of breast, existence of malignant nodes in the axilla, hypertension, past biopsy surgery, and heparin usage are all connected to seroma development [14]. In the index research, wound infection was found in 20% of the patients. It is larger than the 4.5 percent reported by Shaikh K et al, but equivalent to Chandraker N et al's 24 percent and Jan WA et al's 11.4 percent[9,11,17]. In his series, Davis GB stated a 2.3 percent surgical infection rate. He found a link between a BMI of more than twenty five, an American Society of Anesthesiology categorization of three or above, an operation length of more than two hours, diabetes mellitus, and current status of smoking [18]. Nosocomial or hospital-acquired organisms are the most prevalent cause of wound infection. Collection of fluid, separation of wound and smoking are all risk factors for wound infection[19]. Because it lacks certain humoral components including complement and fibronectin, seroma development is a major risk factor. Having low transferrin content adds to the fluid's failure to promote lymphocyte blastogenesis and healing of wound [11]. For the first 3-5 days following surgery, 7.5 percent of patients had postoperative discomfort. This percentage is lower than the 20-30% reported in the literature[20,21]. Hematoma development was seen in 6.25 percent of the patients. This is comparable to the 4% and 7.32 percent observed in other research. 4,11 Four individuals (5%) suffered flap necrosis. According to the literature, the reported frequency ranges from 3% to 32%[20, 21]. Flap necrosis is caused by seroma collection and subsequent infection. Seroma also causes necrosis by disrupting the connection between the flap and the underlying tissues [11]. Skin flap necrosis can also be caused by excessive mobility and the use of diathermy to raise skin flaps. To reduce the danger of flap necrosis, we mostly employed scissors to raise skin flaps. Edema of the arm has been reported in nearly half of the patients following axillary dissection for affected lymph nodes. The majority of patients suffer some degree of edoema after axillary clearing, which is typically so little that the patients are unaware of it. The risk of lymphedema is increased by having a greater BMI before and after surgery [15]. In our study, 2.5 percent of the patients developed lymphedema in one arm. According to the literature, the frequency of lymphedema after a MRM is <10% [21].

CONCLUSION

Following a modified radical mastectomy and axillary clearing, seroma development was the most prevalent consequence. Seroma formation leads to high risk of infection of wound, wound dehiscence, and skin flap necrosis, all of which increases morbidity and enhances the length of hospital stays.

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Original Article

Comparison of Outcomes in Diathermy versus Dissection Method Tonsillectomy at a Tertiary Care Hospital in Karachi

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ABSTRACT

Objective: Over the years, various methods of tonsillectomy have been practiced to reduce or eliminate intra-operative and post-operative morbidity. The objective of this study is to compare outcomes in diathermy versus dissection tonsillectomy in a tertiary care hospital of Karachi.

Study Design: Comparative Randomized double blind study

Place and Duration of Study: This study was conducted at the Jinnah Medical College Hospital, an affiliated hospital of Jinnah Medical & Dental College, Karachi, Pakistan from August, 2019 to January, 2021.

Materials and Methods: The total number of patients enrolled in the study were 100 with ages ranging between 4 to 28 years old (mean age 11.2 ± 2.1 years). Patients were then randomly divided into two equal groups of 50 patients each; group A consisting of diathermy tonsillectomy while group B comprising of dissection tonsillectomy. During and after surgery different parameters were measured including post-operative earache, excessive thick slough formation in the tonsillar fossa, fever, duration of analgesic use, time of return to a regular diet, operating time, blood loss during surgery, post-operative hemorrhage and post-operative pain scores.

Results: The mean pain score of both the groups in immediate post-operative period (7.96 ±0.9 vs 7.63 ±0.8) and 24 hours period (6.78 ±1.1 vs 6.12 ± 0.9) was almost the same while pain score at 7th post-operative is significantly high in diathermy group (5.47 ± 0.9 vs 2.55 ± 0.8). 4% of Diathermy patients suffered from secondary bleeding and none of the Cold Steel patients had such complaint (p- value 0.056). Mean operating time was shorter in diathermy group (21.7 ± 2.1 vs 28.4 ± 2.4 minutes) and intra-operative blood loss was also less in diathermy group (15.5 ±3.1 vs 98.1 ± 9.4 ml).

Conclusion: We conclude that cold steel tonsillectomy has better patient outcomes as compared to diathermy, however diathermy method has less operating time and less intra-operative bleeding.

Key Words: tonsillectomy, diathermy tonsillectomy, cold Steel tonsillectomy, post-operative complications

INTRODUCTION

Tonsillectomy is one of the most commonly performed surgical operation in ENT practice and nearly 530,000 children younger than 15 years are operated annually in United States of America.[1]

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Over the years, various methods of tonsillectomy have been practiced and oriented around reducing or eliminating both intra-operative and post-operative morbidity in the patients.[2] These methods include blunt dissection, laser, electro-cauterization, electrosurgical scissors, ultrasonic dissection and coblation. Tonsillectomy is a day-care surgical procedure hence requiring efficient pain and bleeding control postoperatively.[3] The two most commonly used methods include; bipolar diathermy scissors and harmonic scalpel. The bipolar diathermy method is unique in this technique of coagulating and cutting the tissue simultaneously by applying an electrical current in the scissor hands.[4] Whereas in a harmonic scalpel, it vibrates at a frequency of 55.5Hz generation pressure that divides the tissue. In this method there is minimal damage to the tissue because the division is at the cellular level by degeneration of proteins.[5] According to the study by East and Central African Journal of Surgery, the average time required to remove a tonsil by cold dissection was found to be longer than that for diathermy tonsillectomy.[6]

Regardless of the methods used however, intra-operative blood loss, postoperative hemorrhaging and postoperative pain remain a considerable challenge for both the surgeon and the patients. It has been studied that back in the nineteenth century, surgeons used chemicals such as tanno-gallic acid and silver nitrate or even icing was used.[7] Bleeding has been one of the complications that is always greatly concerning, it may be intra-operative, or post-operatively which can be further divided into reactionary if within 24 hours or secondary if after the first 24 hours usually occurs between 5 to 10 days post-operatively.

Numerous comparative studies have been done on diathermy and dissection method that showed variable results.[8,9] Common postoperative morbidity of tonsillectomy operations are pain and hemorrhage. Hemorrhage after tonsillectomy operation is potentially a lethal complication.[10,11] This study was conducted with the aim to see differences in outcomes and post-operative pain and hemorrhage between the two groups of diathermy and dissection method tonsillectomy.

MATERIALS AND METHODS

This comparative randomized double blind study was conducted at Jinnah Medical College Hospital, an affiliated hospital of Jinnah Medical & Dental College, Karachi, Pakistan. The study commenced in January 2019 and proceeded till August of 2021. The data collection was done via questionnaires filled by the surgeon at the time of admission and post operatively on follow up visits in outpatient clinic. Approval from the hospital ethical review committee (ERC) was taken before the start of the study and informed written consent was taken from each patient. Inclusion criteria were all consecutive patients operated for tonsillectomy during this period in our hospital. Exclusion criteria were; patient with combined adenoidectomy and tonsillectomy, patients lost for follow-up, patients with any other systemic, hematologic or neurologic problem and patients not giving written consent for inclusion in this study.

The total sample size was 122 patients out of which 22 patients were lost to follow up with actual sample size of 100, who were to be operated for tonsillectomy exclusively. The patients with chronic or recurrent tonsillitis in spite of adequate medical therapy or tonsillar hypertrophy causing obstructive airway sleep apnea, odynophagia and speech abnormalities were selected. Detailed history and clinical examination was done followed by laboratory studies including complete blood count, coagulation profile (activated partial thromboplastin time, prothrombin time), and HBsAg and Anti HCV markers. Patients were then divided into two groups randomly; group A, consisting of 50 total patients operated with diathermy method and the group B, consisting of 50 patients operated with dissection/cold steel method.

During and after surgery different parameters were measured including post-operative earache, excessive thick slough formation in the tonsillar fossa, fever, duration of analgesic use, time of return to a regular diet, operating time, blood loss during surgery, post-operative hemorrhage and post-operative pain scores . The post-operative pain level was scored from 1 to 10 using the visual analog score (VAS). The data was analyzed on SPSS 20.1 using non-parametric tests such as chi-square and T-tests and p-value of <0.05 was considered significant.

RESULTS

Over the period of study, a total of 100 out of 122 patients were compliant and came for follow up, out of these 50 had undergone cold steel surgery and the rest 50 had diathermy removal of their tonsils. Mean age in diathermy and dissection tonsillectomy groups was 10.8 ±2.1 years and 11.5 ±1.9 years respectively. In cold steel group 52% of the patients were female whereas in diathermy group 58% were females [Table 1]. About 77% and 60% presented with recurrent infection in each group respectively however none of the patients suffered from any co morbidities. The use of ligature of the pedicle was applied in all of cold steel surgeries but in none of the diathermy procedure.

All the parameters and their values are shown in table 2. Cold steel procedure showed a higher mean operative time of 28.4 ±2.4 minutes as compared to the 21.7 ±2.1 minutes in diathermy tonsillectomy. Intra-operative mean blood loss was 15.5 ±3.1 ml in diathermy group as compared to 98.1 ±9.4 ml in dissection group. In comparison of post-operative complications in both the groups, 10% of patients who underwent cold steel complained of fever post operatively. Whereas only 8% patients of Diathermy group had this complaint. There was no report of reactionary bleeding post operatively in both groups. However, we see that 4% patients of diathermy group came with secondary hemorrhage post operatively in emergency department requiring admission for further management while none of the Cold Steel patients presented with such a complain (p-value 0.056).

One of the most important parameters regarding the patients' concern we considered while performing this study was the level of pain experienced post operatively. The pain level was scored from 1 to 10 using the visual analog scale (VAS), 1 being the lowest severity and 10 being the worst. We measured pain scores on three occasions; in immediate post-operative period, 24 hours after the surgery and on 7th post-operative day at OPD follow up. Our analysis showed that the mean pain scored of both the groups in immediate post-operative period and 24 hours period was almost the same, for Cold steel the mean scores were 7.63 ±0.8 and 6.12 ±0.9 in immediate post-operative period and 24 hour period respectively while

the mean scores were 7.96 ±0.9 and 6.78 ±1.1 in immediate post-operative period and 24 hour period for Diathermy group respectively (p value 0.366 and 0.212).

Table No.1: Demography of the groups

	Group A Diathermy Method	Group B Dissection Method
Total number of patients	50	50
Male patients	21 (42%)	24 (48%)
Female patients	29 (58%)	26 (52%)
Male to Female ratio	1:1.38	1:1.08
Minimum age (in years)	4	4
Maximum age (in years)	27	28
Mean Age (in years)	10.8 ± 2.1	11.5 ± 1.9

Table No.2: Measured Parameters in both groups with p-values

	Group A Diathermy Method	Group B Dissection Method	p-value
Earache	28 (56%)	16 (32%)	0.001
Excessive Thick Slough	32 (64%)	14 (28%)	0.021
Fever	4 (8%)	5 (10%)	0.412
Mean Duration for use of Analgesics (in days)	18.5 ± 2.1	13.2 ± 1.8	0.002
Mean Day of return to a regular diet (in days)	19.1 ± 1.9	13.5 ± 1.7	0.000
Mean Operating Time (in minutes)	21.7 ± 2.1	28.4 ± 2.4	0.005
Mean Blood Loss during surgery (in ml)	15.5 ± 3.1	98.1 ± 9.4	0.011
Reactionary hemorrhage	0 (0%)	0 (0%)	0.000
Secondary hemorrhage	2 (4%)	0 (0%)	0.056
Post-operative pain score after recovery	7.96 ± 0.9	7.63 ± 0.8	0.366
Pain score after 24 hours post operatively	6.78 ± 1.1	6.12 ± 0.9	0.212
Pain score after 7 days Post operatively	5.47 ± 0.9	2.55 ± 0.8	0.048

Whereas, the 7th day follow up pain scores showed significant difference in between the groups, cold steel

patients score being 2.55 ±0.8 and diathermy group had a much higher mean of 5.47 ± 0.9(p value 0.048). Post-operative earache and excessive thick slough formation in the tonsillar fossae were also higher in diathermy group as compared to dissection method group (table 2).

DISCUSSION

Over the years, tonsillectomy has been performed by cold dissection method, however, with the advent of newer technology surgeons started preferring electrosurgical methods such as diathermy use for dissection and hemostasis which gave better control of intra-operative hemorrhage. Traditionally, cold surgical dissections have been performed with the use of a scalpel under the use of general anesthesia during a procedure lasting approximately 45 minutes to an hour. However, in more recent decades, many new types of surgical procedures have been found to be both effective and undemanding. Some of these applied procedures are diathermy (electro-dissection or electro-cauterization), electrocautery, harmonic scalpel, laser ablation and much more.[12] Although many different methods have been studied for the removal of tonsils, the two most common techniques found are dissection with cold dissection and electro-cauterization. Regardless of the methods used however, intra-operative blood loss, postoperative hemorrhaging and postoperative pain remain a considerable challenge for both the surgeon and the patients.

Although, several techniques and attempts have been made by the use of electrocautery tools (which are developed as an alternative to traditional cold dissection), a significant reduction to postoperative pain has yet not been reported. Oko et al conducted a study that compared cold dissection tonsillectomy to ultrasonic scalpel tonsillectomy and according to their study cold dissection cause less pain during the initial days.[13] Whereas, our study results demonstrated that the pain score levels during the early days after surgery were equal but later on pain score is significantly lower in dissection tonsillectomy. According to Pinder et al, and their detailed review and comparison, it was concluded that there isn't strong enough evidence to support one method of tonsillectomy over another when considering post operative bleeding.[14] Their data concluded that there weren't any differences in hemorrhages in either primary or secondary hemorrhages in the different types of tonsillectomy methods. However in case of pain they did conclude that evidence favors monopolar diathermy dissection to result in more post-operative pain. Our study showed comparatively less rates of post operative hemorrhages when being compared to previous studies conducted. A report demonstrated a rate of 0.2-2.2% primary and 1% to 3.3% secondary hemorrhage after tonsillectomy.[15] Another study demonstrates that despite the various

choices available, the rate of post tonsillectomy bleeding still remains in the range 0.28 to 20%.[16] Hemorrhage after tonsillectomy remains a matter of concern as it may result in readmission of the patients and further management measures to control the bleeding.

The concept of electro-dissection was first described by Goycloea in 1982 using monopolar diathermy and 10 years later Pang reported the first electro-dissection tonsillectomy using the bipolar forceps.[17] The surgical technique of bipolar diathermy or electro-cautery is similar to Coblation method or electro-dissociation. In both methods, an alternative current passes between the active electrodes on the tip of the device which causes the destruction of the target tissue adjacent to the electrodes.[18] In bipolar diathermy, direct contact between electrodes and tissue produces local temperatures of 400°C to 600°C resulting in the heating of intracellular contents and subsequent vaporization of the cell.[19]

Intra-operative blood loss is an important parameter for surgeon as well as for patient's post-operative morbidity. The obvious advantage of diathermy over dissection method is less intra-operative bleeding. In our study also there is less mean intra-operative blood loss in group where diathermy method was used (mean blood loss of 15.5 ml vs 98.1 ml). This is much similar with a study conducted at Saudi Arabia showing mean intra-operative blood loss of 25.37 ml with diathermy method vs 88.45 ml with dissection tonsillectomy.[20] Similarly another advantage of diathermy tonsillectomy is the surgical operating time which is much shorter. In our study mean operating time for diathermy method is 21.7 minutes in contrast to 28.4 minutes in dissection method tonsillectomy. This finding is also much similar to other studies like in one local study from Faisalabad where mean operating time for diathermy method was 13.09 minutes versus 24.94 minutes in dissection method tonsillectomy.[21]

Although, there is obvious advantage of intra-operate blood loss and operating time with diathermy tonsillectomy but post-operative pain and increased incidence of secondary hemorrhage are marked limitations or disadvantages of diathermy tonsillectomy.[22] In our study post-operative pain scores on 7th day are much higher in diathermy group than dissection group. Similarly incidence of secondary hemorrhage was around 4% in diathermy group versus 0% in dissection group. We also compared the mean time for return to a regular diet which is also much shorter in dissection group. Similarly duration for use of analgesics after surgery was also much shorter in dissection group than diathermy group. Post-operative earache and thick slough formation in the tonsillar fossa were also less in the dissection group. So these are the clear advantages of dissection method as compared to diathermy method.

CONCLUSION

We conclude that cold steel tonsillectomy has better patient outcomes as compared to diathermy, however diathermy method has less operating time and less intra-operative bleeding.

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Frequency of Altered Liver Function Tests in Hyperemesis Gravidarum During First Trimester

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ABSTRACT

Objective: To determine the frequency of abnormal liver function tests (LFTs) in hyperemesis gravidarum (HG) during first trimester.

Study Design: Descriptive cross sectional study

Place and Duration of Study: This study was conducted at Gynecology and Obstetrics Department of Bahawal Victoria Hospital in collaboration with Pathology Department, Quaid-e-Azam Medical College from March 2020 to September 2021 for a period of six months.

Materials and Methods: Total 106 pregnant women in their first trimester, presenting with hyperemesis gravidarum were enrolled in the study. Liver function tests of all study subjects were evaluated including total serum bilirubin, alanine transaminases (ALT) and aspartate transaminases (AST).

Results: The results of this study showed a mild increase in serum total bilirubin (1.4±0.4) and a mild to four times elevation in level of serum transaminases i.e. ALT (57.2±39.3) and AST (48.4±28.7). An elevated level of ALT was observed in multiple pregnancies.

Conclusion: Hyperemesis gravidarum is associated with alteration in liver function tests. These abnormalities are mild and resolve after the cessation of symptoms. Persistent elevation warrants further investigation to rule out underlying hepatic disease. The severity of symptoms correlates with degree of derangement. Outcome of HG remains unaffected and only conservative management is required. Moreover, the significant increase in serum ALT levels in multiple pregnancies may suggest a relationship with pregnancy hormones.

Key Words: hyperemesis gravidarum, altered liver function test, first trimester, pregnancy, nausea, vomiting

INTRODUCTION

During first trimester, around 70-80% of pregnant women experience some degree of nausea and vomiting. The symptoms typically start around 4th to 6th week of gestation, peak during week 8 to 12 and settle by 20th week. In some cases vomiting might persist until delivery. This is a spectrum of disease ranging from mild to severe illness and is termed as nausea and vomiting of pregnancy (NVP).

The most severe and persistent form of NVP is known as hyperemesis gravidarum (HG). It alludes to the state of severe intractable nausea and emesis that requires medical intervention[1]. It is stated that hyperemesis gravidarum affects approximately 0.3 to 03% of the pregnant women[2]. It is accompanied with dehydration, fluid and electrolyte/ acid-base imbalance, volume depletion, ketosis, various nutritional deficiencies and >5% weight loss[1]. Although, HG has a good prognosis but untreated disease can have significant impact on maternal and fetal morbidity. Practically, the patient is diagnosed with hyperemesis gravidarum when there is complaint of exaggerated morning sickness and all other possible diagnoses have been ruled out. The possible risk factors may include primigravida, multiparity, obesity, past history of hyperemesis gravidarum and gestational trophoblastic disease [1].

Although the exact pathogenesis of hyperemesis gravidarum is under investigation but it is hypothesized that a causal relationship exists between HG and rapidly increasing level of beta- human chorionic gonadotropin (HCG) [2]. This may be suggestive of a correlation between vomiting and serum HCG. Moreover, the conditions associated with elevated serum HCG such as carrying multiples and gestational trophoblastic diseases may lead to increased chances of hyperemesis gravidarum. The previously presumed connection of HG with estrogen and progesterone has now been

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disapproved [3]. A study related vomiting of pregnancy with a higher incidence of Helicobacter Pylori infection but it seems to be a completely distinct condition with no role in the mechanism of HG [4].

Mild morning sickness is managed by advising the patient to avoid triggers like certain foods and food preparations or by oral medications such as pyridoxine, doxylamine succinate, diphendydramine and metoclopramide[5]. In severe cases when oral medication is not tolerated, intravenous forms of diphendhydramine, metoclopramide, or ondansetron may be required. For management of fluid and electrolyte balance, hospital admission is recommended. Refractory cases are managed with short course of glucocorticoids such as methylprednisolone and hydrocortisone [5]. Nutritional support must always be instituted [6].

The common complications of hyperemesis gravidarum are dehydration; altered liver function tests (LFTs), hypokalemia, hypocalcemia, hypomagnesemia, metaboloic alkalosis, pre-renal acute kidney injury (AKI) and transient hypothyroidism [2,7]. Laboratory results that help in the diagnosis of HG include complete blood count, routine blood chemistry such as liver function tests, renal function tests (RFTs), serum electrolytes, amylase, lipase, thyroid function tests (TFTs) and estimation of serum beta-human chorionic gonadotropin (hCG). Frequently observed lab abnormalities in HG are decreased serum electrolytes (mainly potassium, sodium, and chloride). An increased hematocrit can also occur due to volume depletion. Other laboratory results can also show a rise in urinary ketones, specific gravity, and blood urea nitrogen. Additionally, hCG and thyroxine, have been shown to increase with the severity of HG, while thyroid stimulating hormone decreases. Pertaining to liver function tests, ALT can elevate up to 2 - 5 times the upper limit of normal, while bilirubin levels tend to remain unchanged [8,9].

Abnormal LFTs during hyperemesis gravidarum requires proper interpretation for accurate diagnosis and timely management of patients. The present study is focused to determine the frequency of deranged liver function tests in hyperemesis gravidarum during first trimester of pregnant women. The findings of this study will add to the existing data available on this topic and will be used for the welfare of patients.

MATERIALS AND METHODS

Study Design: Descriptive cross sectional study.
Settings: The study was conducted at Gynecology & Obstetrics Department 2 of Bahawal Victoria Hospital and tests were carried out in Pathology department, Quaid-e-Azam Medical College, Bahawalpur.
Duration of study: The study commenced in March 2020 till September 2021.
Sample size: 106 patients were enrolled in the study.

Sampling Technique: Nonprobability purposive sampling.
Sample selection:
Inclusion criteria: The primary targets of this study were pregnant women in their first trimester, presenting to Gynae & Obst. unit 2 with complain of severe nausea and uncontrollable vomiting requiring hospital admission or day care.
Exclusion criteria: Patients with pre-existing or newly diagnosed liver disease and drug induced abnormal liver chemistry were excluded.
Data collection: After approval of the study by the local ethics committee, patients with hyperemesis gravidarum were identified. After explaining the purpose of study a written informed consent was taken and 125 patients were recruited in the study. A predesigned proforma was used to collect patients' information. Demographic data was recorded. Detailed history was obtained regarding menstrual/obstetric details, any known liver disease and drug intake. The laboratory reports of these patients were also assessed. Out of these 125 women, 8 women gave a history of pre-existing liver disease while 11 were taking drugs such as paracetamol, anti-tuberculosis treatment and previous long term use of oral contraceptives so they were excluded.

Lab evaluation included estimation of serum bilirubin (total), alanine transaminases (ALT) and aspartate transaminases (AST). Analysis of all samples was done in Pathology Department by experienced pathologist on Beckman Coulter AU680.
Data Analysis: The data was analyzed with the SPSS software package version 24.0. Quantitative variables were expressed in terms of mean, standard deviation (SD), and percentage. Continuous variables were compared with the Student's t-test and paired sample t-test. A p-value of < 0.05 was considered to be statistically significant.

RESULTS

The demographic characteristics of study population are given in Table 1. There is mild elevation in serum total bilirubin while ALT and AST range from normal to 3-4 times the upper normal limit. The final observations of this study are summarized in Table 2. Overall, 63.2% (67/106) of the study participants showed some degree of derangement in liver function tests. There were 30.2% (32/106) primigravida and 69.8% (74/106) multigravida. There was no statistically significant difference found between the results of serum bilirubin and transaminase of primigravida and multigravida as shown in Table 3. The ALT level was observed to be high in multiple pregnancies. The patients were given intravenous fluids and antiemetics. None of the patient required termination of pregnancy.

Table No.1: Demographic characteristics of study subjects

Variables	Mean ± SD	Range
Age	27.6± 4.2	19-38
Weeks of gestation	14.7±2.5	8-20
Parity	2.7±1.2	1-6

Table No.2: Liver function tests of study subjects

Investigations	Mean ± SD	Range
Total bilirubin (mg/dl)	1.4±0.4	0.3 – 2.8
AST (IU/L)	48.4±28.7	19-87
ALT (IU/L)	57.2±39.3	18-213

*ALT: Alanine transaminase, AST: Aspartate transaminase

Table No.3: Comparison between LFTS of primigravida and multigravida

Investigations	Primigravida	Multigravida	p-value
Total bilirubin (mg/dl)	1.41±0.34	1.44±0.38	<0.05
AST (IU/L)	47.8±31.2	48.1±27.7	<0.05
ALT (IU/L)	57.2±30.4	58.5±37.1	<0.05

*ALT: Alanine transaminase, AST: Aspartate transaminase, p-value is calculated using two-tailed unpaired t-test

DISCUSSION

Three types of liver disease in pregnancy have been described:

- Pre-existing disease
- New onset disease
- Pregnancy-specific disease [10].

As an uneventful pregnancy does not cause a significant modification in liver physiology, the treatment of pregnancy non-specific hepatic disorder is similar to that of non-pregnant population [11]. It is stated that AST and ALT does not rise during a normal pregnancy but an increased alkaline phosphatase (ALP) and decreased albumin concentration was observed. So any abnormality in AST and ALT requires proper evaluation.

Here is a brief discussion of pregnancy related hepatic disorders that can lead to impairment in hepatic transaminase levels.

Acute fatty liver of pregnancy (AFLP) occurs in 0.01% of all pregnancies. ALT and AST can elevate up to ten times the upper normal limit [10,12]. Liver involvement is frequently observed in hypertensive disorders of pregnancy i.e. pre-eclampsia and eclampsia. They cause hepatocellular necrosis resulting in marked rise of the aminotransferases [10]. A 100 times elevation was also seen in some cases[13]. Syndrome of hemolysis, elevated liver enzymes and low platelets (HELLP) is a variant of pre-eclampsia. In this condition ALT, AST and total bilirubin are mildly raised but ALP can increase up to 1000 IU/L [14].

In hyperemesis gravidarum, liver involvement is subclinical and not marked. So, clinicians do not consider HG as a liver disease of pregnancy [10]. Research data reveals derangement in liver function tests in around 50% of the patients suffering from HG. These biochemical changes are reversible and resolves with the settlement of symptoms [15]. The results of our study are consistent with the available data. Commonly a twofold rise in ALT and AST are seen but values more than 200 IU/L are seldom observed [10,16]. These findings contradict with our results, as values >200 IU/L were recorded in our study population.

The mean increase in ALT level was observed to be more than AST, but the exact pathogenesis is unknown[17]. We have observed similar results in our study subjects. There is mild increase in total serum bilirubin level and rarely can it go up to 4 mg/dL [10]. Similarly, we have observed mild elevation in bilirubin level.

The severity of symptoms can correlate with the degree of alteration in liver function tests [11]. We were also able to establish a relationship between deranged LFTs and symptoms. If the derangement persists after cessation of morning sickness, this should alert the clinician for further investigation to rule out any underlying hepatic disease.

The changes in LFTs during hyperemesis gravidarum have no clinical impact on liver function. The physiological functions remain normal, as evident from normal coagulation. The decrease in albumin is decreased most probably due to poor nutrition [11].

A previous study revealed no significant difference between the abnormal LFT values of primigravida and multigravida [18] which is in agreement to the findings of present study.

We also observed a marked elevation of ALT.

Larry et al, repoted an unusual case where a female experienced hyperemesis gravidarum in all her three pregnancies [19]. The maximum recorded level of aminotransferase was 22 times higher than the upper normal limit.

Hyperemesis gravidarum is not accompanied by any radiological changes in liver architecture, If any abnormality is found, then some other underlying cause should be kept in mind [11].

There is no indication for liver biopsy until and unless there is doubt in the diagnosis.

The exact pathogenesis of hyperemesis gravidarum is not completely known. Some literature says that it is associated with malnutrition that can lead to abnormal LFTs but this seems to be unlikely in scenarios where nutrition status is adequate [20].

Kaplan et al. revealed an increased level of tumor necrosis factor alpha (TNF-α) patients with HG [21]. Placenta is a known source of TNF- α. The rise in this inflammatory cytokine can be hypothesized to be

involved in pathogenesis of hyperemesis gravidarum along with derangement in LFTs [22].

Another theory about the pathogenesis of HG is the production of reactive oxygen species (ROS). ROS are produced as a result of impaired metabolism of fatty acids [23]. ROS can lead to production of inflammatory cytokine, ultimately leading to HG and liver dysfunction.

Sometimes there is incidental finding of a subclinical liver disease, diagnosed only on the basis of isolated increase in LFTs. These are confounding variables in our study and can be addressed by conducting further studies at larger scale. The liver chemistry should be estimated before and after development of HG. But we have not come across any such study during literature search. Even if such a study was conducted, the results would not have been impactful. Reason being that all the patients with hyperemesis gravidarum are not completely investigated. Only the ones with severe or complicated disease and cases where the diagnosis is doubtful undergo detailed investigations. To avoid this shortcoming, a prospective study should be planned. To establish an accurate association between liver dysfunction and the degree of liver dysfunction, a well-defined clinical criterion is required. Recently, a scoring system called PUQE (Pregnancy-unique quantification of emesis and nausea) has been introduced that can help in assessment of the severity of symptoms [24]. It is not a widely used scoring system, does not affect the course of disease or its treatment.

CONCLUSION

Hyperemesis gravidarum is associated with alteration in liver function tests. These abnormalities are mild and resolve after the cessation of symptoms. Persistent elevation warrants further investigation to rule out underlying hepatic disease. The severity of symptoms correlates with degree of derangement. Outcome of HG remains unaffected and only conservative management is required. Moreover, the significant increase in serum ALT levels in multiple pregnancies may suggest some relationship with pregnancy hormones.

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Original Article

Baseline Parameters in Untreated Ovarian and Breast (Symptomatic and Asymptomatic Covid-19) Cancer Patients

Kainat Warraich[1], Shahida Parveen[1] and Rubaida Mehmood[2]

ABSTRACT

Objective: To evaluate the effect of covid-19 on CBC, LFT's, RFT's and TMR's in cancer patients.
Study Design: A prospective study
Place and Duration of Study: This study was conducted at Multan Institute of Nuclear Medicine and Radiotherapy (MINAR) from April 2019 to December 2020.
Materials and Methods: This study was performed on 3772 untreated cancer patients (includes bladder, bone, brain, breast, colon, larynx, leukemia, liver, lung, ovary and other cancer types with age ranging from 8-87 years (49.59±15.27) of 2019 and 2020 (50% of COVID attack) at MINAR hospital, Multan. Chi-square Mann Whitney, Independent T- test and Spearman correlation analysis were performed to calculate results.
Results: The incidence of bone cancer (p value-0.02), brain cancer (p value-0.03), breast cancer (p value-0.00001) liver cancer (p value-0.006), and ovarian cancer (p value-0.0001) was higher in 2020 patients. All cancers, data indicated that Creatinine (p=0.004) and CA 125(p=0.04) were in higher ranges in COVID 19 cancer patients. There observed significant change in creatinine levels of breast (p=0.02) and ovarian cancer patients (p=0.04) and also higher level of CA-125(p=0.04) was indicated in ovarian cancer patients along with covid-19. There observed strongly significant positive association of CA- 125 with creatinine (r=0.34, p=0.02), and CEA with Bilirubin Total(r=0.57, p=0.04) in ovarian cancer. MCV (p=0.00), HGB (p=0.01), HCT (p=0.04), MCH (p=0.001), and MCHC (p=0.02) were decreased in breast cancer patients. CA-125 showed a strongly significant negative association with LY %(r= -0.305, p=0.03) and MO %(r= -0.299, p=0.049) in ovarian cancer.
Conclusion: Our findings suggest that incidence of ovarian cancer and breast cancer was very high during COVID pandemic attack. Association of CA 125 with creatinine in breast cancer and with LY% and MO% in ovarian cancer serve as the prognostic factor during viral attack. MCV and Creatinine are diagnostic factors in both cancers.
Key Words: COVID 19, Breast cancer, Creatinine, CA 125, MCV.

INTRODUCTION

In 2019 WHO announced that out of 183 countries in 112 countries, cancers are the first or second cause of death, but in 23 further countries, it is the third or fourth cause of death. Breast cancer is the fifth leading cause of death worldwide, in 159 countries out of 185, one in four cancer patients has breast cancer [1]. In Pakistan, in every nine women one develops breast cancer some time in her life[2].

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Ovarian cancer (OC) is the seventh most commonly diagnosed cancer among women in the world [3]. Asian Indians/Pakistanis had the highest incidence, whereas Koreans had the lowest of ovarian cancer[4]. In the United States, in 2019 approximately 5930 new cases were diagnosed and 1500 patients were dying[5]. For the diagnosis of cancer, baseline parameters which are important to test include CBC, LFTs and RFTs. If there is no change in these parameters we can stop wasting our time with an ineffective method. Because chemotherapy and radioactive rays can fluctuate their concentration in blood and show some harmful effects on liver and kidney functions[6]. We also use TMRs (tumor markers) which are some sort of protein found in the blood and act as biomarkers for cancerous cells should be monitored along radiology tests[7].

LFTs (AST, ALT, ALP, and Total Bilirubin) are the blood tests used as screening tool which give information about the state of the liver. Via RFPs (renal function parameters) tests we calculate biochemical like serum creatinine and urea level whose increased level is toxic for whole body functioning and also indicate kidney dysfunction or cancer[8]. The tumor markers used for cancer diagnosis and treatment control are

CA19-9, CA 125, AFP and CEA.CA 19-9 detects cancer masses related to pancreases. CA 125 is beneficial for ovary cancer detection in pelvic masses. Complete Blood Picture (CBC) is one of the most common tests that are recommended by every physician in every cancer. Different parameters of CBC including WBC, RBC, HBG, HCT, MCV, MCH, MCHC, RDW-CV, PLT MPV PDW, PCT, NE, LY (Lymphocytes), MO (Monocytes) and EO (Eosinophils) are observed.

Cancer is one of the most common comorbidity of people in covid-19 and cancer patients are the most vulnerable people in the pandemic[9].So, they need some intensive care as their immune system is already at high risk due to the continuous use of immune suppressants, it is better to stop the chemotherapy if possible[10].

MATERIALS AND METHODS

We studied 3772 cancer patients' data from MINAR hospital, Multan, from April 2019 to December 2020. They include 1626 cancer patients of 2019 and 2146 cancer patients also suffering from covid-19. We have mentioned only 10 of cancer data for incidence study. Blood samples were collected in K2 -BD vacutainers(11). LFTs and RFTs were measured by the kinetic method in Selectra junior. After collection, (within 15 minutes) testing of all samples for CBC was performed on NIHON KOHDEN. For statistical analysis, SPSS version 22.0 (SPSS Inc., Chicago, IL, USA) was used. First of all we applied chi-square test to check the incidence of different cancers in covid-19 cancer patients. After checking the normality of data, results for CBC, LFTs and RFTs were assessed by Mann Whitney test and Independent T test. Finally, the relationship of TMRs with bio- chemical parameters was assessed by Spearman correlation analysis. The level of statistical significance was set at P<0.05.

RESULTS

We have calculated two year cancer incidence rate of southern Punjab region of Pakistan to some extent with the help of Chi square test in IBMSPSS 22.0 version. The data have been shown in table no. 1.

Our data indicated that the breast and ovarian cancer incidence was very high during COVID -19 outbreak. All cancer patients were untreated in both years, while in 2020, 50% of them were symptomatic and asymptomatic covid-19 along with cancer. Table No. 2 showed that creatinine levels was decreased significantly in breast cancer and increased in ovarian cancer patients along with COVID 19. There was a positive relationship of creatinine with CA125 in 2020 data. It shows that creatinine level have a close relationship with CA125 in ovarian cancer patients. There is also an indication of increased CA125 level in ovarian cancer patients with COVID 19.In ovarian cancer the tumor marker CEA also have a significant relationship with bilirubin total value. MCV was significantly lower in breast (p=0.00) and ovarian (p=0.03) cancers. HGB(p=0.01), HCT(p=0.04), MCH (p=0.001), MCHC(p=0.02),and PDW(p=0.01) showed significant decrease and PCT(p=0.00) and MPV(p=0.00), RDW-CV(p=0.00) MO%(p=0.00) and EO%(P=0.02) were significantly increase in the patient having breast cancer along with covid-19. CA-125 showed a strongly significant negative association with LY% (r= -0.305, p=0.03) and MO% (r= -0.299, p=0.049) and positive association with PCT in ovarian cancer patients along with COVID 19 as shown in Table no.3.

Table No 1: Incidence of cancers during COVID-19 outbreak

Different cancer sites	Year 2019		Year 2020		P value	Total (2019 & 20)	
	No. of patients	%	No. of patients	%		No. of patients	%
Bladder	18	1.1	41	1.9	0.05	59	1.56
Bone	12	0.7	34	1.58	0.02	46	1.2
Brain	20	1.2	12	0.55	0.03	32	0.84
Breast	236	14.5	109	5.07	0.00001	345	9.1
Colon	20	1.2	31	1.4	0.58	51	1.35
Larynx	20	1.2	16	0.74	0.13	36	0.95
Leukemia	20	1.2	14	0.65	0.06	34	0.9
Liver	20	1.2	54	2.51	0.005	74	1.96
Lung	20	1.2	41	1.9	0.11	61	1.6
Ovary	20	1.2	69	3.2	0.0001	89	2.35
Other cancer types	1220	75	1725	80	0.17	2945	78
All cancer patients	1626		2146			3772	

Table No. 2: Biochemical parameters & their association with tumor markers during covid-19 outbreak

Parameters	Breast Cancer Mean ±SD		p value	Ovarian Cancer Mean ±SD		p value	R value (sig.) Ovarian Cancer		
	2019	2020		2019	2020		CA-125 2019	CEA 2020	CA-125 2020
Urea	33.32±16.84	32.89±13.27	0.71	43.83±24.99	45.86±56.70	0.88	-0.17 (0.56)	0.34 (0.20)	0.26 (0.64)
Creatinine	0.95±0.30	0.86±0.24	0.02	1.09±0.41	2.94±15.07	0.04	0.36 (0.18)	0.41 (0.12)	0.34* (0.02)
SGPT	37.66±56.66	36.41±28.97	0.42	22.88±14.79	29.72±24.82	0.46	0.03 (0.96)	0.39 (0.17)	-0.07 (0.67)
SGOT	51.55±116.95	38.59±29.60	0.12	34.12±15.78	37.88±31.30	0.67	0.14 (0.79)	0.25 (0.39)	0.13 (0.44)
BiT	0.71±1.92	0.48±0.43	0.21	1.15±1.98	3.50±19.75	0.9	0.31 (0.54)	0.57* (0.04)	0.31 (0.06)
ALP	124.67±75.43	135.62±113.22	0.3	163±114.17	130.88±122.63	0.42	0.09 (0.87)	0.14 (0.66)	0.10 (0.58)
CA-125	33.32±16.84	32.89±13.27	0.71	237.9±445.61	783.16±1080.77	0.04			

Table No.3: Significant variation of CBC parameters in ovarian and breast cancer patients

Parameters	Breast (Mean±S.D)		P-value	Ovary (Mean±S.D)		P-value	Ovary cancer			
							CEA		CA125	
	2019	2020		2019	2019		2019	2020	2019	2020
WBC	9.01±3.4	8.68±2.8	0.96	13.1±20.4	7.92±2.4	0.29	0.821* (0.023)	0.3 (0.433)	0.257 (0.354)	0.05 (0.729)
RBC	4.66±0.7	4.79±0.6	0.06	4.55±0.6	4.73±0.7	0.3	0.000 (1)	0.617 (0.077)	0.436 (0.104)	0.067 (0.642)
HGB	12.7±1.9	12±1.7	0.01	11.55±1.5	11.5±1.6	0.96	0.036 (0.939)	-0.083 (0.831)	0.068 (0.809)	-0.108 (0.452)
HCT	38.3±5.5	37.2±5.2	0.04	36.51±4.4	35.2±4.9	0.31	0.036 (0.939)	-0.05 (0.898)	0.154 (0.585)	-0.038 (0.793)
MCV	83.26±9.7	77.9±9.1	0.00	80.5±6.6	74.2±12.7	0.03	-0.036 (0.939)	-0.633 (0.067)	-0.25 (0.365)	-0.16 (0.264)
MCH	27.35±3.7	25.3±3.2	0.00	25.51±2.8	24.6±3.1	0.26	-0.143 (0.76)	-0.611 (0.081)	-0.279 (0.315)	-0.219 (0.123)
MCHC	32.79±1.5	32.4±1.9	0.02	31.63±1.4	32.8±2.3	0.01	-0.2 (0.667)	0.05 (0.898)	-0.109 (0.698)	0.09 (0.952)
RDW-CV	13.6±2.1	14.4±2.4	0.00	14.35±2.7	15.6±2.3	0.02	0.25 (0.589)	0.644 (0.061)	0.466 (0.08)	0.05 (0.752)
PLT	334.78±13.4	346.8±134.3	0.4	350.6±132.6	312.4±136.9	0.33	0.643 (0.119)	0.4 (0.286)	0.304 (0.271)	0.273 (0.052)
PCT	0.28±0.5	0.29±0.1	0.00	0.27±0.1	0.25±0.1	0.35	0.5 (0.253)	0.301 (0.431)	0.554* (0.032)	0.313* (0.025)
MPV	7.72±1.3	8.43±1.5	0.00	7.89±1	8.12±1.1	0.25	-0.214 (0.645)	0.075 (0.847)	0.404 (0.135)	0.108 (0.45)
PDW	17.79±1.2	17.1±2.9	0.01	17.91±1.3	16.7±2.5	0.05	-0.036 (0.939)	0.05 (0.898)	-0.011 (0.97)	-0.134 (0.347)
NE%	62.12±10.7	61.3±12.4	0.65	62.76±11.7	63.8±13.6	0.76	0.679 (0.094)	0.167 (0.668)	0.232 (0.405)	0.273 (0.053)
LY%	29.5±10.5	29.9±11.7	0.93	30.71±12.8	28.1±12.9	0.43	-0.821* (0.023)	-0.1 (0.798)	-0.254 (0.362)	-0.305* (0.03)
MO%	2.14±1.3	4±3.3	0.00	2.75±1.3	4.44±3.5	0.09	0.214 (0.645)	0.335 (0.417)	0.233 (0.403)	-0.299* (0.049)
EO%	1.21±1.9	2.42±3.2	0.02	0.6±0.5	1.72±1.9	0.06	-0.074 (0.875)	0.587 (0.126)	-0.404 (0.135)	0.006 (0.971)

DISCUSSION

Cancer is a major cause of death in the world. In clinical research, prognostic factors play important roles in cancer state. During treatments, the relatable prognostic factors show some changes in their values and guide the doctors to continue the treatment or to stop it. [12].

According to our study, breast cancer incidence rate is of 9.1% in two years (2019-2020). Global cancer observatory in Pakistan have also mentioned that breast cancer has the highest incidence in 2020. Our study also showed that in Karachi, adult female has breast cancer.

According to our study, breast cancer has shown the highest incidence rate of 9.1% in two years (2019-2020). This significant result was also found by global cancer observatory in Pakistan. They mentioned that breast cancer has the highest incidence in 2020. Death rates for females in breast cancer and cervical cancer were considered highest of all cancers[13].It has also been observed that in Karachi, adult female has breast cancer. [14].

Our study showed that significant increase in baseline parameters as creatinine and CA125 during 2020 (where 50% of patients have symptomatic and asymptomatic covid-19). So, we can say that Creatinine and CA125 were prognostic factors in untreated cancer patients during covid-19 attack. However, recent study of renal impairment in COVID 19 patients, 15.5% elevation in creatinine and 14.1% elevation in urea is observed[15].In other study, significant increase in CA-125 level is shown in Covid-19 patients[16] as study of Xiang, J., et al., of severe COVID 19, urea and creatinine has been shown significantly higher values [17].

In our study we observed, changes in other biochemical parameter during covid-19 like creatinine has decreased in breast cancer (p-0.02), conversely another laboratory tests of breast cancer in the study of Kent, R., et al., proved that the creatinine level towards higher (2.0 mg/dl) side [18].Creatinine also acts as a predictive value for the risk of death in covid-19, when elevated than normal value[19].Additional studies authenticate that Covid-19 patients have shown abnormal liver function tests. [20].

In ovarian cancer, both creatinine and CA-125 has been raised (p-0.04) in those cancer patients in which 50% were suffering from covid-19. Creatinine level is an independent prognostic factor of survival in ovarian cancer. 1.2% mg/dl or higher value of creatinine in patients indicated poor survival rate and found in 4.4% of patients[21]. Higher level of CA 125 is a positive test for ovarian cancer in 90% females. So, this TMR is a significant diagnostic factor at the clinical level[22]. There also found some association of TMRs with LFTs, as CA-125 has shown a significant positive association relationship with Creatinine (r-0.34, p-0.02) and CEA with bilirubin total (r-0.57, p-0.04) in ovarian cancer patients.

According to our research in asymptomatic covid-19 Breast Cancer patients, MCV was significantly decreased, while Akinbami et al., proved that MCV was decreased only in Breast cancer[23]. MCV was found to be decreased in symptomless covid-19 ovarian cancer as well as in symptomless covid-19 brain cancerous patients. But in the case of Ovarian cancer, MCV decreased[24] and in brain cancer, prognostic factor MCV increased[25].In Ovarian cancer, CA-125 Correlates negatively with LY% and MO% in covid19 Ovarian Cancer. On the other hand in ovarian cancer high or low CA-125 is positively correlate with Neutrophil to lymphocyte ratio[26]. So these tumor markers may be helpful with these CBC parameters in the prognosis of ovarian cancer.

CONCLUSION

Our findings suggest that in ovarian cancer and breast cancer patients MCV and Creatinine and serve as a diagnostic factor of COVID 19 during treatment. Association of CA 125 with creatinine in breast cancer serve as the prognostic factor of treatment in covid-19 patients. While LY% and MO% with CA-125 are prognostic factors in ovarian cancer during COVID attack.

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Clinical Spectrum, Bacterological Profile and Antibiogram of Culture Proven Enteric Fever in a Private Sector Hospital in Lahore

Abid Rafiq Chaudhry

ABSTRACT

Objective: To determine the Clinical spectrum, frequency of different salmonella strains and their trends of antibiotic susceptibility of culture isolates in patients of culture proven enteric fever in children over one year period.

Study Design: Retrospective cross-sectional study

Place and Duration of Study: This study was conducted at the Fatima Memorial Hospital Lahore from January, 2020 to December, 2020 for a period of one-year.

Materials and Methods: The case record of all patients of both sex diagnosed with enteric fever on blood culture is being reviewed. All patients in the age group of one year to 15 years with a discharge diagnosis of enteric fever for admitted inpatient or from outpatient Department (OPD) were included in the study.

Results: Mean age was around five year (61 months) and slight female preponderance (55%) was observed. Mean duration of fever before presentation was eight days and anorexia (82%) was the most common symptom after fever. S. Typhi was found in 76.4% of positive blood cultures and 23.6% of positive culture found S.Paratyphi A,B,C. 5 % cases of enteric fever were multi sensitive with 93% of isolates were either multidrug resistant(41%) or Extended drug resistant (52%).

Conclusion: Salmonella typhi is the predominantly isolated organism in cases of enteric fever. Only 5% of isolates are multi sensitive, Extended drug resistance (XDR typhoid) is the most commonly isolated organism with 52% of cases and 41% isolates were resistant to 1st line antibiotics (MDR typhoid). Study recommends azithromycin for OPD patients (sensitivity 98%) or intravenous meropenem (sensitivity 100%) for sick children in hospitals waiting for final culture and sensitivity reports to come.

Key Words: Clinical Spectrum, Bacterological Profile, Antibiogram of Culture, Enteric Fever

INTRODUCTION

Enteric fever is a systemic infection that is caused by Salmonella Typhi, usually through ingestion of contaminated food or water. Children usually have high grade fever with variety of associated features like, myalgia, anorexia, vomiting, diarrhea, abdominal pain, cough and hepatosplenomegaly.

A similar but often less severe disease, paratyphoid fever, is caused by Salmonella Paratyphi A and B or

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uncommonly Paratyphi C[1]. Enteric fever continues to be a major public health problem and it is endemic in Pakistan. According to the most recent estimates, between 11 and 21 million cases and 128 000 to 161 000 typhoid-related deaths occur annually worldwide [2]. In most developed countries incidence is <15/100,000 population while estimates in developing countries is 100-1,000/100,000 population [2].Ochiai LR et al [3], in their review of disease burden due to enteric fever from five Asian countries reported a higher incidence of typhoid fever from India, Indonesia and Pakistan.

Clinical presentation of enteric fever vary, so clinical diagnosis is difficult [4,5]. Blood culture is regarded as a gold standard for the diagnosis and gives information about antibiotic sensitivity of the isolate [6]. Although, the cost of investigations, lack of laboratory facilities, administration of prior antibiotics and poor awareness amongst health care professionals are obstacles to the diagnosis. We know that almost 30 years back by 1990, salmonella developed resistance simultaneously to all first line drugs like chloramphenicol, cotrimoxazole and ampicillin [5]. Now in the current epidemic in Pakistan we have to face the extremely drug resistant cases of

enteric fever where the pathogen is resistant to the second line drugs that is quinolones and ceftriaxone [7].

With the recent out-break of multidrug (MDR) and Extended drug resistant(XDR) typhoid fever, in Pakistan [8,9,10] and Globally [11,12], we have found a clear trend of very high number of XDR salmonella isolates in culture proven enteric fever at our hospital and that was the main stimulus to explore and determine the antibiogram profile of Salmonella isolates discovered in blood cultures of suspected typhoid cases in children presenting in OPD and admitted in inpatient at Fatima memorial hospital(FMH) Lahore, So that it can be helpful in choice of antibiotics at the time of presentation to treat the patient appropriately especially if they are sick admitted in hospital and can't wait for culture to come.

We studied all cases of Blood culture Proven enteric fever seen by Physician in OPD or Inpatient over a period span of 1 year to describe the clinical and laboratory parameters in children with culture positive typhoid fever, and the trends of antibiotic susceptibility of culture isolates.

MATERIALS AND METHODS

This was a retrospective cross-sectional study, conducted in the Department of Paediatrics, at Fatima memorial hospital, shadman Lahore, Pakistan over a one year period (January 2020 to December 2020). The medical files of patients diagnosed with enteric fever on blood culture is being reviewed. All patients in the age group of one year to 15 years with a discharge diagnosis of enteric fever for admitted in patient or from Outpatient Department (OPD) were included in the study.

All the data was recorded in a pre-designed proforma. Information on the socio-demographic profile, duration of symptoms and, presenting symptoms, duration of illness, Clinical examination like coated tongue, pallor, hepatosplenomegaly(Liver >2 cm below costal margin and spleen clinically palpable) were included in recorded data. All patients had complete blood counts (CBC), blood culture and sensitivity pattern, hepatic enzymes like ALT (normal<40 IU/L) and CRP (normal<5) done. Cases were diagnosed as a culture positive enteric fever if the blood culture was positive for S. Typhi or S. Paratyphi A,B,C and antibiogram profile was recorded in 110 cases.

Statistical Analysis: Data analysis was done by using IBM SPSS statistics (v. 23 IBM SPSS) and cross tabulation formulated to determine the mean (SD) and percentages of clinical and laboratory parameters. Antibiotics sensitivity for culture positive cases and significance of different values was obtained by chi-square test at 5% level of significance or by fischers's exact test.

Permission from the hospital ethical board was taken for using the data of the patients in the research.

RESULTS

A total of 110 children diagnosed with enteric fever on blood culture. Majority of the patients were in the age range of two to nine years old with mean age of presentation was five year (60 months) and slight female preponderance (55%) was observed. Mean duration of fever before presentation was eight days and anorexia (89%) was the most common symptom after fever, followed by coated tongue (75%) and vomiting with abdominal pain (66%). More than half of the cases has shown fever with chills, rigors and sweating pattern [Table 1].Hepatomegaly and splenomegaly were seen in 37% and 48.5% patients respectively. Splenomegaly was observed in 72% of patients with Salmonella paratyphi infections and P value was found to be significant (0.001).

Mean Haemoglobin and Platelets were 8,185 respectively with 21 % of enteric fever cases showing leukocytosis pattern (WBC>12000/micro L). Mean C-reactive protein (normal CRP<5) found to be 29± 5 and Liver transaminases (SGPT) was elevated in majority of patients with mean of 74 (normal <40)

Table No.1: Clinical and Laboratory Parameters of Culture Proven Enteric Fever (N=110)

Parameter	Salmonella typhi (N =84)	S.Paratyphi A,B,C (N =26)	Overall Mean OR %	P value
Age in months*	55(± 23)	63(± 26)	60	.45
Female Sex	56	54	55	.469
Fever duration*	8(4)	8(4)	8	.398
Loose motions	56.3	83.3	70	.095
Vomiting	66.3	66.7	66	.53
Abdominal pain	63.8	61.1	62	.43
Anorexia	86.3	94.4	89	.314
Cough	35	27	31	.72
Chills and rigors	52.5	72.2	62	.31
Sweating	63	50	56	.54
Pallor	20	44	32	.037
Coated tongue	68.8	83.3	75	.44
Hepatomegaly	36	38	37	.92
Splenomegaly	25	72	48.5	.001
Haemoglobin*	8(2)	8(2)	8	.12
Leukocytosis	12	30	21	0.035
Platelets*	168(135)	202(122)	185	3.5
CRP*	30(5)	29(5)	29.5	1.6
ALT*	66(34)	83(54)	74	.98
Blood culture	76.4%	23.6%		.23

* Mean (SD) without * % Percentage
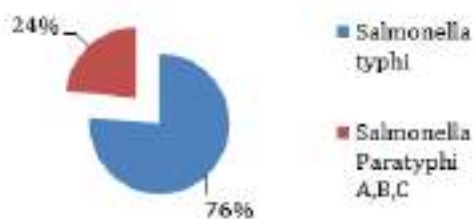
Figure No.1: Salmonella Isolates

S. Typhi and S.Paratyphi A,B,C were found in 76.4%(84), 23.6%(26) respectively of positive blood culture. (Figure 1).

The antibiotic susceptibility of Salmonella Typhi and Paratyphi for Ampicillin, Cotrimoxazole, Chloramphenicol (first line antibiotics) Fluoroquinolone, Ceftriaxone, Cefixime (2nd line antibiotics) Imipenem, meropenem, and Azithromycin, is presented in (Figure 2).

Majority of Salmonella Typhi and Paratyphi A,B,C showed resistance to first line antibiotics (Ampicillin, Cotrimoxazole, Chloramphenicol). Only 5% cases of enteric fever were multisensitive with 93% of isolates were either multi drug resistant(41%) or Extended drug resistant (52%).Three isolate of S. Paratyphi A was resistant to azithromycin as well and only sensitive to meropenem.in our study, we did not found any resistance to meropenem.
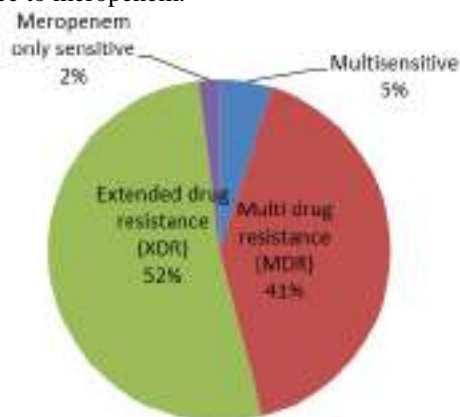
Figure No.2: Antibiotics sensitivity of Enteric fever in Children

Isolate is multisensitive if sensitive to first line antibiotics (Ampicillin, Cotrimoxazole, Chloramphenicol), labeled as a multidrug resistant (MDR) if sensitive to 2nd line antibiotics (Fluoroquinolone, Ceftriaxone, Cefixime) but resistant to first line and called as an Extended Drug resistance (XDR) if sensitive only to Carbapanems and macrolides (Azithromycin).

DISCUSSION

In this study of children with blood culture proven enteric fever, we have observed that majority of the patients were in the age range of two to nine years old with mean age of presentation was five year (60 months) and slight female preponderance (55%) was observed. This data set is similar to those reported in the previous literature, with confirmed enteric fever cases in children except Azmatullah A et al. reported slight male predominancy. [1,8,9] Mean duration of fever before presentation was eight days and anorexia (89%) was the most common symptom after fever, followed by coated tongue (75%) and vomiting with Abdominal pain (66%),similar to those reported in the previous studies done by Ochiai RL et al, and Jeeyani et al. [3,4], although duration of fever before presentation was little prolong in our study, partly explained by consulting health services late in our community by general public.

With the recent outbreak of multidrug (MDR) and Extended drug resistant (XDR) typhoid fever, in Pakistan [8,9,10] and Globally [11,12], we have documented very high number of XDR salmonella isolates in culture proven enteric fever at our hospital also which has coined the idea of this retrospective study to determine the resistance of Salmonella isolates especially the XDR typhoid fever. Salmonella enteric a ssp. serovar Typhi, haplotype H58 is a common cause of MDR typhoid fever across Asian and African countries and the strain causing the outbreak has coined an extended spectrum beta-lactamase (CTX-M15),the root cause of resistance to third-generation cephalosporins, as well as a mutation that causes resistance to fluoroquinolones as well. The H58 haplotype has also been known to harbor resistance to azithromycin on occasion.[11,12]

In our recorded data overall, 52% of isolates has shown Extended drug resistance pattern(XDR typhoid) , quite higher than to others studies documented locally [7,8,9] and globally [12], most likely explained well by multiple outbreak of XDR typhoid in different parts of Pakistan as reported by Saeed M et al. and Akram J et al. in their studies recently[8,9] and also mentioned very high incidence of XDR typhoid in their report published by Federal Disease Surveillance and Response Unit Field Epidemiology & Disease Surveillance Division, National Institute of Health (NIH) Islamabad.[13]

In our findings, we have also found 21 % of enteric fever cases showing leukocytosis pattern (WBC> 12000/micro L) and among leukocytosis Group strikingly, 89% of patients (16 out of 18) has shown Extended drug resistant pattern with P value of <0.001, which is quite significant finding. Although historically leucopenia is commonly associated with enteric fever[14,15], but Jeeyani et al.[4] also has documented similar findings of leukocytosis especially in younger children especially less than 5 years old like our study age group cohort and may be explained with a change in sensitivity and virulence pattern of salmonella isolates especially with recent widespread outbreak of Extended drug resistance pattern in Pakistan only

sensitive to carbapenems or Macrolides, predominantly with high CRP and high hospital admission rates for intravenous treatment and globally as well [16-19].

In our data, S. Typhi was found in 76.4% of positive blood cultures and 23.6% of positive culture found S.Paratyphi A,B,C, and this trend was consistant with the current literature [1,4,5,20]. Both S. Typhi and S. Paratyphi had similar susceptibility pattern to third generation cephalosporins, carbapanems and azithromycin.Very high resistance to first line drugs like Amoxycillin, Chloramphenicol and cotrimoxazole, was observed (only 5% isolates were sensitive to first line drugs drugs) which was also evident in similar studies in the region [7,8,9,13,20] . In our patients, 41% of isolates were multi drug resistant which was slight high as compared to regional similar data [7,8,9,13,20] but in consistent with the trend recently and reflecting judicious use of these drugs by General Practioners (GPs) and using these drugs in the past for typhoid fever, as a first line antibiotics, without doing blood culture in resource limited countries like Pakistan.

The main limitation of this study is nature of data was hospital-based, which may not reflect the actual situation in the community. The retrospective nature of data and small sample size were other potential drawbacks.

CONCLUSION

We conclude that there is a very high incidence of XDR typhoid, which need to be validated by more locally well designed studies having said that emergence of XDR typhoid is No more regional concern, rather it's a global Emergency in public health. Pediatric culture proven enteric fever has a highest sensitivity to Carbapenems (100%) or to Azithromycin (98%).

Author's Contribution:

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Conflict of Interest: The study has no conflict of interest to declare by any author.

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Frequency and Risk Factors of Osteoporosis in Elderly Patients Attending OPD of Abbasi Shaheed Hospital (ASH), Karachi

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ABSTRACT

Objective: To establish the frequency and the factors leading to osteoporosis in aged patients who attended the out-patient department of ASH, Karachi.

Study Design: Descriptive Cross-sectional study

Place and Duration of Study: This study was conducted at the out-patient of major disciplines of a tertiary care hospital of district central, Karachi from February, 2018 to July, 2018 for a period of six months.

Materials and Methods: (male and female) were included after getting written consent. Patients below 40 years were excluded. Sample was selected by non-probability convenience technique. The questionnaire was designed to collect information on social demographic data and risk factors. Analysis was made through software of Statistical Package of Social Scientists 22.0.

Results: In research only 25 % participants were engaged in exercises on usual basis while the remaining participants were doing it infrequently or having the inactive lifestyle. These activities were notably linked with osteoporosis. Study results shows that out of total females (n= 320) fifty percent were obese as compared to male participants and exhibit statistically noteworthy distinction through resulting in p-value of less than 0.05.

Conclusion: The morbidity of osteoporosis in both genders can be reduced by giving education about modifiable risk factors like exercise, obesity and taking drugs.

Key Words: Osteoporosis; Risk factors; Bone mineral density

INTRODUCTION

Osteoporosis is a chronic, slowly growing disease recognized by low bone mass, changes in bone-architecture and its weakness, and a consequent increase in risk of fractures.[1] Osteoporosis may be primary that is postmenopausal i.e. type I & Old age i.e. type II, and secondary osteoporosis, which is caused by malabsorption, medications such as glucocorticoids or steroids, and some diseases such as hyper-parathyroidism.[1]

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Osteoporosis can be prevented by consuming healthy diet adequate dietary protein, calcium and vitamin D[2.] Age is a factor that leads to high incidence of osteoporosis and a major cause of morbidity and mortality in the aged population are fragility fractures.[3]

Type one takes place in a subgroup of women after their menopause especially due to estrogen deficiency and mainly involves the spine and wrist. Postmenopausal bone loss has been a progressive bone loss and is called the "silent thief.[4] Osteoporosis was initially considered as women problem but after an increase in age-related fractures also included the men in this slot.

Vitamin D deficiency in adults can worsen osteoporosis and increase the chances of fracture which may easily be taken from diet or contact to sunlight but affected at places where the body coverage limit sun exposure.[5] One of the most serious complication of corticosteroid treatment is osteoporosis. Fractures in corticosteroid users have been suggested to occur because of bone mass density (BMD) loss.[6] load of osteoporosis is rising in developing nations. In Asian nations it has grown to two folds rise of osteoporotic fracture in last three decades. In Pakistan, around 10 M population with 3/4 fraction of females are involved are women and these

figures are expected to rise to 12.91 million by 2050.[7] one osteoporotic or fragility fracture occurs in every 3 seconds somewhere in the world.[8]

Worldwide 200M population is affected by the osteoporosis which is leading to around 9 million fractures mainly affecting the hips, vertebrae, and distal forearm.[9,10]

The plan of this research was to find the main reasons leading to osteoporosis in local community, and to evaluate the significance of risk factors recognition. This study is expected to create awareness for the modification of life style.

MATERIALS AND METHODS

This descriptive Cross-sectional study was conducted in the out-patient of major disciplines of a tertiary care hospital of district central, Karachi for a period of 6 months from February to July, 2018.

Study subjects: A total 400 patients (male and female) were enrolled after written consent. Female patients below 40 years and male patients below 60 years were excluded. The sample was estimated though the Rao soft software considering the margin of error 5%, with two-sided 95% confidence level with 50% prevalence. The sample size estimated was 377 so we enrolled the 400 potential subjects with consideration of 10% refusal rate.

Sampling Technique: Sample was selected by non-probability convenience technique.

Data: The study subjects were detailed for the procedure and its importance. A pre-tested questionnaire was used for data collection. The questionnaire was designed to collect information on social demographic data and selected risk factors (exercise, exposure to sunlight, history of fractures, intake of milk and dairy products, history of taking steroids, menopause, intake of calcium and vitamin D).

RESULTS

All the information provided by the participants was kept as confidential. Anthropometric measurements for (BMI) were completed through digital scale and height was calculated through measuring tape in inches, which later converted into meter square to calculate the Body Mass Index (BMI) in kg/m^2. The patients had been divided into four groups according to the World Health Organization (WHO) criteria.[11] (Table-1).

Table No. 1: WHO criteria for BMI standard levels

Category (Groups)	BMI(Kg/m^2)
Underweight	< 18.4 Kg/m^2
Normal	18.5- 24.9 Kg/m^2
Overweight	25-29.9 Kg/m^2
Obese	>30 Kg/m^2

All the subjects were tested for their bone mineral densities (BMD) & according to WHO, T score of the patient indicating whether the person is normal or osteoporotic (table-2) showed t score criteria.[1,12]

Table No. 2: WHO definition of osteoporosis based on BMD

Classifi-cation	BMD	T-score
Normal	Within ±1 SD of the mean level for a young-adult reference population	T-score equal to −1.0 and above
Osteoporosis	-2.5 SD or above from the mean of a young to adult population	T-score equal to less than −2.5

Data was analyzed by using SPSS version 22.0. The statistical analysis was done wherein the p-value of < 0.05 considered as significant.

This study was approved by Ethical Review Committee of Karachi Medical and Dental College.

400 subjects were registered in the study including 320 (80%) females in which 120 (30%) were positive i.e. Osteoporotic. There were 80 (20%) male participants in which only 24 (6%) were positive. (Table-3).

Table No. 3: Frequency of Osteoporosis In Participants

Gender	Osteoporosis n (%)	Non osteoporosis n (%)	Total n (%)
Male	24 (6%)	56 (14%)	80 (20%)
Female	120 (30%)	200 (50%)	320 (80%)
Total n (%)	144 (36%)	256 (64%)	400

Out of total 400 participants, the risk factors of osteoporosis were, low physical activity (57%), lack of milk intake (52.5%) and intake of caffeine (97%) were present in more than 50% participants. Our study results showed 55% females undergone menopause in which 19.4% have early menopause leading to osteoporosis. The risk factors observed are shown in table-4.

Table No. 4: Risk Factors of Osteoporosis

Risk factors of osteoporosis	Risk factor present n (%)
Low physical activity	230 (57.5%)
Lack of milk and dairy products	210 (52.5%)
Steroids	20 (5%)
Caffeine	388 (97%)
Menopause	76 (55.5%)
Early menopause	62 (19.4%)
Obesity	180 (45%)

Comparison of risk factors of osteoporosis among males and females are shown in Table-5.

Table No.5: Gender Based Comparison of Risk Factors of Osteoporosis

Risk factors of osteoporosis	Males (n= 80) %	Females (n=320) %	P-value
Exercise			0.04
Mild	21 (26.2%)	150 (46.8%)	
Very often	19 (23.7%)	50 (15.6%)	
Infrequent	30 (37.5%)	80 (25%)	
Regularly	10 (12.5%)	40 (12.5%)	
Exposure to sunlight	75 (93.7%)	269 (84%)	0.06
History of fracture	05 (6.2%)	30 (9.3%)	0.04
Milk intake			0.07
Daily	8 (10%)	25 (7.8%)	
Weekly	28 (35%)	28 (8.7%)	
Rarely	4 (5%)	97 (30.3%)	
No	40 (50%)	170 (53.1%)	
History of steroid Present	4 (5%)	16 (5%)	0.05
Obesity	20 (25%)	160 (50%)	0.03

DISCUSSION

In this study only 25 % participants were found engaged in regular physical activity while the remaining having sedentary life style and this behavior of participants had significantly associated with osteoporosis. Study results shows that out of total females (n= 320) fifty percent (50%) are obese as compare to male participants and showed significant (p<0.03) gender difference and their comparison of exposure to sun light (which is a source of vitamin D) had shown statistically non-significant (p>0.06) difference. Milk contains Calcium which is an important factor for strong bones. Less Calcium intake is a well-known risk factor due to lack of milk intake in their diets.

This study included more females participants due their high chances of the disease as the risk for Osteoporosis is 2–3 times more among women and this risk increases with age too.[7,12]

Many reasons are there for higher prevalence in females like low bone mass and low level of estrogen hormone.[13,14]. These hip fractures are common in females but morbidity and mortality is found associated with males.[15] One of the important findings were described in another study that the association between low calcium intake (<600 mg/day) and osteoporosis similar to our study results.[16]

According to one study among postmenopausal women, burden of osteopenia and osteoporosis is very large and mainly related to modifiable risk factors[17, 18], our study also focused on contribution of modifiable osteoporotic risk factors. Osteoporosis is also related to mild trauma fracture or fragility fractures.[19]Our study results show significant association of obesity with osteoporosis. Physical activity and exercise improves strength and prevents the fragility of bones or fragility fractures in elderly people. The authorities recommend daily 30 minutes physical exercise.[20,21] Steroids are used in the treatment of inflammatory and autoimmune diseases. Glucocorticoids are most common causes of secondary osteoporosis.[22] Vitamin D and calcium containing diet reduce the risk of this condition but the study participants did not show taking such rich diet.[23,24]

CONCLUSION

The study concluded that the frequency of osteoporosis more in females as compare to males. Osteoporosis is a non-communicable disease that is leading cause of mortality and morbidity. Public awareness programs regarding prevention, diagnosis and management of osteoporosis and fragility fractures should be started in society on priority bases. The morbidity of osteoporosis can be reduced by giving education about modifiable risk factors like exercise, obesity and history of taking steroids.

Recommendations: Promotion of life style modification strategies and implementing food fortification policy (vitamin-D). 2) Awareness campaigns about physical activity.3) DXA scanning screening programs in society. 4) At national level, it is included in the national action plan for the prevention of non-communicable diseases.

Author's Contribution:

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Conflict of Interest: The study has no conflict of interest to declare by any author.

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Original Article

Efficacy of Loading Dose of Magnesium Sulphate versus Standard Pritchard Regimen for Controlling of Fits in Eclampsia

Paras Ali[1], Nazia Hakeem[1], Rabia Jamil[1], Afshan Shahid[1], Lubna Ali[1] and Farhat Jafri[2]

ABSTRACT

Objective: To determine the efficacy of loading dose of magnesium sulphate verses standard Pritchard regime for controlling of fits in eclampsia.

Study Design: Randomized controlled trial study

Place and Duration of Study: This study was conducted at the department of Obstetrics and Gynaecology Unit II Civil Hospital Karachi from July 2016 to December 2016 for a period of six months.

Materials and Methods: There were 132 women with antepartum, intrapartum and postpartum eclampsia irrespective of age, parity and gestational age were included in the study. Women with known case of epilepsy, space occupying lesion, magnesium sulphate sensitivity, renal failure, history of administration of magnesium sulphate prior to admission and those with contraindication of magnesium sulphate like myasthenia gravis were excluded. Women who fulfilled the inclusion and exclusion criteria were randomly allocated into two groups. Group A comprise of 66 women who received Standard Pritchard regimen (loading dose and maintenance dose). Group B also comprise 66 women who received only loading dose. The efficacy of drug i.e. occurrence of convulsion after completion of therapy was observed.

Results: The mean age of the participants in group A was 29 ± 5.2 years and 27 ± 3.6 years in group B. The average BMI in group A and group B was 28.51 ± 1.6 kg/m^2 and 28.40 ± 1.5 kg/m^2 respectively. Majority of the participants in group A were nulliparous 22(33.33%) and multiparous 28(42.42%) in group B. Postpartum eclampsia was observed in 49(37.1%), followed by antepartum 44(33%) and intrapartum 39(29.5%). Women who were treated with standard Pritchard regimen, fits was controlled in 62(93.94%) only 4(6.06%) had recurrence of convulsions while in loading dose group 8(12.12%) had recurrence of convulsions and 58(87.87%) women remained fits free. Single loading dose is equally effective as standard Pritchard regimen.

Conclusion: Magnesium sulphate is the most preferable drug for prevention and treatment of eclamptic patients. The single loading dose of magnesium sulphate is equally effective as standard Pritchard regimen in prevention of convulsions with the added advantage of reduced toxicity, fewer side effects and ease of monitoring.

Key Words: Eclampsia, Magnesium sulphate, standard Pritchard regime

INTRODUCTION

Eclampsia is the occurrence of sudden onset of generalized tonic clonic seizures in a hypertensive woman after 20 weeks of pregnancy".[1]

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Globally it is a major cause of feto-maternal morbidity and mortality.[2] Currently, the incidence of eclampsia in United states and United Kingdom is 0.04 to 0.1%.[3] In comparison, the reported rate of eclampsia in developing countries is approximately 15%.[4] Worldwide, each year 50000 women died due to eclampsia and it accounts for 10% of maternal death in developed countries.[5] According to Tariq and Rehman and USA based studies, prevalence of preeclampsia and eclampsia in Pakistan and USA is 19% and 1-24% respectively.[6] Another study conducted which state that hemorrhage, hypertensive disorders and unsafe abortion are the three leading causes of direct maternal deaths and preeclampsia and eclampisa is account for 10 t0 25%.[7,8]

Since the publication of the collaborative multicentre study on eclampsia in 1995, the most preferable anticonvulsant drug for the treatment of eclampsia is

magnesium sulphate.[9] MgSO4 is also recognized by WHO and United Nations as a lifesaving drug for the management of preeclampsia and eclampsia.[10]

Currently standard intramuscular (IM) Pritchard regimen (1975) and intravenous Zuspan regimen (1978) are two common regimens which are in current used.[11] The dosage of magnesium sulphate as recommended by Pritchard is a loading dose of 4g intravenously and 10g intramuscularly; 5g on each buttock. This is followed by a maintenance dose of 5gm intramuscularly on alternate buttocks every 4 hours for up to 24 hours after delivery or last fit.[11-12.] There is a 25% risk of postpartum eclampsia especially during the first 12-24 hours therefore continue magnesium sulphate for 24 hours after last fit.[11-12]

It was observed in a study conducted in Jinnah postgraduate medical centre (JPMC) Karachi that maintenance therapy was not given to majority of patients due to risk of side effects and they did not develop any further convulsion. Several studies have been done on magnesium sulphate in terms of reducing dose and duration of treatment in order to avoid side effects, reduce costs and decrease patient discomfort.[13,14] Use of magnesium sulphate is not common due to its cost, non-availability and clinician's inexperience on its use.[15]

Currently there is only one study available at the local level and shows no significance difference in the effectiveness of either drug. We know that we are dealing with eclampsia frequently. This study will contribute the data in medical institute which may be helpful in selecting the better treatment option. The aim of this study is to improve the quality of treatment in our population.

MATERIALS AND METHODS

This is a prospective randomized controlled trial study conducted in the department of Obstetrics and Gynacology Unit II Civil Hospital Karachi from July 2016 to December 2016. Ethical approval was taken from College of Physicians and Surgeons Pakistan. There were 132 women with antepartum, intrapartum and postpartum eclampsia irrespective of age, parity and gestational age were included in the study. Women with known case of epilepsy, space occupying lesion, magnesium sulphate sensitivity, renal failure, history of administration of magnesium sulphate prior to admission and those with contraindication of magnesium sulphate like myasthenia gravis were excluded. Women who fulfilled the inclusion and exclusion criteria were randomly allocated into two groups by envelop method. Sample size calculated by using WHO statistical size calculator by using two proportion sample size formula. Proportion 1 for standard regime group (100%) proportion 2 for loading dose group (88%), assuming power 90% and 95%

confidence interval sample size was calculated as 132 and randomized in two groups 66 in each group.

Group A comprise of 66 women who received Standard Pitchard regimen (loading dose and maintenance dose). Group B also comprise of 66 women who received only loading dose. Informed consent was taken from spouse or nearest family member. The efficacy of drug i.e. occurrence of convulsion after completion of therapy was observed and recorded in a self-designed proforma. Data was analyzed by using SPSS version 20. Mean and standard deviation calculated for age and BMI. Frequency and percentages were calculated for parity, types of eclampsia, number of fits and efficacy of drug. Chi square test was applied and P value <0.05 considered significant.

Loading Dose: Loading dose 4gram of Magnesium sulphate (MgSO4) diluted in 12cc distilled water slowly intravenously given in 15-20 mins plus 10g intramuscularly; 5g on each buttock.[11,12]

Pritchard Regime: loading dose 4gram of Magnesium sulphate (MgSO4) diluted in 12cc distilled water slowly intravenously given in 15-20 mins plus 10g intramuscularly; 5g on each buttock followed by a maintenance dose of 5gm intramuscularly on alternate buttocks every 4 hours for up to 24 hours after last fit.[11,12]

Null Hypothesis: There is no significant difference between two regimens.

Alternate Hypothesis: There is a significant difference between two regimens**.**

RESULTS

There were 132 women with eclampsia randomly allocated into two groups. Sixty six women were treated with loading and maintenance dose called group A and 66 were treated with loading dose only called group B. Mean age of the participants in group A was 29 ± 5.2 years and 27 ± 3.6 years in group B. The average BMI in group A and group B was 28.51 ± 1.6 kg/m^2 and 28.40 ± 1.5 kg/m^2 respectively. Majority of the participants in group A were nulliparous 22(33.33%) and multiparous 28(42.42%) in group B. Postpartum eclampsia was observed in 49(37.1%), followed by antepartum 44(33%) and intrapartum 39(29.5%). Most of the women 87(65.9%) presented with less than 3 episodes of fits and the median of fits of the patients was 2(IQR=1, range: 1-5). Demographic profile of patients is presented in table 1.

Efficacy of loading dose of magnesium sulphate verses standard pritchard regime for controlling of fits in eclampsia is shown in table 2. Women who were treated with standard Pritchard regimen, fits was controlled in 62(93.94%) only 4(6.06%) had recurrence of convulsions while in loading dose group 8(12.12%) had recurrence of convulsions and 58(87.87%) women remained fits free.

Table No.1: Demographic characteristics of participants n=132

Variable Age (Years)	Group A n=66	Group B n=66	Mean+- SD
<25	17 (25.75%)	26 (39.39%)	28.28+4.44
26-30	27 (40.9%)	36 (54.65%)	
31-35	22 (33.33%)	4 (6.05%)	
BMI (Kg/m2)			
<28	22 (33.33%)	22 (33.33%)	28.45+- 1.60
28-30	32 (48.48%)	33 (50.0%)	
>30	12 (18.18%)	11 (16.66%)	
Parity			
Nulliparous	22 (33.33%)	18 (27.27%)	-
Primiparous	17 (25.76%)	16 (24.24%)	
Multiparous	18 (27.27%)	28 (42.42%)	
Grandmultiparous	09 (13.64%)	04 (6.05%)	
Type of Eclampsia			-
Antepartum	18 (27.27%)	26 (39.39%)	
Intrapartum	22 (33.33%)	17 (25.76%)	
Postpartum	26 (39.39%)	23 (34.85%)	
No of fits			
<3	44 (66.67%)	43 (65.15%)	-
>3	22 (33.33%)	23 (34.85%)	

Table No.2: Efficacy of standard Pritchard regimen versus loading dose n=132

Efficacy	Group A n=66	Group B n=66	P Value
No Convulsions	62 (93.94%)	58 (87.87%)	0.36
Recurrence Of convulsions	4 (6.06%)	8 (12.12%)	

DISCUSSION

Preeclampsia and eclampsia are main concern for obstetricians due to its associated complications. Worldwide, it is responsible for majority of maternal, fetal and neonatal death.[16]Preeclamptic women are receiving anticonvulsant drugs for centuries in the belief that they decrease the risk of convulsions and ultimately improve fetomaternal outcome.[17] In 1998 a systemic review of anticonvulsants[18] for women with pre-eclampsia identified four trials, comparing an anticonvulsant with placebo. The review concluded that the magnesium sulphate is the most preferable drug for women with eclampsia and better than diazepam[19], phenytoin or lytic cocktail. Routine use of Magnesium sulphate as an anticonvulsant in them management of pre-eclampsia started in 2002 after publication of Magpie trial[20]. In our study the average age of the patients was 28.28±4.44 years. We observed that the occurrence rates were highest in age group of 20-30 years in both the groups. Studies conducted by L Myatt[21] and S Latika[22] found that peak incidence of eclampsia in the same age group. Eclampsia is a disease of Primigravida. In our study 33.33% of the participants in group A and 27.27% in group B were nulliparous. In

the study by Bangalet al[23] and Serdesai[24] et al in their studies observed eclampsia in Primigravida 80% and 79% respectively. Postpartum, antepartum and intrapartum eclampsia was observed in 37.1%, 33% and 29.5% respectively in our study. The study conducted by Bhattacharjee F et[25] al observed 43.74% cases of postpartum, 46.73% cases of intrapartum and 109.5% cases of antepartum eclampsia.

The average BMI in our study was 28.45kg/m^2. The risk of side effects or toxicity of MgSO4 depends on the Body mass index (BMI) as shown in the Tudela et al[26] and Jana et al[27] study and observed that women with having low BMI low dose MgSO4 (8g loading- 3g IV and 5g IM; followed by 2.5g IM 4 hourly) was effective regimen. They also observed that in comparison to Collaborative Eclampsia Trial the risk of recurrence convulsions and maternal mortality was also lower with low dose regimen.[27]

In our study efficacy of loading dose of magnesium sulphate verses standard pritchard regime for controlling of fits in eclampsia was nearly equal. We observed that in women with standard Pritchard regimen 93.94% women had control of convulsions only 6.06% had recurrence of convulsions while in women with only loading dose 87.87% had control of convulsions and recurrence of fits occurred in 12.12%. The study conducted by Talukdar RK et al[28] observed that out of 100 patients treated with Pritchard regimen, 3 patients had recurrence of convulsions, while patients treated with only loading dose of magnesium sulphate, not even a single patient had convulsion. Another study conducted by El-Khayatetal[29] in Egypt on postpartum preeclamptic women and reported that I/V loading dose might be a promising alternative regime. Another study conducted by Shoaib et al[30] reported that single loading dose of MgSO4 was preferred in terms of control of convulsions, efficacy, cost and ease of monitoring as compared to standard Pritchard regimen.

There are several studies have been done in favor of MgSO4 despite of this majority of eclamptic women in Primary health center do not receive MgSO4 as a first line drug for the control of convulsions. Most of the eclamptic women either receive no immediate treatment or health personnel administer other anticonvulsants like diazepam and then referred the patient to tertiary care centers for further management. The transportation of these highly irritable women in the third world countries, including Pakistan is not an easy task.[31] To improve fetomaternal outcome it is necessary that seizures should be controlled as soon as possible especially in Primary health care settings. There is a risk of 10% patients may develop further convulsions after receiving the loading dose. This recurrence may be acceptable. There is a need to trained midwives and nursing staff for monitoring and administration of MgSO4 as this achievement has definite implications

for care, especially in the low and middle-income countries[31].

CONCLUSION

Magnesium sulphate is the most preferable drug for prevention and treatment of eclamptic patients. The single loading dose of magnesium sulphate is equally effective as standard Pritchard regimen in prevention of convulsions with the added advantage of reduced toxicity, fewer side effects and ease of monitoring.

Author's Contribution:

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Conflict of Interest: The study has no conflict of interest to declare by any author.

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Original Article

Mental Health Consequences of Covid-19 among Health Care Workers in Abbottabad

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ABSTRACT

Objective: To compare the mental health impact and Post Traumatic Stress Disorder between medical and paramedical staff using DASS-21 and IES scale respectively and to find association of mental impact of COVID-19 with socio-demographic variables.

Study Design: Analytical cross sectional study

Place and Duration of Study: This study was conducted at the Department of Medicine, Ayub Teaching Hospital Abbottabad for 16 months from June, 2020 to October, 2021.

Materials and Methods: Carried out on 150 health care workers of Ayub Teaching Hospital. Data was collected by using two validated questionnaires DASS and IES scales. Analysis was conducted by SPSS version 20. Independent sample t test was used for comparison of scores between medical and paramedical staff while chi square test of association was used to find association of mental impact with socio-demographic variables. P value of ≤0.05 was considered significant.

Results: The mean age of the health care workers was 30.01 ± 6.62 years. Out of 150 participants, 105 (70%) were doctors, 45 (30%) were paramedics. Male to female ratio was 1:1. Overall mean depression score accounted for 8.81 ± 8.26; anxiety score was 7.94 ± 7.86; stress score was 12.60 ± 9.02 and mean PTSD score was 24.76 ± 16.40. A statistically significant difference was observed between medical and paramedical staff for stress (p=0.002) and PTSD (p=0.05). Stress was found to be significantly associated with category of health workers (p<0.001) while anxiety with gender (p=0.04).

Conclusion: Substantial impact of COVID-19 on mental health of healthcare workers was found during Covid-19.

Key Words: Mental health association, Post-traumatic stress disorder, COVID-19, Stress

INTRODUCTION

Healthcare workers have shown an astounding sturdiness and professional commitment in spite of numerous challenges faced during the pandemic of Corona Virus disease-19 (COVID-19).[1] The disease posed many challenges to the health care workers like personal risk of infection, fear of disease transmission to their family members, friends and colleagues, death of many patients and burnout due to the overwhelmed hospitals and intensive care units during the pandemic.[2] The impact of the disease was more on them as compared to the general public due to various reasons like unavoidable exposure to the COVID cases, long

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duty hours, insufficient resources and inefficient health system.[3]

Mental health statistics of pandemics occurring in the past are witness to their long lasting mental impact on the health care workers. Severe acute respiratory syndrome (SARS) outbreak in 2003 affected almost 18-57% of health care workers psychologically while Middle East respiratory syndrome (MERS) caused post-traumatic stress disorder (PTSD) in about 54.5% healthcare workers.[3-6] In Karachi, a similar study, revealed moderate to extreme mental impact3 while in Lahore mental impact was found to be mild[7].Thus during the pandemics, healthcare workers are at higher risk of developing anxiety and depression due to extreme stressful conditions which adversely affects their work performance.[8]

Although studies on mental health impact of Covid-19 have been conducted both worldwide and at the national level but evidence regarding its impact is unavailable at the regional level, an issue that needs to be addressed. Therefore this research was conducted to determine the impact of COVID-19 pandemic on the mental health of health care staff. This assessment will be helpful to the managerial staff to recognize and respond to the mental health issues faced by the

healthcare workers during future epidemics and pandemics.

MATERIALS AND METHODS

This study was carried out in Medicine ward of Ayub Teaching Hospital in Abbottabad for 16 months duration from June 10, 2020 to Oct 31, 2021 after obtaining Ethical approval. The sample size was 150 health care workers including both medical (Physicians) and paramedical staff (nurses, technicians, administration and clerical support staff). Staff members who did not give consent and those with pre-existing mental health issues were excluded. Sample size was calculated to be 138 by Openepi software with 95% CI, precision of 0.05 and prevalence of stress equal to 90.1%[3], however figure was rounded off to 150. Selection was done by convenience sampling. After obtaining fully informed verbal consent and history about previously existing mental illness, data was collected on two validated self-administered questionnaires namely Depression Anxiety Stress Scale 21(DASS 21)[9] for measuring three negative emotional states i.e depression, anxiety and stress and Impact of Event Scale- Revised (IES-R)[10] for measuring subjective acute distress within past 7 days. In case of DASS-21, first the scores for each of the three mental states were added separately and then the final score was derived by multiplying the added score of each state by two and then classified on the basis of severity. A proforma for information on socio-demographic variables was also attached with the scales.

Descriptive and inferential statistical analysis of the data was done by SPSS version 20. Means and standard deviation were calculated for continuous variables (age, DASS and IES scores). Frequencies and percentages were calculated for the demographic variables, depression, anxiety, stress and PTSD categories. Independent sample t test was used for comparison of means of scores between medical and paramedical staff while Chi square test of association was employed to determine the association of socio-demographic variables and grades of depression, anxiety, stress and PTSD. P-value below and equal to 0.05 was considered as statistically significant for both types of significance tests.

RESULTS

Regarding socio-demographic variables of the total 150 participants, male to female ratio was almost 1:1 with 72 (48%) men and 78 (52%) women. The overall mean age of the health care workers was 30.01±6.62 years. The mean age of the doctors was 29.18±6.04 years while the mean age of the paramedics was 31.95±7.52 years. Out of the total 150 participants, 105 (70%) were doctors and 45 (30%) were paramedics. Majority of the health care workers were single 79(52.7%) whereas 71(47.3%) were married. Most of the participants 140(93.3%) were healthy while 10(6.7%) had other comorbidities like hypertension, diabetes and Asthma. Only 26(16%) health care workers were smokers and 126(84%) were non-smokers.

Overall mean depression score accounted for 8.81±8.26; anxiety score was 7.94±7.86; stress score was 12.60±9.02 and mean PTSD score was 24.76±16.40. Majority of the participants had moderate depression 30(20%), anxiety 32(21.3%) and stress 34(22.7%). A statistically significant difference was observed in medical and paramedical healthcare workers for stress (p=0.002*) and PTSD (p=0.05*) while no significant difference was seen for anxiety and depression (Table 1). Stress and PTSD were found to be significantly associated with category of health workers (p<0.001*) as illustrated in Table 2 while only anxiety was significantly associated with gender (p=0.04*) (Table 3).

Table No.1: Comparison of mental health impact and PTSD between medical and paramedical staff (n=150)

Mental health impact Scores	Category of health care workers	Mean	Std. Deviation	P-value
DASS-21 Stress score	Medical	11.1048	8.60224	0.002*
	Para-Medical	16.0889	9.10500	
DASS-21 Anxiety score	Medical	8.3619	8.33796	0.32
	Para-Medical	6.9778	6.62807	
DASS-21 Depression score	Medical	9.4286	8.97738	0.16
	Para-Medical	7.3778	6.13221	
PTSD score	Medical	23.0762	16.89885	0.05*
	Para-Medical	28.7111	14.61727	

*: significant
DASS: Depression, Anxiety, Stress Scale
PTSD: Post Traumatic Stress Disorder

Table No.2: Association of mental health impact with category of Health care workers

Mental health impact variables	Grades	Medical staff	Paramedical staff	P value
Depression	Normal	57	27	
	Mild	17	09	
	Moderate	21	09	0.31

	Severe	07	0	
	Extremely severe	03	0	
Anxiety	Normal	57	26	
	Mild	05	05	
	Moderate	23	09	0.52
	Severe	08	02	
	Extremely severe	12	03	
Stress	Normal	75	18	
	Mild	14	03	
	Moderate	10	24	<0.001*
	Severe	05	0	
	Extremely severe	01	0	
PTSD	Not a clinical concern	60	13	
	Of clinical concern	16	04	<0.001*
	Mild to moderate PTSD	10	15	
	Severe PTSD	19	13	
Total (n=150)		105	45	

*: significant   PTSD: Post Traumatic Stress Disorder

Table No.3: Association of mental health impact with gender

Mental health impact variables	Grades	Males	Females	P value
Depression	Normal	46	38	
	Mild	08	18	
	Moderate	15	15	0.19
	Severe	02	0	
	Extremely severe	01	02	
Anxiety	Normal	43	40	
	Mild	07	03	
	Moderate	09	23	0.04*
	Severe	07	03	
	Extremely severe	06	09	
Stress	Normal	51	42	
	Mild	05	12	
	Moderate	15	19	0.14
	Severe	01	04	
	Extremely severe	0	01	
PTSD	Not a clinical concern	40	33	
	Of clinical concern	06	14	0.20
	Mild to moderate PTSD	10	15	
	Severe PTSD	16	16	
Total (n=150)		105	45	

*: Significant   PTSD: Post Traumatic Stress Disorder

DISCUSSION

This study was conducted on 150 medical and paramedical health care workers to assess the impact of COVID-19 on their mental health taking into account three negative psychological states (depression, anxiety, stress) and Post traumatic stress disorder PTSD.

The results clearly demonstrate a significant negative psychological impact of COVID-19 on these healthcare workers in terms of stress and PTSD. It has also shown association of stress and anxiety with category of health care workers and gender respectively. Many studies conducted previously on the same subject have also reported higher prevalence of depression, anxiety and stress among the healthcare workers.[3,7,11] Some have

also reported the impact to be higher among the non-medical staff as compared to the medical staff.[12] Many factors have been reported to be involved for the mental health impact of COVID-19 on health care workers in our country like illiteracy and lack of understanding in the general population, inadequate use of safety measures could warrant to such incremented frequency of anxiety, depression and stress in Pakistan.[3,11]

Majority of the participants in our study had moderate depression 30(20%), anxiety 32(21.3%) and stress 34(22.7%). Overall mean depression score accounted for 8.81±8.26; anxiety score was 7.94±7.86; stress score was 12.60±9.02 and mean PTSD score was 24.76±16.40. The mean scores for depression and anxiety were consistent with the results of similar study

conducted in Lahore by Riaz et al however the mean stress score in our study was a bit higher.[7] Another difference was occurrence of moderate stress among the majority of health care workers in comparison to mild stress in Riaz et al study.[7] The reason for this inconsistency in stress scores may be that Abbottabad is a small city with fewer resources, inadequate infrastructure as compared to the big cities of Pakistan and the awareness plus use of safety measures may be less in the population.

Our study showed a statistically significant difference among healthcare workers for stress Stress and PTSD were also found to be significantly associated with category of health workers (p<0.001). Our results are similar to international COVISTRESS survey in which Paramedical staff risk for very-high levels of stress was found to be higher.[12] Paramedical staff is at more risk to be exposed than the doctors as they faced more lack of equipments and human resources than the doctors.[13] High levels of work-related stress among paramedics especially nurses during COVID-19 have led to higher burnout levels.[14] Statistically significant difference between medical and paramedical healthcare workers was also observed in regard to PTSD scores and the results are consistent with the study of Iranmanesh et al in south east Iran.[15]

In our research, only anxiety was significantly associated with gender (p=0.04) and women had the highest levels of work-related moderate anxiety. Our results concord with the literature revealing that women suffer more from the negative psychological impact of the COVID-19 outbreak.[16] Women often have a double life combining work and family life.[17] Even if women have less severe forms of COVID, they were frightened of contracting COVID-19.[18]

Some strengths of our study are that it was conducted using two validated scales for measuring mental health impact simultaneously and the participants were representative in terms of age and gender for health professionals. However it was carried out in only one tertiary care centre, sample size was small, convenience sampling technique was employed and it was undertaken when first wave of COVID-19 was at its end. This could be the reason of relatively reduced severity of mental health impact among healthcare workers. Longitudinal studies have to be undertaken in the future to estimate the causal relationship between work-related stress risk and mental health needs.

CONCLUSION

This study concludes significant difference in work related stress levels and post-traumatic stress disorder between medical and paramedical healthcare professionals with more impact on paramedical staff as compared to other workers. It is suggested that for the upcoming epidemics or pandemics, concrete interventions must be applied and adequate resources should be invested to augment the mental wellbeing of healthcare workers.

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Original Article

Comparison of Efficacy of Mineral Trioxide Aggregate and Calcium Hydroxide as Pulpotomy Agents in Primary Molars

Naheed Najmi[1], Asmat Jameel[2] and Yawar Abidi[3]

ABSTRACT

Objective: To compare the efficacy of MTA and CH in primary molars as pulpotomy medicaments.
Study Design: Randomized Control Trial study
Place and Duration of Study: This study was conducted at the OPD, Operative Dentistry, Liaquat College of Medicine & Dentistry, Gulistan-e-Jauhar, Karachi from August 2020 to July 2021.
Materials and Methods: 28 children between 5 to 9 years having carious primary molar were randomly assigned to CH and MTA groups with 14 children each. Following pulpotomy teeth were restored with composite and stainless steel crown. Clinical and radiographical examinations were performed at 1, 6 and 9 months. Statistical analysis was done using Chi square test; p-Value of <0.5 was taken as significant.
Results: 26 children out of 28 that underwent intervention came for evaluation. At 1 month follow up all patients showed 100% clinical and radiographic in both groups. At 6 months two cases showed failure in CH group, whereas in MTA all teeth were 100 % successful. At the end of trial at 9 month with 2 teeth showing clinical failure and 3 with radiographic failure, the overall success rate of CH was found to be 64.2% and with only clinical failure in MTA group, was found to be 92.8%.
Conclusion: MTA exhibited higher clinical and radiographic success as compared to CH, hence, is recommended to be used as a substitute to CH.
Key Words: Calcium Hydroxide. Mineral Trioxide Aggregate, Pulpotomy, primary molar

INTRODUCTION

Pulpotomy is one of options of vital pulp therapy utilized when coronal pulp becomes inflamed whereby the infected and inflamed part of the coronal pulp is surgically removed leaving the healthy radicular pulp intact so as to preserve its vitality.[1] This treatment option is accepted widely primarily for the deciduous teeth in which the pulp has been exposed as a result of caries, trauma or a mishap during treatment procedure.[2] Following pulpotomy the remaining pulp is dressed with a suitable medicament to encourage pulp healing[3] eventually retaining the tooth in mouth until its physiological exfoliation.[4]

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Success of pulpotomy procedure is largely dependent upon the type of pulpotomy medicament used[5]. An ideal pulpotomy agent must be lethal to bacteria as well as promote the healing potential of the remaining vital pulp without harming it or the adjacent tissues.
To date various pulpotomy agents have been used. Formocresol, a devitalizing agent, since its introduction in 1904 has remained in clinical use, undergoing several modifications in its concentration and techniques. However, despite its popularity, there are concerns regarding its use as a result of its cytotoxic, mutagenic and carcinogenic potential.[6] Calcium hydroxide (CH) entered into the clinical field to be used as an alternative to formocresol, having an antibacterial efficacy and ability to induce dentine bridge formation owing much to its high alkalinity.[7] However, its success rate dropped as result of researches reporting internal resorption and defects in the hard tissue formed.[8] This led the researchers in pursuit of a material that is more biocompatible with lesser drawbacks. Mineral trioxide aggregate (MTA), mainly consisting of calcium and silicate components, was introduced by Torabinejad in 1990. Ever since it has been assessed extensively and in the light of these studies it has been recommended to be used as a pulpotomy agent mainly on account of its extreme biocompatibility, ability to promote hard tissue formation and provide a good seal.[9] Literature review has reported MTA as a potential substitute of calcium

hydroxide as a pulpotomy agent , however, inspite of MTA's successful outcomes its drawbacks pertaining to its long setting time, discoloration of teeth and cost[10,11], limit its use in our part of the world and hence fewer researches have been done here. Therefore, the aim of the present study is to compare the clinical and radiographic outcomes of calcium hydroxide and MTA pulpotomies done on primary molars with a 9 month follow up.

MATERIALS AND METHODS

The study was conducted at the department of Operative Dentistry, Liaquat College of Medicine & Dentistry, Gulistan-e-Jauher Karachi, Pakistan, It started in August 2020 and continued till July 2021. 28 healthy and cooperative children aged 5 to 9 years that reported in Operative Dentistry Opd with deep carious lesions in primary molars, were screened after thorough clinical and radiographic examination to be included in the study. The entire procedure, benefits of this treatment and associated risks were explained to the parents of the children and a written consent to participate in the study was taken from them prior to the start of the procedure. The protocol was approved by the ethical review board, Liaquat college of Medicine and Dentistry, before initiation of study. 28 envelops having the name of one pulpotomy medicament (14 envelops having calcium hydroxide and 14 having MTA written in them) were shuffled. Each child fulfilling the inclusion criteria was asked to choose one envelope. The child was then treated according to name of medicament mentioned in the envelope without disclosing to the patient. Thus the study was single blinded. The inclusion criteria were- 1) children aged 5-9 years, 2) patients having atleast one vital primary molar in the mouth with pulpal exposure after removal of caries (carious exposure) 3) teeth restorable following completion of treatment. The exclusion criteria were- 1) children having systemic diseases 2) patients with complain of spontaneous pain or nocturnal pain 3) signs of periapical or furcal pathology such as swelling or redness in soft tissue surrounding the tooth, mobility, tenderness to palpation and percussion and radiographic evidence of bone resorption. 4) Pathological root resorption. 5) non vital teeth. 6) teeth with uncontrollable hemorrhage

Sample size was calculated referring to a study closely matching our protocol[12]. The clinical procedure started with giving topical anesthesia (xylocaine spray) and then local anesthesia, lignocaine (1: 80000) epinephrine, followed by rubber dam application. After removal of caries, access to the pulp chamber was made with # 330 carbide bur in high speed handpiece. Coronal pulp was removed with slowly rotating #4 round bur. Pulp chamber was gently irrigated with sterile saline and a sterile cotton pellet moistened with saline was placed on the pulp stumps to control the bleeding. After ensuring that hemostasis has achieved, pulpotomy medicament (according to the chosen envelope) was placed on the pulpal tissue. For the CH group, CH paste was applied on the pulp stumps by dispensing from the syringe.

In other group, MTA: was mixed according to manufacturer's instructions with powder to distilled water ratio of 3:1. After placement MTA was condensed with gentle pressure using moist cotton.

After placement of pulpotomy agents in both groups, a layer of glass ionomer cement was placed followed by composite and finally restored with stainless steel crown.(3M Unitek SP), cemented with type 1 GIC. Finally a periapical radiograph with paralleling technique was taken using cone indicator. The entire procedure was done by the principal investigator in a single visit. A telephone call was made to inquire the condition of the patient, the next day and any problem noted.

The patient was called for evaluation after 1, 6 and 9 months. Clinical and radiographic examination was done by a senior faculty member other than principal investigator, in the department who was blinded to the type of medicament used.

Presence of any of the following symptom or signs was considered as a clinical failure: pain, tenderness to palpation and/or percussion, swelling, sinus, abnormal mobility. Radiographic features, that indicated treatment failure, if present upon evaluation, were: periapical and/or furcal radiolucency, pathologic root resorption.

The overall treatment was considered a success only when both, clinical as well as radiographic findings were sound.

Data was entered in SPSS version 21. Categorical variables were presented as frequencies and percentages whereas quantitative variables as age was expressed as mean ± standard deviation. Chi Square test was used for inter group comparison at different time intervals. P-Value of < 0.5 was considered as statistically significant.

RESULTS

A total of 28 children who fulfilled the inclusion criteria and gave consent were included in this study. All of these had carious primary molars. Thus a total of 28 primary molars (7 maxillary molars and 21 mandibular molars) underwent pulpotomies using CH and MTA as pulpotomy agents, 14 in each group. The mean age of these children was 7.46 ± 1.29 that ranged between 5 and 9 years. These 28 patients comprised of 8 (28.57%) males and 20(71.42%) females. Out of 14 molars, CH was used on 2 males and 12 females, of these 3 were maxillary molars and 11 mandibular molars. MTA pulpotomy was done in 4 maxillary molars and 10 mandibular molars in a total of 6 males and 8 females (Table 1).

The children were recalled for evaluation after 1, 6 and 9 months. There was one loss to follow up after 6 months and another drop out at 9 month recall.

At one month recall, in both CH and MTA pulpotomy groups, all cases were clinically and radiographically successful. However, at 6 month interval, in the CH group, there was one drop-out. One patient of this group had pain and a draining sinus indicating clinical failure as well as radiographic failure as evident in the radiograph by periapical radiolucency. Another child of this group showed radiographic failure. The remaining 11 cases were clinically and radiographically sound. In the MTA group, at this stage, all teeth were analyzed to be clinically and radiographically successful. At 9 months follow-up, with one drop-out, 11 patients were analyzed in the CH pulpotomy group. 2 children in this group reported with clinical failure, one having pain and swelling and the other having tenderness to percussion. In addition when the radiographs of 3 patients were observed pathologic changes were seen; 2 cases showing internal resorption and one showing periapical radiolucency thus suggesting radiographic failure. In contrast MTA group at this stage had 100% recall rate. One clinical failure was observed; patient reported with pain and the tooth was tender to percussion, whereas the radiographic success was 100 %. Intergroup comparison between the CH and MTA group at 1, 6 and 9 months showed statistically significant difference in the radiological success rate at 9 month follow up (Table 2 & 3).

Table No.1: Distribution of Pulpotomy Agents Based on Gender, Age and Tooth Category

Group	Gender (freq)		Age (mean ± SD)	Tooth Category Maxillary Molars	Mandibular Molars
	Male	Female			
CH	2	12	7.21 ± 1.25	3	11
MTA	6	8	7.71 ± 1.32	4	10
Total	8	20	-	7	21

Table No.2: Clinical Success Rate of Pulpotomy at Different Time Intervals

Group	1 month N (%)	6 months N (%)	9 months N (%)
CH	14 (100)	12 (92.3)	9 (81.8)
MTA	14 (100)	14 (100)	13 (92.8)
p-Value*	-	.341	.131

*p-Value calculated using Chi-Square Test

Table No.3: Radiological Success Rate of Pulpotomy at Different Time Intervals

Group	1 months N (%)	6 months N (%)	9 months N (%)
CH	14 (100)	11 (84.6)	7 (63.6)
MTA	14 (100)	14 (100)	14 (100)
p-Value*	-	.186	.009

*p-Value calculated using Chi-Square Test

Thus overall assessment at the end of the trial showed that in CH group, out of 14 patients, excluding 2 drop-outs, 81.81% (9/11) cases were clinically and 63.63% (7/11) cases were radiographically successful. Over all there were 7 cases out of 14 that were both clinically and radiographically successful, declining the success rate to 50 %. In the MTA group, the success rate was 92.8% (13/14) with 13 clinically successful cases. In addition, 100% (14/14) radiographic success was seen. With 13 clinically and radiographically successful cases, rate was calculated to be 92.8%. (Table 4).

Table No.4: Overall Success Rate Among Two Groups at the End of Trial

Group	Total cases of intervention (n)	Successful N (%)	Unsuccessful N (%)
CH	14	7 (50)	7 (50)
MTA	14	13 (92.8)	1 (7.1)
Total	28	20 (71.4)	8 (28.6)

DISCUSSION

Pulpotomy is an acclaimed treatment for deciduous teeth with inflamed pulp particularly that exposed as a result of deep caries or mechanical injury, whereby inflamed portion of the pulp is amputated and dressed with a suitable therapeutic material[13]. Several pulpotomy agents have gone through trial and testing over the years and accepted or declined depending upon their properties[14].

The present study was conducted to assess the outcomes of 28 primary molars that underwent pulpotomy using either CH or MTA as pulpotomy medicaments. The evaluations were done after 1,6 and 12 months, where clinical as well as radiographic success rates were recorded. With 2 cases lost to follow up the recall rate was 92.8 %.

This randomized controlled trial provided excellent results with MTA where one case had a clinical failure giving an overall success rate of 92. 8%, whereas, greater clinical and radiographic failures were seen in CH group, hence having a compromised outcome of 64.2% success rate. Similarly other studies have reported lower success rates of CH, amongst which is the work of Moretti et al who presented clinical and radiographic failure rate of 64% in a 2 year trial in primary molars following pulpotomy with CH. [15]. Also these findings corroborate the results of clinical trial done by Mente et al[16] CH being the gold standard and most popular pulpotomy agent for many years was used as a control in this study. The lower success rates of CH have been mainly attributed to its inferior chemical and mechanical properties as greater solubility, increased micro leakage, tunnel defects and leading to internal root resorption. Because of these reasons and with the advent of biomaterials, MTA gained attention by having biocompatibility and superior antibacterial activity[17]. The results of this study also favour the preferable use of MTA as pulpotomy agent considering

there was only one clinical failure and 100 % radiographic success giving an overall success rate of 92.8%. Other researches that compared the efficacy of MTA with CH reported similar findings with MTA being superior to CH[18–20]. The most distinguishing feature of MTA underpinning high success rate is its superior sealing ability and higher resistance to dissolution[21].

CONCLUSION

On the basis of the data analyzed at the end of 9 month trial to compare the efficacy of CH and MTA as pulpotomy agents to treat primary molars, it is concluded that based on number of clinical and radiological failures in CH group in comparison to MTA as well as overall success rates, it is recommended that MTA is a material of choice for pulpotomies in primary teeth despite its shortcomings as being expensive and causing discolouration of tooth, can prove to be a good substitute for CH. However further studies are required with larger sample size and a longer evaluation period.

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Original Article

Rate of Depression among Infertile Women Presenting at Tertiary Care Hospital

Saeed Akhtar[1], Azra Yasmeen[2] and Fariha Saeed[3]

ABSTRACT

Objective: To find out depression rate in infertile women presenting at B.V Hospital Bahawalpur.
Study Design: Transactional study
Place and Duration of Study: This study was conducted at the Bahawal Victoria Hospital, Bahawalpur from June, 2020 to August, 2020 for a period of three months.
Materials and Methods: It is a trans-sectional research of women with infertility married for one year, aged19-49 years coming to this hospital. Every infertile women presenting during this period was included in the research.
Results: Total 100 women with primary infertility participated in the research. There mean age was 32.57 ± 9.71. Out of 100 infertile women, depression was found in 56 (56%) women. Mild to moderate depression was noted in 49 (87%) patients followed by severe depression in 5 (9%) patients and very severe depression in 2 (4%) patients.
Conclusion: Our study reports high percentage of depression among infertile women. Not a single patient included in the study was getting treatment for depression. So this group is not getting the diagnosis of depression nor its management. So a neglected group of patients needs help and support from the health professionals. Gynecologists should be encouraged to diagnose and treat them or to refer them to mental health professionals.
Key Words: Depression, infertile women, sexual intercourse

INTRODUCTION

It has long been observed at psychiatric clinics that many women consulting for depression are infertile. Being infertile is stigma in our Pakistani society that leads to psychological and social problems for infertile women, her parent family and in laws. In-laws blame the woman. Woman remains fearful about the 2nd marriage of the husband. In laws taunt on her for being infertile. She may be blamed for being haunted and some in laws may force her to get treatment from faith healers and magician, which further leads to many social evils in our society. Many women may get divorced due to being infertile. All these factors frequently lead to depression in infertile women. Definition of infertility is to not get pregnant up till end of one year of regular sex.[1] According to international estimates, prevalence of infertility is about 9-15%.[2-4]

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In psychiatric illness, depressive illness is frequent in infertile women. Research has concluded that a significant number among women with infertility get depression.[5-7] A study of States about rate of depression in women with infertility showed moderate depression in 19% and severe depression in 13%.[5] In other study in Denmark showed severe depression in 15% infertile females.[8] Another study conducted in Saudi Arabia showed depression in 53.8% of women with infertility.[8] A Pakistani research showed major depression in 52.8% and minor depression in 37.7% of females with infertility.[9] Another Pakistani study showed 53.2% depression in infertile females. Infertile women has double chance to get depression as compared to fertile women.[10]

In Pakistan infertility is a source of severe stress and source of psychosocial problems and even social evils especially at under developed areas. So we want to conduct this study at Bahawalpur to assess the severity of the problem.[11-12]

MATERIALS AND METHODS

It is a trans-sectional research of women with infertility married for one year, aged19-49 years coming to Gynecology and obstetrics out patients department of Bahawal Victoria Hospital, Bahawalpur from June to August 2020. Every infertile women presenting during this period was included in the research. All the patients agreed to participate in the study. Previously known psychiatric patients or who developed

depression before completion of criteria of primary infertility were excluded. Similarly patients having secondary infertility were also excluded. 100 patients participated in our research. Hospital anxiety and depression scale comparises of 7 item subscale of anxiety and 7 item subscale for depression and the total score is from 0 to 21, increased score means severe disease. Subscale score of more than 8 shows depression.

Demographic data including age, education and year of infertility was taken. We used Himaltion rating scale for depression and data was entered in SPSS version 16. The data was analyzed as percentages in to mild, moderate, severe and very severe sub types of depression. Rate of depression in females with infertility and relationship, between infertility and depression was assessed.

RESULTS

Total 100 women with primary infertility were included in the study. Mean age of the patients was 32.57 ± 9.71. Out of 100 infertile women, depression was found in 56 (56%) women. (Fig. 1) Mild to moderate depression was noted in 49 (87%) patients followed by severe depression in 5 (9%) patients and very severe depression in 2 (4%) patients. (Fig. 2)
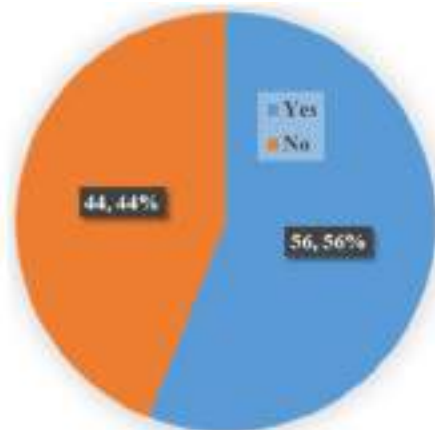
Figure No.1: Frequency of depression
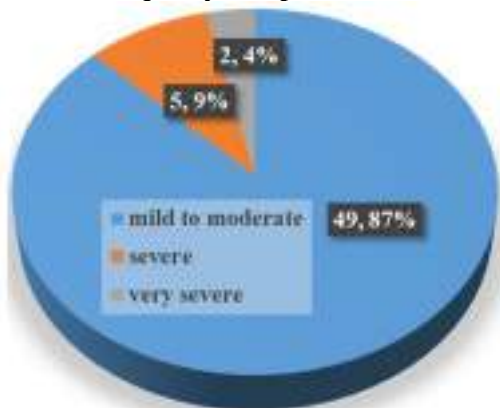
Figure No.2: Severity of Depression

Total 1 age groups were created i.e. age group 19-28 years, age group 29-38 years and age group 39-48 years. Total 38 (38%) patients belonged to age group 19-28 years, 51 (51%) patients belonged to age group 29-38 years and 11 (11%) patients belonged to age group 39-48 years. Depression was found in 19 (50%) patients of age group 19-28 years followed by 34 (66.67%) patients of age group 29-38 years and 3 (27.27%) patients of age group 39-48 years. Significant (P = 0.037) association of depression with age group was noted.

Table No.1: Association of depression with age group

Age group	Depression		Total	P. value
	Yes (%)	No (%)		
19-28	19 (50)	19 (50)	38 (38)	**0.037**
29-38	34 (66.67)	17 (33.33)	51 (51)	
39-48	3 (27.27)	8 (72.73)	11 (11)	
Total	**56 (56)**	**44 (44)**	**100**	

DISCUSSION

Being infertile is a stigma in our society and infertility leads to psychological and social problems in our society in Pakistan. Prevalence of psychological problems is estimated to 25-60% in infertile couples.[13] It is proposed that depression can directly affect infertility through various biological changes like high prolactin level, dysfunctional immune system changes, hypothalamic pituitary adrenal axis and thyroid dysfunction.[14] It is considered that stress directly effects cortisol level by increasing the release of hormones form pituitary gland and have a significant negative effect on fertility.[15] So depression may be the cause of infertility or it may be an aggravating factor. Thus infertility may be causing depression or depression may be aggravating infertility. In this way association between depression and infertility is known.[16] Our study showed increased rate of depression (65%) in infertile women. This is in line with other studies. For example, Guerrag D et al reported rate of depression of 69% in infertile women in china.[17] Higher rates of depression in infertile women are shown in Japan and Gambia.[18-19] There was depression and/or anxiety disorder in 33% in Hong Kong and 32% in Scotland in infertile women.[20-26] Internationally, child bearing means faminity, as a result infertile female becomes sad and feels worthless, if she is infertile. Their infertility than leads to depression.[27] Our study assess rate of depression in infertile women at Bahawalpur in Pakistan. As Pakistan is Islamic country, child bearing is source of status and worth. Having a child makes the family ties strong and increase the

status of women and her satisfaction as being mother. In our country and region infertility is stigma. Being infertile may lead to marital conflicts for example separation of couple. Intervention of in laws cause depression in infertile women.

CONCLUSION

Our study reports high percentage of depression among infertile women. Not a single patient included in the study was getting treatment for depression. So this group is not getting the diagnosis of depression nor its management. So a neglected group of patients needs help and support from the health professionals. Gynecologists should be encouraged to diagnose and treat them or to refer them to mental health professionals.

Author's Contribution:

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Success of
Restoration after
Chemo
Mechanical
Caries Removal
by Using Papain

Evaluation of Success of Restoration after Chemo Mechanical Caries Removal by Using Papain Based Gel

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Nighat Shafi[3] and Maryam Virda[4]

ABSTRACT

Objective: To assess the restoration's success after chemo mechanical caries removal by using papain based gel.

Study Design: descriptive case study

Place and Duration of Study: This study was conducted at the Operative Dentistry Department of de' Montmorency College of Dentistry/Punjab Dental Hospital Lahore from February, 2016 to August, 2016.

Materials and Methods: This was a descriptive case series study. A sample size 100 patients were selected by using nonprobability consecutive technique of sampling. All Patients of both genders having age of 10-16 years were involved in this research and patients with presence of fistula and patients having history of pain(VAS score 4-8) were excluded from the study. Papain based gel had been applied to the cavity and allows 30-40 seconds for the gel to work, and the patients had been followed up for 1 month for assessment of restoration.

Results: In this study among 100 patients, the average age of the patients was 13.06 ± 1.99 years. The success of restoration after chemo mechanical removal of caries by using papain based gel was present in 73.0% patients while it was absent in 27.0%.

Conclusion: Removal of caries after chemo mechanical by using papain based gel showed high efficacy of success of restoration.

Key Words: Chemo Mechanical, Papain based gel, Caries

INTRODUCTION

Caries is one of the common occurrence in children around the world (about 50%). It should be addressed expeditiously, otherwise it not only have impact on the child's chewing function, their speech, smile, psychological wellbeing, and excellency of their life. Dental illnesses are at considerable cost to deal with in most of the world, and an unchallenging and efficient way to handle this problem is to prevent it. Dental caries involves the hard structures of the teeth that has been linked to a multi-factor aetiology.[1]

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Caries is a preventable illness that is widely known as primary reason of oral discomfort leading to tooth loss and become strenuous for people of all age groups to attain and sustain good oral care. Caries has a diverse microbial population, with bacteria of both facultative and obligatory anaerobes including Actinomyces, streptococcus mutans and Lactobacillus [2]. It is very prevailing and progressive disease, which have impact on 60% to 90% of school going age group and adults all over the world .In case of negligence dental caries can leads to mild discomfort to fistulas and abscess formation.[3]. The prevalence of this disease in the children of age seven to seventeen years is 40% to 85% respectively. Despite of this high ratio some documentation reports about 36% fall in caries incidence in age group of 5-17 years over a ten years period. Treatments for caries prevention may have a significant influence on preventing the development of caries. Fluoride application topically in form of gel and supplements are easy and economical way of reducing the incidence of tooth destruction by making the tooth surface more resistant to bacterial acid. Likely, pit and fissure sealants and varnishes containing flouride seems to be efficacious in decreasing the caries risk. Based on the available research, prevention and minimal interventions are appearing to be effective in managing dental cavities[4]. As an alternative to the traditional drilling approach, other caries eradication methods have been proposed and developed. In pediatric dental

treatment, chemo-mechanical caries removal (CMCR) emerges as a promising approach. It reduces patient anxiety, reduces the requirement for local anesthetic, and allows for more selective removal of carious tooth structure[5] .Chemo-mechanical methods (CMCR) are non-invasive alternatives to long established methods to deal with caries with application of a proteolytic material to dissolve carious dental tissue and make it easier to remove with manual instrument. Without the use of local anesthetic or burs, this approach can be used to preserve healthy dental tissue[6]. Papain based gel used for Chemo-mechanical caries removal that contains papain with the cleaning and wound curing properties and chloramine with disinfectant property. In year of 2003 in Brazil papain based gel (papacarie) was formulated first time and shown adequate clinical trials about its efficacy[7]. Papain based gel is selective and conservative in nature thus, it reduces the danger of pulp exposure. The uses of the gel for caries removal ameliorate the bond between tooth surface and restorative material thereby extends the life of a restoration since it prevents the formation of smear layer. So, bondings become strong, and it specifically targets the infected tooth area. Furthermore, using Papain based gel to remove caries chemically and mechanically minimizes patient concern and discomfort, allowing it to be accepted in clinical practice. [8]. Papain based gel comprises papain(papaya extract), an endoprotein with bactericide, bacteriostatic, and anti-inflammatory qualities, as well as chloramine (a mixture of chlorine and ammonia with antibacterial and disinfecting properties), toluidine blue, water, salts, and thickeners. The technique is based on the chemo mechanical removal of diseased dentin. It has antibacterial and anti-inflammatory properties, allowing for the maximal maintenance of healthy tooth structures. Papain based gel is a biomaterial that enables for the atraumatic removal of caries by chemo-mechanical means. Its use has the advantage of being simple to implement and not requiring the use of any special devices [9].Based on the available evidence, the presently available chemo mechanical caries eradication procedures are feasible alternative to traditional rotational methods. These techniques are particularly beneficial to patients who are extremely worried, disabled, or children[10].

The chemo mechanical caries removal system, which includes natural proteolytic enzyme to aid in the excavation of diseased dentin, is now accessible. This study was designed to assess the efficacy and efficiency of papain based gel for caries removal.

MATERIALS AND METHODS

This was a descriptive case series study, conducted at Operative Dentistry Department of de' Montmorency College of Dentistry/Punjab Dental Hospital Lahore after taking approval of institutional Ethical Review Committee. This study had been used with 100 patients calculated with level of confidence is 95%, margin of error is 9% and taking expected percentage of success 70% after using papain based gel for removal of caries in children[18]. An informed consent had been taken from parents. All 100 cases with inclusion criteria fulfilled had been enrolled by using nonprobability consecutive sampling technique. An informed consent had been taken from all patients for participation in this study. All Patients of both genders having age of 10-16 years, patients having frank carious lesion with extension into dentin, but without pulpal involvement assessed clinically (VAS score=0) and radio-graphically (presence of periapical radiolucency), patients with permanent molars and no proximal caries as evidenced by bitewing radiographs chosen for this study. Patients having fistula, compromised pulp with forked, teeth exhibiting pulp exposure on clinical assessment (absence of pain VAS score 4-8) and radiographically(absence of periapical radiolucency) and patients having history of pain(VAS score 4-8) were excluded from the study.

Data Collection Procedure: After taking all information like name, age, gender and address, children had undergone procedure by researcher herself. Teeth had been isolated by using cotton pellets and using slow speed suction. Papain based gel had been applied on the carious tooth and after delay period of 30-40 seconds to allow the gel to work effectively. Gel makes the dentin soft that had been removed by sweeping the curette with non-cutting tip. An exploratory probe with a rounded tip was used to apply the gel a second time in cases where there had been evidence of diseased dentin. Exploratory probe had been used to clinically evaluate the texture of remaining dentin. Cavity had been cleaned with 2% chlorhexidine digluconate and calcium hydroxide had been placed for pulp protection. Cavity had been restored with glass ionomer cement and dentin-bonded resin composite restoration. The patients had been followed up after 1 month for assessment of restoration. Frencken et al scale had been assessed and success had been labeled if score is zero (as per operational definition). All this information had been recorded through proforma.

Statistical Analysis: For statistical analysis SPSS version 20 was employed. All quantitative data, such as patient age and frequency, were given a mean standard deviation, and all qualitative variables, such as gender and restoration success, were given a percentage. P-value of 0.05 assume significant when chi square test was applied to all categories.

RESULTS

The results of the success of restoration was found in 73 patients while it was found to be absent in 27 patients and average age of the patients was noted 13.06 ± 1.99 years in table 1.

The Success of restoration in age was found to be in 41 patients, who were below 13 years, and 32 patients who were above 13 years of age. After application of chi square test which shows a relationship of these two categorical variables, the p-value ≤ 0.541 which shows statistically insignificant relationship between the variables is shown in table 2.

The relationship between Success of restoration and gender .Success of restoration in gender was found to be in 39 male patients and 34 female patients and was found to be absent in 27 patients. After application of chi square test to show the relationship of these two categorical variables, the p-value ≤ 0.394 which shows that there is insignificant relationship between these two variables is shown in table 3.

Success of restoration was found to be in 55 patients who had no malnutrition and 18 patients who had malnutrition and was found to be absent in 18 who had not malnutrition. Chi square test was applied to see the relationship between these two categorical variables, the p-value ≤ 0.386 which shows that there is no relationship between these two variables in table 4.

Table No.1: Age Variables

Variables	Mean ± SD
Age	13.06 ± 1.99
Success of Restoration	Frequency
Yes	73(73.0 %)
No	27(27.0%)

Table No.2: Success of restoration

		Group age		Total	P-Value
		Below 13 years	Above 13 years		
Success of restoration	No	17	10	27	0.541
	Yes	41	32	73	
Total		58	42	100	

Table No.3: Gender wise restoration of patients

		Gender		Total	P-Value
		Male	Female		
Success of restoration	No	17	10	27	0.394
	Yes	39	34	73	
Total		56	44	100	

Table No.4: Malnutrition

		Malnutrition		Total	P-Value
		No	Yes		
Success of restoration	No	18	9	27	0.386
	Yes	55	18	73	
Total		73	27	100	

DISCUSSION

The dental caries that were considered in this study is one of the most prevalent oral disease. This study was undertaken at de' Montmorency College of Dentistry's Department of Operative Dentistry to check the efficacy and efficiency of a restoration after Papain based gel use in Patients of both genders having age of 10-16 years.

In this study, the sample size was taken of 100 patients who were satisfying the mentioned criteria enrolled in the study. Sample size was carried by using nonprobability consecutive sampling technique. The mean age was as 13.06 ± 1.99 and success of restoration was found in 73 patients while it was found to be absent in 27 patients. There was statistically insignificant relationship of success of restoration with age, gender and malnutrition.

This present study concluded that the success of restoration after chemo mechanical removal of caries by using papain based gel in open carious lesions of permanent molars was present in 73.0% patients while it was absent in 27.0% of the patients and the effect modifier i.e. age, gender and malnutrition had no significant association with success of restoration.

The goal of an international trial conducted by Ericson et al [12] to assess the clinical success and assurance of chemo mechanical removal approach (Carisolv).of caries at four centres. In this study, all selected 137 patients with average age of 35±21years (64 females and 73 males), range 3–85) were chosen. However, procedure was performed on 125 patients and results shows 106 cases with complete caries removal using gel and bur was used in 19 cases.

Bussadori et al [11] conducted a study with 2 years follow-up on fourteen permanent molars in children aged 10 to 16. The finding of this study revealed that 13 of the 14 cases were successful. According to the findings of this study, in young children when molar treated with papain based gel and filled with ionomer cement considerable results were obtained and it is an option which provides patients with benefits.

In a study done by Caro et al[13] in 2012, the aim was to compare two caries removal strategies in terms of the amount of time it took to complete the procedure, total operating time, expenses, and pain complaints are all factors to consider while removing carious tissue. A randomized, controlled clinical experiment involving patients of 7 years with occlusal caries (n=30) in sixty Ist molars was done. The traditional technique and silver amalgam were used on half of the teeth; while the other half received Papain based gel preparation and repair with ionomer cement (GIC). In terms of operating time, expenses, and pain complaints, both sets of teeth were studied. In comparison to the traditional procedure for eliminating carious tissue, they discovered that utilizing Papain based gel and GIC resulted in much cheaper costs and operative time.

Kochhar et al [14] conducted a study to examine the effectiveness of caries removal, the duration of procedure, and pain as reported by the patient throughout different strategies. The total duration to eradicate caries with the Carisolv proved significantly longer than Papain based gel and hand instrument methods. The Airotor approach required the least

amount of time. Patients reported the least amount of pain during caries removal when using the Papain based gel, followed by Carisolv and hand excavation. Pain was significantly higher with Airotor. The chemo mechanical caries elimination by use of Papain based gel and Carisolv was proven successful and could be considered as a treatment option.

Pandit et al[15] compared the usefulness of different caries removal means, duration of different methods and evaluate the pain threshold reported by the patient during procedure and showed a comparison of mean success of different methods. Caries removal efficacy by hand instrument was determined to be 1.26 on average. Caries removal by airotor had an average efficacy of 0.38, while caries removal by the papain based gel had an average efficacy of 0.42. Our study shows that following chemo mechanical elimination of caries using papain based gel, there is a high efficacy of restoration success.

CONCLUSION

The use of papain based gel to remove caries after chemo mechanical treatment resulted in a high efficacy of restorative success. As a result, the use of papain based gel as an option for individuals seeking an alternative to standard procedures can be advocated. The removal of carious tissue using papain based gel was shown to be effective, simple, and painless for the patient. In the instance of very hesitant patients, the restoration matched functional needs and was a simple and economical option. Patients must, however, be advised about the possibility of failure and the need for regular follow-up sessions.

Author's Contribution:

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Original Article

Computed Tomography
Head Scan to Evaluate Patient with Chief Complaint of Headache: Is It Necessary and Cost-Effective?

Lubna Shamshad, Mohammad Akhtar, Mahzar Shafeeq, Kailash Tanwani, Shomaila Memon and Sehrish Sethar

ABSTRACT

Objective: To determine the cost-effectiveness of computed tomography head scan in patients with chief complaints of headache.

Study Design: Prospective cross-sectional study

Place and Duration of Study: This study was conducted at the department of Radiology, PNS Shifa Hospital, Karachi from February, 2018 to December, 2018.

Materials and Methods: Total 401 patients with chief complaint of headache were included. CTHS were carried out and reports were evaluated. A pre structured questionnaire was filled by principal investigator to record the findings. Statistical analysis was done using SPSS. Frequency and percentages were reported for qualitative variables. Mean and standard deviation were reported for quantitative variable. Bivariate analysis was done using fisher exact test. Level of significance was set at 0.05.

Results: The studied population contained 63.8% male and 36.2% female patients. Mean was found to be 37.39 ± 17.30 years. Among 401 patients included in the studied population, 323 patients (84% of males and 74.5% of the females) were found to have normal CTHS results and while 76 patients (16% of males and 25.5% of the females) were found to have abnormal CTHS results.

Conclusion: CTHS is not a cost-effective method of diagnosing the cause of headache. If the patients have no associated symptoms and sign of intracranial pathology, CTHS is seldom helpful in the diagnosis of the cause of headache. It should be advised only after the detailed study of clinical history and neurological examination.

Key Words: Computerized Tomography, cost-effectiveness, headache, intracranial pathology, neuro-imaging, neuro-physician and patients

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INTRODUCTION

Among the pain complaints recorded worldwide, headaches are the most commonly reported. Headaches are generally categorized into primary and secondary types Primary headaches include migraine, headache due to tension and due to clustering.[1] Primary headache does not routinely require neuro-imaging as neuroimaging cannot identify or figure out the underlying disease process.

A study by International Headache Society reported migraine and tension-type headaches as common headache disorders which are reported to prevail in about 50% of the North-American, Asian, European and Australian population.[2]

Tension-type headaches that prevail more, influence the quality of life and require frequent physicians' consultation. It affects more than 95% of the global population at least once in life, and 33% of the population faces chronic headaches at least once.[3, 4]

Chronic headache is characterized by pain in head area sustaining for more than 15 days in a month, and for a period of more than 3 months.[5, 6] It is also one of chief complaint reported by the patients visiting OPD and a major complain recorded by the patients visiting emergency departments.[7-9] Out of these patients, about 10% of the patients with recurring headaches have secondary causes.[10]

Secondary headaches are always associated with underlying diseases like extra cranial benign condition such as sinusitis or mastoiditis and intracranial pathologies such as subarachnoid hemorrhage or brain tumors. The relation of headache with normal CTHS results is not adequately researched. The rationale of this study is to determine the frequency of normal CTHS results in patients with a chief complaint of a

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headache as several cases, with complaint of head usually recommended for CTHS. But mostly are normal, which increase the cost of diagnosis and treatment and increase burden on radiologists due to referral system. So we conducted to determine the extent of normal CTHS in local population.

MATERIALS AND METHODS

This prospective cross-sectional study was performed at the department of radiology, PNS Shifa Hospital, Karachi, Pakistan from February to December 2018. A number of patients referred for CTHS to the radiology department in the aforementioned hospital were included in this study. Patients with a history of neurosurgery such as VP shunt, aneurysm clips installation or patients diagnosed to have a brain tumor and patients who were already admitted in the hospital; were excluded. Ethical approval was obtained by the Institutional review board of PNS Shifa hospital and informed verbal consent was taken by the participants prior to the induction in the study. The CTHS of all the patients were carried out on 160-slice Siemens CT scanners; where contiguous slices (10mm steps) were recorded starting from foramen magnum to the vertex and reconstructed in the bone window for evaluation.

Statistical analysis was carried out on SPSS version 20. Frequencies and percentages were calculated for qualitative variables while arithmetic means and standard deviations were calculated for quantitative variables. Bivariate analysis using fisher exact test. Level required for significance was considered to be at 0.05 or 5%.

RESULTS

Out of 401 patients, 63.8% were male and 36.2% were female. Mean age and age range of the patients included in the study was found to be 37.39±17.30 years. 28.7% (93) patients reported the persistence of headache for a duration of 1 month, 51.6% (168) reported the pain duration between 1 month to 1 year and 19.7% (62) reported the duration of pain to be greater than 1 year. This CTHS of this group was found to be normal. Among 401 patients included in the studied population, 323 patients (84% of males and 74.5% of the females) were found to have normal CTHS results and while 80.5% (i.e. 323 patients out of which 16% were males and 25.5% were females) were found to have normal CTHS results, while rest 19.5% had abnormal results. Detailed characteristics of the population are presented in Table-1.

19.5% patients with abnormal findings comprised 9.7% patients with cerebral atrophy, 4.0% with chronic infarct, 1.0% with basal ganglia calcification, 1.2%

with sinusitis, 0.2% with intracranial infection, 0.7% with neoplasm, 0.2% with hydrocephalus, and 2.2% had other complaints. The distribution of all and abnormal CTHS is summarized in Table-2 and Figure-1 respectively.

High significance was observed between age and CTHS results. Age stratified normal and positive CT findings are presented in Table-3.

Results found the association of gender with CTHS results analysis to be insignificant while the duration of the headache with CTHS results was found to be significant. The detailed results and figures are shown in Table-4.

Table No.1: Characteristics of the study population

	n(%)
Age(years)	37.39±17.30°
Duration Group	
<1 month (days)	115(28.7), 8.16±7.53°
1 month to 1 year (months)	207(51.6), 3.21±2.11°
>1 year(years)	79(19.7), 2.81±2.37°
Gender	
Male	256(63.8)
Female	145(36.2)
CT Findings	
Normal	323(80.5)
Abnormal	78(19.5)
°Mean±SD	

Table No.1 Distribution of CTHS findings

	N (%)
Normal	323 (80.5)
Cerebral Atrophy	39 (9.7)
Basal Ganglia Calcification	4 (1)
Sinusitis	5 (1.2)
Intracranial Infection	1 (0.2)
Chronic Infarct	16 (4)
Neoplasm	3 (0.7)
Hydrocephalus	1 (0.2)
Misc	9 (2.2)
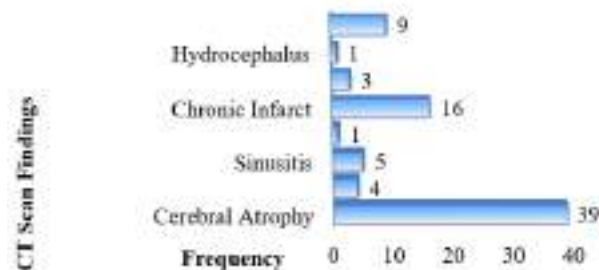
Figure No.1: Distribution of Abnormal CTHS finding

Table No.3: Distribution and association of CTHS results with age

n(%)

Age	No.	Normal	Cerebral Atrophy	Basal Ganglia Calcification	Sinusitis	Intracranial Infection	Chronic Infarct	Neoplasm	Hydro-cephalus	Misc	P-Value
0-9	19	17 (89.5)	0 (0)	0 (0)	0 (0)	1 (5.3)	0 (0)	0 (0)	1 (5.3)	0 (0)	
10-19	44	41 (93.2)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	3 (6.8)	
20-29	68	66 (97.1)	1 (1.5)	1 (1.5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	
30-39	96	86 (89.6)	1 (1)	2 (2.1)	3 (3.1)	0 (0)	1 (1)	0 (0)	0 (0)	3 (3.1)	0.000
40-49	76	64 (84.2)	3 (3.9)	1 (1.3)	1 (1.3)	0 (0)	4 (5.3)	1 (1.3)	0 (0)	2 (2.6)	
50-59	48	32 (66.7)	8 (16.7)	0 (0)	0 (0)	0 (0)	5 (10.4)	2 (4.2)	0 (0)	1 (2.1)	
60-69	31	13 (41.9)	13 (41.9)	0 (0)	0 (0)	0 (0)	5 (16.1)	0 (0)	0 (0)	0 (0)	
70-79	15	4 (26.7)	9 (60)	0 (0)	1 (6.7)	0 (0)	1 (6.7)	0 (0)	0 (0)	0 (0)	

Correlational significant was assessed by applying the Fisher Exact Test and P≤0.05, considered as insignificant.

Table No.4: Distribution and association of CTHS results with gender and duration of the headache

N (%)

	No.	Normal	Cerebral Atrophy	Basal Ganglia Calcification	Sinusitis	Intra-cranial Infection	Chronic Infarct	Neoplasm	Hydro-cephalus	Misc	P-Value
Gender											
Male	256	215 (84)	19 (7.4)	1 (0.4)	3 (1.2)	1 (0.4)	7 (2.7)	2 (0.8)	1 (0.4)	7 (2.7)	0.093**
Female	145	108 (74.5)	20 (13.8)	3 (2.1)	2 (1.4)	0 (0)	9 (6.2)	1 (0.7)	0 (0)	2 (1.4)	
Duration											
<1 Month	115	93 (80.9)	12 (10.4)	1 (0.9)	1 (0.9)	2 (1.7)	1 (0.9)	1 (0.9)	1 (0.9)	3 (2.6)	0.595**
1-12 month	207	168 (81.2)	18 (8.7)	1 (0.5)	3 (1.4)	0 (0)	9 (4.3)	2 (1)	0 (0)	6 (2.9)	
>12 month	79	62 (78.5)	9 (11.4)	2 (2.5)	1 (1.3)	0 (0)	5 (6.3)	0 (0)	0 (0)	0 (0)	

DISCUSSION

Headache is the common neurological symptom faced by more than 95% per cent of the population in their lives.[11] The present study highlights the fact that the CT scan was unable to find to the cause of headache for more than 80% of the patients. This study was conducted to determine the frequency that CTHS is successful in finding causes of headache and to assess the cost-effectiveness of the CTHS performed on the prescription of physicians for headache causes evaluation.

Epidemiological studies have been performed in various countries related to primary headache.[10] Stovner et al have reported the existence of regional linkage with the prevalence of primary headache.[1] Other studies have shown that tension-type headache (TTH) is more prevalent in Europe than in Asia and North America. Similarly, migraine prevalence in Asia is lower than in North America and Europe.

Among the helpful neurosurgical diagnosis, techniques are neoplasms imaging and computed tomography head scan (CTHS). The former is proved to be helpful in early diagnosis and prompt neuro-surgical treatment. The later helps in identification of life-threatening causes such vascular disorders, infections or substance abuse. Like any other method, both of these methods have their limitation. CTHS is not sensitive to the ophthalmoplegic migraine as it remains uninformative about it.[12] Another superior method of radio imaging is magnetic radio imaging (MRI) which gives more detailed results than computer tomography (CT) scans. CT scans are recommended more by the physicians because it is considered economical. However, CT scan is found not to be an ineffective technique as it reports the results of a patient with chronic headache as normal even for the cases marked as "red flag".[13-15]

A detailed clinical history and thorough physical and neurological examination help in deciding which patient with headache requires a CT or MRI scan of the brain to evaluate the underlying cause. Clinician often advises CT-scan or MRI of the brain in the absence of red flags in order to relieve the patients' anxiety. CTHS is easily available in most of the hospitals, therefore is fast and economic, but besides being ineffective in many cases, it poses a high risk of radioactive damage. MRI is more detailed and sensitive but is costly and has claustrophobic effects.[11]

Another researcher Mitchell conducted a significant study on patients who were referred for CTHS with or without physical and neurological symptoms. He discovered that the patients who were diagnosed with abnormal CTHS results actually were marked for neurological examination and most of them were marked for 'red flag'.[16] Another study by Dumas et al., resulted in the establishment of the fact that CTHS is inaccurate for headache cause assessment.[17] He observed that less than 1% CTHS results in help in the diagnosis of the cause of headache while up to 4.5% shows abnormality, no details are observed in rest of more than 95% cases where CTHS result appears to be normal.

Researches performed by Frishberg[18] and Thomas[19] support our study. Both of these studies showed that CTHS results are less likely to find the cause of headache when the headache is accompanied by routine symptoms. Simpson found that the results of CTHS are mostly found to be normal. He found that only 1.4% of the results found to be abnormal actually helps in the identification of the cause of headache while rest all represent the abnormalities that occur incidentally and are not actually linked with the headache diagnosis.[6] He summarised his study that there is less incidence of the detection of pathology in patients with chronic headaches. He also provided complete reassurance to the patient that there is no structural cause for their headaches without red flags and explained the cost-effective benefits to the patients while reducing the workload on radiology department.[6]

Another important study was conducted by Lateef et al to determine the importance of red flags in the acute care of young children with headache. His results showed normal neurological examination and non-worrying history in young children presenting with headache. He also found that CTHS seldom helps in diagnosis or contribution to the treatment of disease.[20, 21]

Perpic et al performed another research on children with chronic headache.[22] 71.3% of the child patients were found to have normal neuro-imaging while 28% of children had incidental findings like the asymmetry of ventricles, enlarged cisterna magna, enlarged adenoids, fluid in the mastoids, etc while only 0.7 per cent had a clear indication of the problem.[22] On contrary, 6.68% children showed positive findings when research by Gupta et al. A even higher percentage was reported by Simpson et al.[6] Our study in comparison shows 0.2% of positive CT findings among children. It is recommended to take extra care in performing CTHS of children to avoid excessive radiation exposure.

CONCLUSION

It is concluded in the study that CTHS results are normal for the majority of the patients with headache. Every patient is not a candidate of CTHS as it is not helpful in the diagnosis of the cause of headache especially when the headache is not accompanied by clear signs and symptoms of intracranial pathology. If a detailed clinical history and dedicated neurological examination performed prior to recommending for CTHS or MRI, the examination would become more cost-effective.

Recommendations: CTHS is found to have inaccuracy and limited cost-effectiveness for the diagnosis of headache cause however, it can be used to attain psychological benefits of false-negative results to the patients. It is required general practitioner and neuro-physician to sensibly evaluate the patients with detailed history, thorough neurological and focused physical examination. CTHS should be recommended by physicians only for patients with red flag signs. In the absence of this, the only function of CTHS appears to provide reassurance to the patients at the cost of unnecessary exposure to radiations and increased socioeconomic loss for the patient and increased workload for the radiology department.

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Oral Cancer: Correlation of Histopathological Grading and Location with Lipid Profile

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ABSTRACT

Objective: To compare the level of HDL, LDL, Triglycerides and Cholesterol in OSCC patients with that of healthy individuals and to find out the relationship between the level of HDL, LDL, Triglyceride and Cholesterol with location and histopathological grading of the tumor.

Study Design: Prospective Case-Control study

Place and Duration of Study: This study was conducted at the OPD of Jinnah Postgraduate Medical Center and Sindh Institute of Oral Health Sciences, from July, 2018 to December, 2019 for a period of one and a half year.

Materials and Methods: Sample size of 24 controls and 24 cases was calculated through open epi keeping in consideration Odds ratio of 7.1% from previous studies.

Results: LDL, HDL and Triglyceride levels increased while HDL decreased in Oral cancer patients in comparison to controls. We also compared the lipid profile levels with histopathological differentiation and location of the lesion finding out that the well differentiated tumor has lipid values within normal range except for LDL levels which becomes opposite in poorly differentiated squamous cell carcinoma.

Conclusion: Our findings are concurrent with previous studies that lipid profile varies with malignant transformation in oral cancer. Longitudinal studies are required to provide a definite conclusion on the matter.

Key Words: Mouth Neoplasms, Cholesterol, Cell Differentiation, Lipoproteins; LDL, Smokeless Tobacco

INTRODUCTION

According to WHO statistical report 2014 Head and Neck cancers are ranked the 7th for the incidence and 9th for causing deaths [1]. It has the highest incidence in Papua New Guinea, Bangladesh, Hungary, and Sri Lanka. Oral cancer due to the chronic use of Pan, Betel nut and Gutka is at its peak in the Sub-continent. Incidence in Pakistan is around 4.1%, which is very high [2]. Treatment outcome is dependent upon early detection and locoregional spread. Both factors directly affect the mortality and morbidity rate. As a result, there is a negative impact on the quality of life of these patients [3].

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Lipids are essential for the normal biological functions in the human body. It is part of cell growth and multiplication. In oral cancer, lipid peroxidation due to free radical formation occurs which affects the cell cycles [2-4]. Dividing cells require lipids for growth and expansion [2-4]. Hence, the current trend for finding out the link between lipid levels and their association with oral cancer (since cancer cells are also rapidly dividing and multiplying). Plus, lipid profile levels are commonly prescribed, cheap, and non-invasive tests, which could increase the chances of early detection improving the outcome of these patients. There are several studies on correlation of lipid profile with Oral squamous cell carcinoma incidence and prognosis. Still there is no data on correlation of histopathology grading and derangement of lipid profile according to age and gender. Also, obesity was recently added to the list of the risk factors for cancer [2].

Lipid profile in patients with oral squamous cell carcinoma and premalignant lesions was studied in 2014 by Rahul Mehta [3]. He observed decline in Triglycerides, LDL, HDL and VLDL in comparison to control groups. The same was shown in previous studies [4-13].

The relation is inverse between malignancy and plasma lipid levels. Still the stigma remains whether this effect is the cause or the effect of carcinogenesis [14]. There are still to date few studies on oral cancer and lipid profile as biomarkers. The aim of the study is to evaluate the

levels of serum plasma lipids in patients of oral cancer and to correlate it with the severity of the disease. This will not only provide a cheap but also a less invasive, early detection test for oral cancer.

MATERIALS AND METHODS

A prospective case-control study was conducted through data of patients coming to the dental OPD of Sindh Institute of Oral Health Sciences and Jinnah postgraduate medical center diagnosed with oral cancer from July 2018-Dec 2019. Data collection was through convenient sampling. The "Case group" included all the diagnosed oral cancer patients who have not started treatment. Diagnosis was based on a histopathological report confirming dysplasia or cancer. "Healthy controls" were selected matching age and sex of the patients in "Case group" keeping ratio of 1:1. For the collection of data, 2 proformas were used, one for the control group and the other for the cases group.

Data Collection Process: Samples were recruited from the dental outpatient departments after taking consent and agreeing on getting tested for Lipid profile. All samples were sent to the JPMC lab so that the results are under uniform conditions. They were required to give 5 ml blood after 8-10 hours of Fasting.

Inclusion Criteria: Patients aged between 20-65 years with no history of chemo or radiotherapy or medical history of hypertension, diabetes mellitus, triglyceridemia, liver, renal and coronary heart disease, obesity or with family history of hyperlipidemia and pregnancy were included.

Sample Size Calculation: The sample size of 24 healthy and 24 controls was calculated using the software Open Epi with Odds Ratio of 7.1 for chewing tobacco and risk of oral cancer from previous studies is taken keeping 95% confidence level and bound on error of 5% [13].

Lipid test details: All the patients who fulfilled the criteria and consented to be part of the study were asked to take Lipid profile test at JPMC laboratory to keep the results under uniform conditions. Five milliliters of fasting blood sample (8–10 h) was collected under aseptic conditions.

RESULTS

Statistical analysis through SPSS version 17 was done. Mean and standard deviation of variables based on histopathological differentiation was calculated in Table 1. It shows mean and standard deviation with standard deviation of error was calculated for both groups that are healthy controls and cases. On comparison of the data, cases have more standard deviation in their data set for LDL, Cholesterol, and triglyceride while in healthy controls only high variation is seen in HDL levels. Though, for both cases and healthy controls, the standard deviation and mean values for LDL, HDL, cholesterol, and triglyceride are

not far off but standard deviation is double in LDL level in "case group" in comparison to "healthy controls".

Table No.1: Comparison Lipid Profile between Patients & Normal Individuals

Lipid Profile.	Groups	
	Cases (Means ± SD)	Healthy (Means ± SD)
LDL	100.78 ± 62.381	97.57 ± 32.331
HDL	55.86 ± 21.859	27.22 ± 14.687
Cholesterol	174.22 ± 68.461	126.14 ± 66.867
Triglycerides	136.00 ± 46.704	95.00 ± 35.511

In Table 2 and 3 shows the correlation of lipid profile with location and histopathological grading of tumor. The results suggest that lipid profile does change in cancer patients relative to healthy individuals and they also are affected by the level of histopathological differentiation.

Table No.2: Variation of Lipid Levels according to Histopathological differentiation of lesion

Histopathological Differentiation	LDL	HDL	Cholesterol	Triglyceride
Poorly Differentiated	Normal	Decreased	Decreased	Decreased
Moderately Differentiated	Normal	Decreased	Normal	Increased
Well Differentiated	Increased	Normal	Normal	Normal

*Reference range (John Hopkins Hospital)[35]

LDL= < 100 mg/dL
HDL= ≥ 40 mg/dL
Cholesterol = < 200 mg/dL
Triglycerides = <150 mg/dL

Table No.3: Variation of Lipid Levels according to the Location of Lesion

Site	LDL	HDL	Cholesterol	Triglyceride
Buccal Mucosa	Increased	Normal	Normal	Normal
Tongue	Increased	Decreased	Normal	Increased
Alveolus	Normal	Decreased	Increased	Increased

*Reference range (John Hopkins Hospital) [35.]

LDL = < 100 mg/dL
HDL = ≥40 mg/dL
Cholesterol = < 200 mg/dL
Triglycerides = <150 mg/dL

DISCUSSION

Oral cancer is on the rise in Pakistan [14]. Second leading cause of death in 2020 was Cancer. According to the World Health Organization cancer caused 9.6 million deaths in 2018. Tobacco use was one of the most common risk factors contributing to 22% of the cancer deaths[15]. Early diagnosis improves the prognosis and quality of life of the patients suffering from cancer. Especially in third world countries where resources are less, finding a cheap, non-invasive, and *commonly* available test can expedite early diagnosis and overall living conditions. Recently, there is a rise in utilizing complete blood count and lipid profiles in diagnosing

cancers of other areas such as breast cancer, colon cancer, ovarian cancer and they are found to be effective in doing so [16]. These studies found an inverse relationship between lipid profile and malignancy [16.]

The etiology explained behind the decreasing level of lipid in serum is due to excessive degradation of the lipid compounds to divide and grow by both normal and cancerous cells [17]. Hypocholesteremia is taken as a risk factor for developing tumors. Maintaining the level of lipid profile to diagnose and treat several diseases has been suggested and explored by several researchers. In previous literature the results are varied but mostly quote that the HDL, LDL, Triglyceride, Cholesterol and VLDL decreases in cases of Oral cancer in comparison to healthy controls [4-13,18-29]. One study showed no change in lipid profile of Oral cancer patients in comparison to controls [30]. While few studies reported increase in lipid profile in cases of Oral cancer [31-34]. Our findings are consistent with increase in LDL, Triglyceride, cholesterol level in oral cancer patients though HDL was relatively low in comparison to Healthy controls (Table 1)[32-34].

We also correlated the histopathological differentiation with different lipids. We found that well differentiated showed an increase in LDL levels while the rest remained in normal range (Table 2) whole moderately differentiated showed decrease in HDL level and increase in Triglyceride levels while LDL and Cholesterol reading were within normal range. The poorly differentiated tumor showed a completely opposite picture of the well differentiated one. In previous studies failed to find any link between the two [11,16,27]. Further studies are required to explore these findings.

We also compared the lipid levels according to the site of the pathology in Table 3 and found that Alveolus and Buccal mucosa tumors had normal HDL levels. LDL levels increased in tongue and buccal mucosa while remaining within normal range in alveolus tumors. Cholesterol levels increased in Alveolus tumors while remaining in normal range in buccal and tongue cancers. Triglycerides were in normal range in buccal mucosa while increased in alveolus and tongue tumors. Prior studies did not show any pattern in lipid profile levels with change in the site of the tumor [11,16,27].

Longitudinal studies comparing the changes in lipid profile from early signs of change, premalignant lesion, or condition to development of malignancy should be designed if lipid profiles are to be utilized in future for early diagnosis and as part of supportive therapy during treatment phase. Sample size should be large enough to support or refute previous findings. Also, studies would also explore comparing data of patients on antihyperlipidemic medications developing OSCC with patients having no comorbid.

CONCLUSION

Our findings are concurrent with previous studies that lipid profile varies with malignant transformation in oral cancer. Longitudinal studies are required to provide a definite conclusion on the matter.

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Original Article

Comparison of Diathermy versus Scalpel Incision in Obstetrics Surgeries

Farah Javed, Wajiha Shadab, Umm-e-Salma, Sadaf Afzal, Saba Mehmood and Shamaila Sharif

ABSTRACT

Objective: Electro-surgery frequently mentioned as surgical diathermy is crucial to reduce blood loss during surgery. This study aimed to compare abdominal incision from skin till parietal peritoneum given by scalpel as compared to diathermy in terms of mean volume of blood loss and mean incision time.

Study Design: Quasi experimental trial study

Place and Duration of Study: This study was conducted at the department of Gynecology and Obstetrics of Railway General Hospital; Rawalpindi form May, 2017 to November, 2017 for a period of six months.

Materials and Methods: A total of 100 patients undergoing elective surgeries of obstetrics and gynecology were included in this study.

Results: Fifty patients each were randomly allocated to Groups A (Scalpel) and B (Diathermy). The mean age of patients was 39.82 ± 12.27 years in Scalpel group and 39.20 ± 12.59 years in Diathermy group. The mean time of incision in Scalpel and diathermy group were 150.04 ± 30.31 sec and 88.34 ± 33.54 sec respectively ($p < 0.001$). The mean blood loss was greater for the Scalpel group (18.70 ± 7.41 ml) as compared to the Diathermy group (5.70 ± 1.96 ml; $p < 0.001$).

Conclusion: It is concluded that diathermy is an effective, convenient and time saving method of tissue dissection during surgery, which also reduces volume of blood loss during surgery.

Key Words: Abdominal incision, partial peritoneum, hemostasis, scalpel, diathermy, blood loss, incision time

INTRODUCTION

Skin incisions are commonly used in obstetric procedures to allow the surgeon access to abdominal organs. These include midline, lower abdominal, transverse, vertical, paramedian, pfannensteil, maylard or cherney, joel-cohn and Pelosi incisons.[1] Any surgical incision should be of an adequate length to allow the surgeons to have a clear view of the surgical field facilitating hand movement and instrumentation.[2]

Scalpels have been widely used in obstetric surgery for giving surgical incisions. However, scalpels result in increased bleeding thereby blocking clear access to the procedures and hence, resulting in prolonged operating time.[3]

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More recently, surgical diathermy has gained popularity for surgical procedures of the abdomen.[4] In this procedure, an electrode is used for generating sinusoidal current allowing cleavage of the tissue without compromising the surrounding area. As a result, there is decreased scarring of the tissue and improved healing.[4, 5] The surrounding tissue is not damaged, as the heat vaporizes immediately without dissipating to other tissue.[6] As a result, surgical diathermy has the advantage of reduced bleeding, reduced operating time and rapid hemostasis.[7]

However, a few complications have been associated with surgical diathermy. These include patient burns, surgical smoke, explosion, fire, capacitative coupling, direct coupling and insulation failure. These complications are further aggravated during laparoscopic procedures, owing to reduced surgical access [8, 9] Moreover, diathermy incisions have greater scarring at the surgical site, in comparison to those produced by scalpel incisions. The difference is possibly due to a much cleaner incision given by a scalpel. Also, diathermy incisions have also been reported to cause slower wound healing and a greater infection risk, as compared to scalpel incisions.[10]

The use of conductive gel and skin cleaning may reduce burns secondary to the use of diathermy, as the use of the gel increases the contact of the skin with the return electrode.[11]

Electrosurgery has also been reported to be a risk factor for ventricular fibrillation in cardiac patients with pacemakers, resulting in pacemaker failure. Thus, the use of bipolar applications may reduce possible complications.[12] In addition, it is recommended that the electricity circuit should be maintained far away from prosthetic, conductive joints in patients with such joints.[13] Diathermy is currently not commonly used for Obstetrics and Gynecology surgeries in Pakistan owing to the fear of causing deep burns and scarring. No study in Pakistan has been reported to compare diathermy and scalpel incisions for Obstetrics and Gynecology surgeries. The present study aimed to compare abdominal incision from skin till parietal peritoneum with complete hemostasis by scalpel versus diathermy in terms of blood loss and incision time.

MATERIALS AND METHODS

This comparative study was performed in the department of Gynaecology and Obstetrics in the Railway General Hospital, Rawalpindi from May till November 2017. Ethical approval was taken from the Hospital ethical review committee. The WHO calculator was used for sample size estimation. With a 5% significance level, 90% power of test, population mean blood loss of 6.53 ± 3.8[14] ml $\pm$ and anticipated mean blood loss of 18.16 ± 7.36[14] ml, a sample of 50 in each group was estimated to be adequate.

Females with ages between 18 and 60 years having elective surgeries of gynecology and obstetrics patients were involved in the study. All patients with a history of previous surgeries anemia, bleeding disorders or undergoing emergency procedures were excluded.

An informed verbal permission was taken from all patients. Lottery method was used for randomly allocating patients to two groups: A and B. While scalpel incisions were given to patients in Group A, group B patients underwent diathermy. Blood loss during skin incisions was calculated by weighing the surgical swabs used mainly during hemostasis. One gram was taken as equal to one ml of blood (1g= 1ml). Use of suction evacuation for blood was avoided while making the incision. Blood loss was calculated as ml per cm². Total time from the beginning of skin incision with full hemostasis till achievement of the peritoneal incision was recorded. The length and width of incision at the end of procedure was measured in centimeters. Product of length and width of skin incisions was calculated to determine the incision area.

Data was inserted and analyzed using SPSS v17.0. Mean and standard deviation were described for quantitative variables, such as age, length, width of incision, blood loss and incision time. To compare any difference in the mean values of these quantitative variables, independent sample T test was applied. Effect modifiers such has age, BMI, length, width of incision type of surgery was controlled by post stratification independent sample t-test. A p-value of ≤ 0.05 was taken as significant. Frequencies and percentages were calculated for the type of surgeries.

RESULTS

A total of 100 patients participated in the study with 50 patients in each group. The mean age of the patients was 39.82 ± 12.27 years in Group A (Scalpel) and 39.20 ± 12.59 years in Group B (Diathermy). In Group A 21(42%) had Obstetric and 29(58%) had Gynecology related surgeries, while in Group B, there were 27(54%) Obstetric and 23(46%) Gynecology related surgeries. The mean length of incision was 8.57 ± 0.88 cm in Group A and 8.35 ± 0.85 cm in Group B. The mean width of incision in was 5.88 ± 0.58 cm in Group A and 5.99 ± 0.65 cm in Group B. The mean time of incision was found to be greater in Group A patients (150.04 ± 30.31 sec), as compared to Group B patients (88.34 ± 33.54 sec; $p < 0.05$) The mean blood loss was greater in Group A (18.70 ± 7.41 ml) as compared to that for Group B (5.70 ± 1.96 ml; $p < 0.05$).

Table No.1: Mean comparison of different variables in both groups (n = 100)

	Group A	Group B	Total	p-value
Age (Years)	39.82 ± 12.27	39.20 ± 12.59	39.51 ± 12.37	0.804
Length of incision (cm)	8.57 ± 0.88	8.35 ± 0.85	8.46 ± 0.86	0.209
Width of incision (cm)	5.88 ± 0.58	5.99 ± 0.65	5.94 ± 0.62	0.352
Time of incision (sec)	150.04 ± 30.21	88.34 ± 33.54	119.19 ± 44.38	<0.001
Blood loss (ml)	18.70 ± 7.41	5.70 ± 1.96	12.20 ± 8.47	<0.001

DISCUSSION

This study set out to compare the surgical success and post-operative complications between scalpel and diathermy skin incisions in gynecology and obstetrics surgeries. Success has been reported in the use electrosurgical systems for vessel-occlusion in abdominal, vaginal hysterectomies and other surgical procedures.[15]

The mean blood loss for the Scalpel Group A (18.70 ± 7.41 ml) was greater than that for Diathermy Group B (5.70 ± 1.96 ml; $p < 0.001$). Our study reported a greater mean incision time for the Scalpel Group A (150.04 ± 30.31 sec), as compared to Diathermy Group B (88.34 ± 33.54 sec). In a clinical trial, Prakash et al reported that there was no difference in the mean incision time of the electrocautery (9.40 ± 3.37 s/cm²) and the scalpel groups (9.07 ± 3.40 s/cm²; $p = 0.87$). Like our study, they found that the mean blood loss for the Scalpel group (23.40 ± 15.28 ml) was greater than that for the Electrocautery group (6.46 ± 3.94 ml; $P < 0.0001$). The wound infection rates between the

electrocautery group and the scalpel groups (14.63% and 12.19%; p = 0.347) was not statically significant. This implies that electrocautery could be considered as a safe and effective tool for skin incisions in laparotomy and abdominal surgeries instead of using scalpel for incision[16].

Another randomized controlled trial compared the volume of blood loss, wound incision time and post-operative complications during repeated cesarean section (CS) performed with scalpels and electro surgery in transverse abdominal incisions. The findings suggested a substantial difference between the two groups in terms of blood loss (median [interquartile range], 11 [8–15.25] g for the diathermy group and 20 [18–23] g for the scalpel group, p< 0.001) and skin-to-peritoneum incision time (median [interquartile range], 7 [5–7.25] min for the diathermy group and 10 [7–11] min for the scalpel group, P< 0.001).[1] Rongetti et al. conducted a randomized clinical trial comparing electrocautery and scalpel surgeries, in terms of surgical site infection (SSI) in subcutaneous tissues and skin. The study reported that while both groups were balanced for all variables, the surgical time, was meaningfully higher in the electrocautery group (203.5 min vs 161.1 min versus, p = 0.029). The SSI rates were 9.7% and 7.4% for the electrocautery and scalpel groups respectively (p = 0.756). The exploratory multivariate model revealed that body mass index 30 kg/m^2 (OR = 24.2, 95% CI: 2.8-212.1) and transverse surgical incision (OR = 8.1, 95% CI: 1.5-42.6) are independent risk factors for SSI[17]. A prospective study equated diathermy and steel scalpel in terms of incision-time, postoperative wound infection, early postoperative pain, and scar tissue. Postoperative pain (VAS) was markedly reduced during initial 48 hours in the diathermy group (P < 0.0001). Postoperative wound infection (P > 0.05) was almost same in both groups. Thus, diathermy showed significant advantages in terms of incision time, early postoperative pain, and analgesia requirement [18].

Another randomized controlled trial conducted by Damani et al. compared the incision time, blood loss, post-operative complications (wound infection) and post-operative pain in midline laparotomies incisions made by scalpel versus diathermy. A total 220 patients were involved in this study who were then randomly assigned to Group A (Scalpel incision) and Group B (Diathermy incision) using opaque labeled envelopes. The results showed significantly reduced incision time (p = 0.001), post-operative pain (p=0.001, 0.012 and 0.021 on day 1, 2 and 3 respectively), blood loss (p=0.014), and post-operative analgesics requirement (p=0.021) for the diathermy group. On the contrary no noteworthy statistical difference was recorded regarding postoperative complications (wound infection) and duration of hospital stay. Thus, diathermy use for incision in midline laparotomy is

significantly superior than scalpel because of less incision time, less blood loss, reduced analgesic requirements and less early postoperative pain.[19]

CONCLUSION

Surgical diathermy was found to have a lesser incision time and blood loss as compared to skin incision given by scalpels during obstetric surgical procedures. Thus, diathermy may be recommended as a safe and effective method for skin incisions during surgical procedures.

Author's Contribution:

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Original Article

Ocular and Pulmonary Manifestations in Addicts at AAS Center Daska

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ABSTRACT

Objective: To find out serious communicable or non-communicable ocular and pulmonary manifestations in addicts to reduce the morbidity or mortality in addicts.

Study Design: Cross-sectional study

Place and Duration of Study: This study was conducted at the AAS Center Daska, Sialkot for one month study from 21.10.2021 to 20.11.2021.

Materials and Methods: 60 samples were selected through non probability purposive sampling technique. History was taken. Ocular and general physical examination was performed. The collected data was analyzed by using SPSS version 25.

Results: The results of this study indicate that maximum percentage of age was from 30 to 60 years of age 80 %. Then age group within 20 to 30 years 15% and least was below 20 years with only 5 %. The illicit drug maximally used was heroin with 43.3%. Then was ice with 20 %.

Conclusion: Main ocular health problem seen was constricted pupils. HIV AIDS with pulmonary complications was leading pulmonary health hazard.

Key Words: AAS Rehabilitation center, Ophthalmoplegia, HIV AIDS, COPD.

INTRODUCTION

Addiction is an irresistible impulse motivating someone for non-prescribed and recreational usage of pharmacological ingredients regardless of causation of deleterious effects on body[1]. Two main components of addiction are strong urge and irresistability[2]. Over and over again non pharmacological utilization of illicit drugs leads to addiction. It is also affected by DNA sequences of that person along with external environment especially the behavior of other community members[3].

Many substances are used for this purpose including but not limited to opiates, cocaine, ice, ethyl alcohol and cannabinoids[4].

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All these illicit drugs lead to structural and functional changes in the body. To certain level these can be reversed[5]. Almost all body organs are affected by the non-prescribed and recreational use of drugs of addiction. Ocular effects of these drugs are very dangerous and causing morbidity. There may be ocular infection, corneal ulcers, retinopathies and optic nerve abnormalities[6]. Endogenous endophthalmitis is one of drastic complication of intravenous or intramuscular use of illicit drugs. It may also result in occlusion of circulation leading to ischemic injury to retina[7,8].

Most of the addicts take ethyl alcohol either along with other drugs or single. Double and blurred vision are the main symptoms seen in acute use. Use of alcohol over a long period may cause Ophthalmoplegia, toxic Amblyopia and loss of thickness of retina[9]. It may also cause dry eye[10]. Chronic use leads to double images in both eyes along with loss of alignment of eyes[11].

Ischemia and new blood vessels formation on retina has been a feature in addicts using opium derivatives. Abnormality of platelets has also been correlated with its use[12]. Chronic use of cocaine corneal, retinal and optic nerve abnormalities. It also causes nasal septum and epithelial defects[13]. It may lead to double vision and bulging of eyes[14]. Other than ocular effects pulmonary manifestations of addicts are also very deleterious. Intravenous injections of illicit drugs causes embolism and pneumothorax in both lungs[15]. It may lead to COPD, pulmonary tuberculosis and diseases of blood vessels of lungs[16]. Lungs swelling

can be seen on postmortem examination in all types of addicts.[17]

MATERIALS AND METHODS

Study Design: It was cross sectional study.

Study Center: AAS rehabilitation center Daska and Sialkot medical college Sialkot.

Study Samples: 60 male addicts admitted in the center.

Inclusion Criteria: Only male admitted in the AAS rehabilitation center, Daska.

Exclusion Criteria: Anyone having any ocular or pulmonary disease before he started to take drug of abuse was excluded from the study.

Data Collection: After taking the consent from authority all the admitted addicts were examined for any ocular and pulmonary problem. Before examination a thorough history was taken. Both eyes were examined thoroughly. Any problem of sclera, cornea, iris, choroid, vitreous and retina were noted. Examination was performed by naked eye, ophthalmoscope and retinoscope. Evaluation related to lungs was performed with history, clinical examination, laboratory investigation and radiological examination where needed.

Data Analysis: Data was analyzed by using SPSS version 25. Descriptive data related to total addicts, drug of abuse and ocular as well as pulmonary

manifestations was obtained. Their percentage was deducted. Tables were formed.

RESULTS

The results of this study indicate that maximum percentage of age was from 30 to 60 years of age 80 %. Then age group within 20 to 30 years 15% and least was below 20 years with only 5%.

Table No 1: Descriptive data of age

	Number	Percentage
Below 20 years	3	5
20-30	9	15
30-40	23	38.4
40-50	16	26.6
50-60	9	15
Total	60	100%

Table No.2: Routes of administration of illicit drugs

	IV/IM	Oral	Inhalation	Total / %
Heroin	20	02	04	26 / 43.3
Opium	-	04	01	5 / 8.3
Ice	-	05	7	12/ 20
Alcohol	-	4	-	4 / 6.7
Cannabinoids	-	01	03	4 / 6.7
Cocaine	-	05	04	9 / 15
Total	20	21	19	60 /100%

Table No 3: Ocular manifestations in addicts

Ocular Manifestation	Opiates	Ice	Alcohol	Cocaine	Cannabinoids
Ocular Fungal infection	1	-	-	-	-
Bacterial infection	1	-	-	-	-
conjuctival	-	-	-	-	-
corneal	-	3	-	3	-
Optic nerve	-	-	1	-	-
Diplopia	1	-	1	-	-
Constricted pupils	13	-	-	-	-
Macular Degeneration	-	-	1	-	-
Retinal venous occlusion	1	1	-	1	-
Talc Retinopathy	1	-	-	-	-
Transient visual loss	-	2	-	-	-
Impaired Oculomotor Function	-	-	-	-	1
Dry Eye	-	-	1	-	-
Dilated Pupils	-	3	-	1	-

Table No 4: Pulmonary manifestations in addicts

Pulmonary Manifestation	Opiates	Ice	Alcohol	Cocaine	Cannabinoids
Pulmonary Tuberculosis	2	-	-	3	-
HIV/AIDS	8	-	-	-	-
COPD	9	3	-	8	4
Pulmonary Talcosis	2	-	-	-	-
Lung Malignancy	-	-	-	-	-
Nasal Mucosal/septum	-	2	-	5	-
Pulmonary edema	2	-	-	-	-

DISCUSSION

The illicit drug maximally used was heroin with 43.3%. Then was ice with 20%. The ocular sign which was the most prevalent was constricted pupils seen in opiate addiction as seen in another study[18]. Corneal ulcers were seen to be present in cocaine and ice addiction[19].As seen in study alcohol consumption caused optic nerve damage in one addict [20].

Fungal endophthalmitis was caused in intravenous heroin abuser which was in accordance with another study [21]. Talc retinopathy was evident in heroin addict. Although only a single patient was seen yet with very serious consequences[7]. Keratitis was another ocular manifestation being seen in cocaine and ice abuse as seen in another study[18]. This was seen in drug sniffers. Macular thickness was reduced in one patient. Optic nerve atrophy was also seen. It was in accord to a study performed in China[22].

With respect to pulmonary manifestations the most drastic outcome of intravenous abuse of heroin was HIV AIDS. 8 patients were referred to HIV Center Islamabad. Many studies in the past have indicated this grave complication among heroin intravenous addiction[23]. Pulmonary tuberculosis was second most abundant pulmonary complication seen in cocaine and opiate addicts. As cocaine is sniffed and opiates sometimes inhaled[24]. The maximum cases were that of COPD especially in cocaine and opiate poisoning. This finding was in accordance with many previous studies [15,16,17]. Nasal septum inflammation along with erosion was evident in cocaine[18,19] and ice[24] sniffers.

CONCLUSION

Among drug abusers life threatening complications are seen. These complications are not only deleterious to addicts but also a grave public health hazard. Ocular and pulmonary manifestations seen also cause in morbidity ans hence financial burden on society.

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Original Article

Oral Health Issues During Pregnancy

Madiha Anum[1], Muhammad Sibghat Ullah Khan[2], Sajid Hanif[3], Muhammad Atif[3], Mohid Abrar Lone[3] and Imran Khan[4]

ABSTRACT

Objective: To find out what oral health issues women face during pregnancy.

Study Design: A cross-sectional observational study

Place and Duration of Study: This study was conducted at the Chiniot General Hospital Korangi Karachi's Dental OPD from November 2019 to July 2020.

Materials and Methods: This study was originally intended to involve 150 pregnant women, however owing to the COVID-19 crisis and the closing of dental OPDs, many pregnant women are unable to get dental check-ups and appointments. Thus, 90 individuals' data was gathered, encompassing all phases of pregnancy, and the outcomes of 90 people were analyzed. Each participant gave their informed consent prior to the start of data collection.

Results: Seven components were examined during the oral examination. The first was the oral hygiene status, which revealed that 24 women (26.7 percent) had good oral hygiene, whereas 66 women had terrible oral hygiene (73.3 percent). Second, 74 (82.2%) pregnant women had gingival bleeding on probing, which was followed by visible plaque in 77 (85.6%) women, caries activity in 83 (92.2%) women, and extra oral edoema in 14 (15.6%) women. Finally, 78 (86.7%) of the women showed gingival edoema, with 35 (38.9) having localized swelling.

Conclusion: The significance of dental care throughout pregnancy, as well as sociodemographic differences in clinical OH during pregnancy, are highlighted in this study, which provides important results for customizing treatments for pregnant women.

Key Words: pregnancy, oral hygiene, gingivitis, dental caries

INTRODUCTION

During pregnancy, a woman's body undergoes hormonal, biochemical, and physiological changes, resulting in several systemic changes. During pregnancy, the oral cavity is also impacted, just like the rest of the body, and is particularly prone to oral mucosal alterations, which can lead to a variety of dental disorders. This might result in orofacial discomfort.[1] Pregnant women's general and dental health were both impacted by physiological and hormonal changes. Increased oestrogen and progesterone levels promote blood vessel dilatation and permeability, weakening immune response and making

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the host more vulnerable to oral infections and inflammation[2,3]. When foetal growth reduces the stomach's volumetric capacity in the third trimester, pregnant women frequently increase the frequency and quantity of carbohydrate ingestion. Increased tooth plaque accumulation, acid generation, and dental decay are all linked to these changes[4,5]. During pregnancy, rising oestrogen and progesterone levels increase the permeability of oral vascular structures and lower immunocompetence, increasing the likelihood and severity of mouth inflammation[5,6]. Increased levels of progesterone and oestrogen can cause hyperemia, edoema, bleeding, and an increased risk of bacterial infections in the mouth[3]. Pregnant women are more prone to gingivitis, tooth mobility, dental caries, and erosion, and should undergo preventative oral health care as a result.[7,8]. Gingivitis and periodontitis, two types of periodontal disease, have been linked to pregnancy[9]. According to a study the oral cavity undergoes many changes during the gestational period, most commonly faced problems are gingivitis and periodontitis[10]. Around 5 % of pregnant females may also develop pregnancy oral tumours. The main factor for this vascular lesion is the increased level of progesterone in combination with bacteria and other irritants. The Vascular lesion must be removed if it bleeds or causes problems in mastication or if they don't resolve after delivery. [11]. Many studies found that periodontal disease may be a risk factor for preterm

births[12]. Dental Caries is the localized destruction of tooth substance. It is the most common oral condition in developed countries but its effects on pregnancy outcomes haven't been identified yet. Some studies reported that the bacteria causing dental caries may be responsible for pregnancy outcomes like preterm birth or low birth weight, while many studies found that there is no association between dental caries and adverse pregnancy outcomes. Pregnant women are more vulnerable to have dental caries and gingivitis as compared to non-pregnant women[12]. The dental health of a pregnant woman can have an impact on both her and her unborn child's health. The objective of this article is to provide information about the importance of women's health care providers in recognising, preventing, and managing oral health issues during pregnancy. There are strategies for integrating inter professional oral health competences into the teaching and practise of women's health care providers.

MATERIALS AND METHODS

An observational cross-sectional research. The research was approved by the SZABIST University Ethical Review Board, and a permission letter was received from Chinniot General Hospitl Korangi Karachi, with the goal of investigating oral health problems during pregnancy. The data for this study came from pregnant women who had tooth discomfort. All pregnant females aged 18 to 45 years old, at any stage of pregnancy, who visited the Dental OPD or emergency department for routine dental consultations were included. A sample size of 140 to 150 pregnant women was calculated. Non-probability Consecutive Sampling Approach was employed as the sampling technique. Consecutive sampling is a sampling technique in which every subject who meets the inclusion criteria is chosen until the required sample size is reached; the reason for choosing this sampling technique is due to the limited time period for data collection and the small number of pregnant females visiting dental clinics; therefore, keeping the time interval in mind, I chose consecutive sampling and included every pregnant female visiting dental clinic having dental discomfort and other dental issues. This study was originally intended to involve 150 pregnant women, however owing to the COVID - 19 crisis and the closing of dental OPDs, many pregnant women are unable to get dental check-ups and appointments. Thus, 90 individuals' data was gathered, encompassing all phases of pregnancy, and the outcomes of 90 people were analysed. Each participant gave their informed consent before the data collection began. The study's specifics were disclosed to them, and they were not forced to participate if they did not want to. Participants in the study were interviewed and answered questions regarding sociodemographic data such as age, educational status, marital status, and family income status. They were questioned about their current complaints, which necessitated a trip to the dentist. Patients were also inquired about their pregnancy status (gravida and trimester). Medical history about any medical conditions or any complication during pregnancy were asked like gestational diabetes, gestational hypertension or any other issue during pregnancy. The patient's teeth were evaluated by qualified clinical professionals at Chiniot General Hospital Karachi's Dental Care Unit. The oral hygiene status was then assessed, as well as the presence of visible plaque and calculus, gingival bleeding on probing, and the carries status, which included determining how many carious teeth were present and whether the same tooth pointed by the patient with dental pain was carious or not. Any trauma history, gingival edoema (localized, widespread), and extra oral swelling were also checked, as well as any previously treated, filled, removed, or RCT treated teeth. SPSS software version 21.0 was used to analyze the data. For numeric variables, the mean of the data was presented. For nominal and categorical data, frequency and percentage were provided. The Fisher exact test was used to determine the significance of the variables.

RESULTS

Table No.1: Intra oral Examination

Oral hygiene status	
Bad	66(73.3)
Good	24(26.7)
Plaque or calculus	
Absent	13(14.4)
Present	77(85.6)
Gingival bleeding on probing	
No	16(17.8)
Yes	74(82.2)
Carries activity	
Absent	7(7.8)
Present	83(92.2)
Gingival swelling	
Absent	12(13.3)
Present	78(86.7)
Gingival swelling (generalized or localized)	
Generalized	43(47.8)
Localized	35(38.9)
Extra oral swelling	
Absent	76(84.4)
Present	14(15.6)

During the oral examination seven components were examined. Firstly, the oral hygiene status which showed good hygiene in 24 women (26.7%) followed by bad oral hygiene in 66 women (73.3%). Secondly, gingival bleeding on probing was observed in 74(82.2%) pregnant women, followed by visible plaque in 77 (85.6 %) women, caries activity in 83 (92.2 %) women, extra oral swelling in 14(15.6%) women. lastly gingival

swelling was present in 78 (86.7%) women out of which 35(38.9) had localized swelling and 43(47.8) had generalized swelling as illustrated in table-1.

The most prevalent associated factor with the history of presenting complaint was dental caries, which was present in 53.4 percent of the patients, followed by gingivitis (27.8%), and 7.8 percent had both of the aforementioned correlations. In the study group, 77 (85.6%) of the women had no pregnancy-related problems, whereas 13 (14.4%) of the women developed gestational diabetes. Table 2 contains information on the most recent prenatal dental appointment.

Table No.2: Presenting complain during Pregnancy

Limited mouth opening	2(2.7)
Extra oral swelling	17(23.0)
Sensitivity	4(5.4)
Bleeding gums	32(43.2)
gingival pain	4(5.4)
Halitosis	3(4.1)
Swollen gums	12(16.2)
Restoration dislodgment	2(2.2)
RCT treated tooth	1(1.1)
Impacted tooth	4(4.4)
Gingivitis	25(27.8)
Fixed Prosthesis dislodgment	1(1.1)
Dental Trauma	2(2.2)
Dental Caries and gingivitis	7(7.8)
Dental Caries	48(53.4)
Pregnancy general health complication	
No	77(85.6)
Yes(Gestational Diabetes)	13(14.4)

DISCUSSION

Pregnant women often ignore basic dental treatment and oral hygiene maintenance as a consequence of various changes in their bodies, weakness, and different lifestyles, which can aggravate their oral problems and cause adverse pregnancy outcomes. Prenatal health care practitioners must have a thorough understanding of oral health care and recognize the significance of proper oral hygiene and oral health throughout pregnancy. In this study Dental caries was present in 53.4% of the participants and was the most common associating factor with the history of presenting complain followed by gingivitis (27.8%) and 7.8% presented having both dental caries and periodontal issues. Others reported with other problems like dislodged fixed prosthesis (1.1%),pain due to impacted third molars(4.4), pain due to restoration dislodgment (2.2%), abscess formation and pain in RCT treated tooth (1.1%),pain due to trauma and fractured tooth(2.2).

A previous study conducted in a Government hospital Karachi aimed to access the frequency of dental caries during pregnancy stated that prevalence or frequency of dental caries is high among pregnant women. They reported dental caries prevalence around 57% among pregnant females which was high among rural women than urban women [10]. It further explains that socioeconomic status, education status, rural urban lifestyles, gestational diabetes, gestational hypertension, lack of awareness are all responsible factors for caries initiation and progression during pregnancy [10]. Previous studies conducted in Brazil, Pakistan, Hungary also reported the prevalence and frequency of dental caries around 47%to 69% among pregnant women. A study conducted in Thailand by Adulyaman to access oral health related quality of life also obtained the similar results that low education level and limited access to the health care services are actually the main reason [13]. A previous study conducted in France reported that about 50 % of pregnant females had tooth decay. They also evaluated that tooth decay was associated with lower educational level and lower age and lack of proper prenatal care [14]. Because dental plaque is the main etiological element in caries and gingivitis, oral hygiene is an important role in their prevention [15]. Poor dental hygiene is the only significant risk factor of caries presence and severity, according to clinical trials [6, 16, 17]. If plaque is not removed on a regular basis, a carious lesion forms and protects the biofilm; caries will grow until the patient is able to clean this region. The study conducted in a Government setup in Karachi in Jan 2020 also sought out that diabetes and caries are associated with each other and gestational diabetes may be responsible for enamel development defects in teeth of the children born to diabetic females [10], but in this study association of dental caries with diabetes was not evaluated as patients who are known case of diabetes mellitus were excluded from the study. Although 13 (14.4%) women were reported with gestational diabetes, they were included but evaluating the association of dental caries or dental pain with gestational diabetes was beyond the scope of this study. In a previous cross sectional survey 28.68% study participants complained of swollen gums with redness,27.49% complained of bleeding gums,25.89% complained of just halitosis (bad breath) and 13.9% didn't complain about any signs of gingivitis [3]. Women during their gestational period are more vulnerable to tooth decay, due to recurrent vomiting that causes erosion of the dental enamel, teeth become more prone to dental caries and if the carious lesion left untreated it may result in its transmission towards the inner layers of tooth and pulp thus causing abscess formation or cellulitis a previous short study that was conducted in Pakistan around 47 % of women had at least one decayed tooth. A study conducted on low income Brazilian women showed the prevalence of 61 % decayed teeth. A previous study in Hungary reported 69 % of postpartum females required at least one or more restorations and need dental assistance [14].

CONCLUSION

The point of major concern is that a large group of pregnant women are not aware about pregnancy gingivitis and other oral health issues like dental caries, bleeding gums, dental pain during pregnancy, many are not aware about the preventive and treatment measures during pregnancy and there is lack of awareness about importance of necessary dental treatments during pregnancy among dentists and oral health care experts also.

Author's Contribution:

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Original Article

Knowledge of Tooth Wear in Patients of A Tertiary Care Hospital in Lahore

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ABSTRACT

Objective: To determine the status of knowledge of tooth wear in patients of a Tertiary Care Hospital in Lahore, so that need to suggest educational and informational programs about the prevention of tooth wear can be assessed.

Study Design: Descriptive, cross-sectional study

Place and Duration of Study: This study was conducted at the Dental OPD department of Prosthodontics, Punjab Dental Hospital, Lahore, from June 2019 to December 2019 for a period of six months.

Materials and Methods: A total of 402 patients presented to Dental OPD department of Prosthodontics, Punjab Dental Hospital, Lahore. Predesigned interviewer administered questionnaire was adopted and the levels of knowledge are categorized as high, moderate and low.

Results: In this study, 206 (51.24%) adults had low level of knowledge, 123 (30.60%) had moderate, while 73 (18.16%) adults had high level of knowledge with frequency of awareness of tooth wear was seen in 196 (48.76%) patients.

Conclusion: Frequency of moderate to high level of knowledge regarding occurrence of tooth wear in patients was low.

Key Words: knowledge, tooth wear, moderate

INTRODUCTION

Tooth wear (TW) is an irreversible, non-carious dental problem that leads to the loss of dental hard tissue.[1,2] Patient perception regarding tooth wear includes poor aesthetics, a shortened clinical crown, tooth sensitivity and physiological and psychological discomfort. Clinical presentation and etiology are usually subdivided into the previously mentioned terms of Attrition, Erosion, Abrasion and Abfraction. Diagnosis is often based on the clinical findings, which may suggest one causative factor.[3,4]

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However, it is well known that the cause of tooth wear is multifactorial, making clinical diagnosis difficult. Thus, it is suggested that these single terms, which can be useful when considering and describing the etiology, may only describe the outcome of a number of underlying events rather than the cause or process involved in the wear.[5,6]

Occasionally, patients may have inherited dental conditions that may increase the severity of tooth wear, such as Amelogenesis Imperfecta, Dentinogenesis Imperfecta and Dentine Dysplasia, to name a few. It is important to inform these patients of their increased risk of wear.[1,3,4] Most common causative factors are acid reflux, intake of acidic food items, bulimia nervosa, forceful brushing, use of electric toothbrushes, abrasive toothpastes, tensile and compressive stresses at cervical margin of tooth and bruxism etc.[7,8] Epidemiological studies have indicated that the prevalence of tooth wear is increasing in the ageing population and was calculated as 38.6% in Pakistani adults.[5]

Tooth wear is a slow progressing disease that can be prevented during its pathogenesis by avoiding its risk factors. Previous studies about knowledge assessment of tooth wear have been conducted in Malaysia and Norway.[9,10] In Pakistan, data about the patient's knowledge level of tooth wear, are scarce. The purpose of this study is to investigate the status of knowledge regarding tooth wear in patients presenting to a Tertiary Care Hospital Lahore, Pakistan. Punjab Dental Hospital is a large Tertiary Referral Center in Punjab providing

dental services to a large number of patients of the province. It will provide statistical data at provincial level and enable us to suggest educational and informational programs about the prevention of tooth wear.

MATERIALS AND METHODS

This study was conducted in department of Prosthodontics, de 'Montmorency College of Dentistry/ Punjab Dental Hospital, Lahore. Patients attending Out Patient Department in the age ranges 18-40 years were included in the study. Patients with severe psychiatric morbidities or developmental anomalies as per their compromised mental health, assessed through their medical history, were excluded from this study. Informed consent was taken from each participant of this study.

A predesigned interviewer administered questionnaire was adopted as standardized measuring tool for uniform series of data collection. This questionnaire contains 10 items for the knowledge about tooth wear. Each item is given the score 2. Variables include levels of knowledge of tooth wear i.e. High, Moderate and Low. Low level ranges from 0-12, Moderate level ranges from 14-16 and High-level ranges from 18-20.

Statistical Analysis: Statistical analysis was performed using Statistical Package for the Social Sciences (SPSS) version 23.Post-stratification Chi-square test was applied by taking p-value ≤0.05 as significant.

RESULTS

Age range in this study was from 18 to 40 years with mean age of 30.12 ± 4.50 years. Majority of the patients 213 (52.99%) were between 31 to 40 years of age as shown in Table I.

Table No.1: Age distribution of patients (n=402)

Age (in years)	No. of Patients	%age
18-30	189	47.01
31-40	213	52.99
Total	402	100.0

Mean ± SD = 30.12 ± 4.50 years

Out of the 402 patients, 181 (45.02%) were male and 221 (54.98%) were females with male to female ratio of 1:1.2. Distribution of patients according to education is shown in Table 2.

Table No.2: Distribution of patients according to education (n=402)

Education	Frequency	%age
Uneducated	193	48.01
Educated	209	51.99
Total	402	100.0

In my study, 206 (51.24%) adults had low level of knowledge, 123 (30.60%) had moderate, while 73 (18.16%) adults had high level of knowledge with

frequency of aware of tooth wear was seen in 196 (48.76%) patients as shown in Figure I.

Figure No.1: Frequency of aware of tooth wear (n=402)

When stratification of awareness of tooth wear was done on age groups, it was found that there was no significant difference between different age groups as shown in Table 3 while the stratification of awareness of tooth wear with respect to gender has shown in Table 4 which also showed no significant difference between male and female. Table 5 has shown the stratification of awareness of tooth wear with respect to education.

Table No.3: Stratification of awareness of tooth wear with respect to age

Age (years)	Awareness of tooth wear		p-value
	Yes	No	
18-30	89	100	0.529
31-40	107	106	

Table No.4: Stratification of awareness of tooth wear with respect to gender

Gender	Awareness of tooth wear		p-value
	Yes	No	
Male	80	101	0.098
Female	116	105	

Table No.5: Stratification of awareness of tooth wear with respect to education

Education	Awareness of tooth wear		p-value
	Yes	No	
Uneducated	128	81	0.0001
Educated	68	125	

DISCUSSION

Tooth wear is a multifactorial condition that leads to the irreversible, non-carious loss of hard dental tissues (dental enamel, dentine and cementum) and results in functional and aesthetic oral limitations.[11,12] The literature divides tooth wear into mechanical wear (attrition and abrasion) and chemical wear (erosion). Both in vitro and in vivo studies demonstrate that these mechanisms are rarely found individually.[13]

Dental information is available through many informational and educational channels through family and friends, from dental care professionals during dental appointments, school or from the Internet and apps. However, patients' preferences for different information channels are not well known. Knowledge regarding tooth wear is essential for oral health and is

compulsory to modify health related practice. A deficient knowledge might influence the quality of life of individuals which ultimately affect the morbidity and mortality of a tooth.[14] In addition attitude and practice towards tooth wear are correlated to inflict awareness to prevent tooth wear mechanisms from becoming pathological and thus reducing its prevalence. Therefore, knowledge and awareness of the community is important to overcome the occurrence of this lesion.[14,15]

This study is conducted to determine the frequency of levels of knowledge regarding occurrence of tooth wear in patients. Age range in this study was from 18 to 40 years with mean age of 30.12 ± 4.50 years. Majority of the patients 213 (52.99%) were between 31 to 40 years of age. Out of the 402 patients, 181 (45.02%) were male and 221 (54.98%) were females with male to female ratio of 1:1.2.In my study, 206 (51.24%) adults had low level of knowledge, 123 (30.60%) had moderate, while 73 (18.16%) adults had high level of knowledge with frequency of aware of tooth wear was seen in 196 (48.76%) patients. In young European adults, the prevalence of tooth wear was high i.e. 54.4%.[5] When awareness of tooth wear is assessed among general population in previous studies, 64.5% subjects had low mean score knowledge and only 35.5% subjects were aware of tooth wear in Kota Bharu Kelantan.[16] In Bertam, Penang, 58.2% adults had low level of knowledge, 38.4% had moderate, while 3.4% adults had high level of knowledge.[10] In Oslo Norway, among 18-year old adults, 56% were aware of tooth wear and only 47% were unaware of this condition.[11]

Research from Norway showed a greater awareness of erosive tooth wear: 88%-94% had heard about erosive tooth wear.[14]There were little knowledge about erosive tooth wear: current guidelines about having no more than seven food/drink consumptions daily (except for drinking water, coffee and tea without milk or sugar) were known to 9% only.[17]

The scientific literature elaborates that studies have their main focus on the causative factors, prevalence, and treatment options for dental erosive lesions. However, a survey among general dental practitioners from 2003 showed that there is a small proportion of dentists who advised their patients about the erosive wear. Recent studies showed that an insufficient information about dental erosive wear was given by dental practitioners to adolescents/adults in possible risk groups.[18] Furthermore; another recent study determined the knowledge and awareness about dental erosion among dental students, faculty members and patients in a Brazilian dental school were poor.[19,20].

CONCLUSION

This study concluded that frequency of moderate to high level of knowledge regarding occurrence of tooth wear in patients is low. So, we recommend that public awareness programs should be arranged to educate the population regarding the prevention of tooth wear.

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Original Article

Clinical Patterns of Post Cholecystectomy Syndrome Reporting at a Tertiary Care Hospital of Sindh

Faiza Syed

ABSTRACT

Objective: Determining the presenting clinical symptoms and etiology in post cholecystectomy syndrome (PCS) reporting at a tertiary care hospital of Sindh.

Study Design: Cross sectional study

Place and Duration of Study: This study was conducted at the Department of Surgery, Suleman Roshan Medical College Hospital, Sindh from January 2020 to October 2021.

Materials and Methods: A sample of 135 was calculated by 'sampling for proportions'. Patients were included according to inclusion criteria with history of cholecystectomy. A pre – structured questionnaire was designed. Sonography and computed tomography (CT) scans were performed. Blood was processed and centrifuged to get sera for laboratory testing. Data was entered in SPSS v19.0 for statistical analysis 95% CI (P≤ 0.05).

Results: Most frequent clinical sign was right upper quadrant (RUQ) tenderness in 129 (95.5%), followed by epigastric pain in 97 (71.7%), fever in 73 (54.0%), Jaundice in 19 (14.0%) and abdominal pain in 23 (17.0%). Bile leakage was noted in 27 (20.0%), peritoneal fluid in 19 (14.0%), dilated CBD in 39 (28.7%), recurrent CBD stone in 12 (8.8%), retained CBD stone in 19 (14.1%), Oddi sphincter dysfunctioning in 37 (27.4%) and cystic duct stump (remnant) in 41 (30.3%).

Conclusion: The present study concludes the clinical patterns of post – cholecystectomy syndrome vary amongst patients, are of different etiologies that need specific diagnostic and therapeutic strategies by a multidisciplinary team.

Key Words: Postcholecystectomy syndrome, Choledocholithiasis, Bile leak, CT scan, Sonography

INTRODUCTION

Gallstone (cholelithiasis) is a common disorder in adult age particularly in the female of fertile age and cholecystectomy is the standard treatment for symptomatic gallstones. Most of patients become symptom free, but still a small number experiences symptoms like biliary colic similar to prior to surgery. Whole set of symptom complex is termed the Postcholecytectomy syndrome (PCS).[1] Post cholecystectomy syndrome was first coined by the Womack and Crider[2] (1947) as 'the presence of biliary symptoms after surgery as before'. Occurrence of biliary and upper gut symptoms begins from day 2nd to 25 years after surgery.[3]

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Incidence of 43% in female and 28% in male has been reported.[3,4] PCS mentions the presence of upper gut symptom after cholecystectomy as before. Symptoms are complained in 5 – 40% of patients after cholecystectomy. Biliary and upper gut symptoms may be transient and or persistent lifelong. Lifelong persistent symptoms occur in approximately 10% cases. Postcholecytectomy syndrome (PCS) occurs because of a number of etiologies, such as secondary to biliary duct injury, biliary stricture, retained biliary duct stone, cystic duct and bile duct remnant, gall bladder remnant, and secondary to dysfunction of the sphincter of Oddi.[1,5] PCS is commonly presenting within the first three years of surgical procedure. PCS associated pain ascribed to either post – surgical strictures and adhesions or sphincter of Oddi dysfunction. Biliary microlithiasis has also been reported as cause of PCS. Biliary etiology accounts for 50% cases of PCS such as dysmotility, biliary injury, bile duct stone, and choledochocyst. Remaining 50% are ascribed to non – biliary etiology such as functional gut disorders, peptic disorder, gastritis, Oddi sphincter dysfunction, and functional dyspepsia. Postcholecytectomy syndrome (PCS) manifest clinically as epigastria pain, dyspepsia, nausea, emesis, flatulence, indigestion, and anorexia.[1,5] Pain excites with meal intake. Many PCS patients are suffering from diarrhea beside dyspepsia and pain in

upper abdomen. Chronic diarrhea of PCS is a type of bile acid diarrhea that is treated with bile acid sequestrate therapy.[1] Differential diagnosis of PCS are an overlooked reflux esophagitis, gastritis, acid peptic disorder, pancreatic disorders, irritable bowel syndrome, etc.[3,4] Biliary tract related pathologies include the; retained biliary stone, duct strictures, biliary leaks, bile duct remnant, gall bladder remnant, cystic duct stump remnant, chronic biloma, papillary stenosis, and dysfunctioning sphincter of Oddi.[6] Extra biliary etiology of PCS include the gastritis, esophagitis, gastric and duodenal ulcers, gut ischemia, chronic pancreatitis, pancreas divisum, enteritis, diverticulosis, psychiatric disorders, ischemic heart disease, neuroma, intercostal neuritis, and worm infestations.[7] Imaging of upper abdomen may explore a number of etiologies and include the; computed tomography scans, sonography, endoscopy such as ERCP, MRCP, etc.[8,9] The imaging techniques have decreased the open surgery explorations.[10] Post cholecystectomy syndrome (PCS), an ailing symptom complex, is frequently encountered after surgery but reporting is meager. The present study was planned to determine the clinical pattern/presentation and etiology of post cholecystectomy syndrome in patients reporting at a tertiary care hospital of Sindh.

MATERIALS AND METHODS

A cross sectional study was planned at the Outpatients Department of Surgery, Suleman Roshan Medical College Hospital, Sindh from January 2020 to October 2021. Patients underwent cholecystectomy in past days and presenting with clinical symptoms was included irrespective of gender and age. Volunteers who gave written consent qualified for inclusion in study protocol. A sample of 135 was aggregated based on calculation by 'sampling for proportions'. Sample size of 135 post cholecystectomy syndrome (PCS) was calculated by 5% type – 1 e, and 90% power of test as cited previously.[10] Post cholecystectomy syndrome (PCS) was defined as cited.[1,2] Patients with history of cholecystectomy presenting with upper gut symptoms, pain in epigastrium, nausea, emesis, dyspepsia, indigestion and diarrhea collected from the outpatient department of surgery and medicine. A detailed clinical history was inquired from the volunteer PCS patients. Medical officers were deployed to take a full history. Duration of cholecystectomy, improvement of symptoms after surgery, recurrence of symptoms duration, and nature of symptoms, digestive problems, and diarrhea were noted and entered in a proforma. A pre – structured questionnaire was designed including Biodata and details of symptoms related to PCS. Patients were handled according to the guidelines of 'Helsinki`s declaration' for conducting human research strictly abiding by the ethical measures. Ethical issues were handled by the principal researcher.

Confidentiality of Biodata was secured in lockers by the principal investigator. Post cholecystectomy syndrome (PCS) with past history of open or laparoscopic cholecystectomy, complaining of symptoms as before surgery were inquired of details of surgery, symptoms – nature, occurrence and duration. Patients were examined by the consultant surgeon and findings are keenly noted in the proforma. Imaging investigations – sonography and computed tomography (CT) scans were ordered to be performed wherever necessary and findings were noted in clinical proforma. Upper gut endoscopy was performed for peculiar type of PCS where suspicion was for the upper gut disorders. Chronic cases were evaluated over time period and underwent elective surgery wherever essentially required. PCS patients with acute surgical problems such as biliary leaks or sever colic were treated in emergency suits. Written informed consent was taken wherever applicable. In case of any surgical procedure, the legal heirs were informed in detail and in writing about the harm and benefits of intervention. A senior staff nurse was asked to collect the blood samples. Blood was processed and centrifuged to get sera for laboratory testing. A completely filled proforma was typed on a Microsoft Excel Sheet. Data was entered in SPSS v19.0 for statistical analysis. Data variables – continuous and categorical were analyzed by Student`s t – test and Chi- square testing. Graphs were generated in Microsoft Excel sheet. Level of statistical significance was taken at 95% CI (P≤ 0.05).

RESULTS

Mean (± SD) age of participants was 51.3±9.13 years. 25 (18.5%) were male and 110 (81.4%) were female of 135 Postcholecytectomy cases. Female to male ratio was 4.4:1. Demographic data of participants is shown in table – 1. Most frequent clinical sign was right upper quadrant (RUQ) tenderness in 129 (95.5%), followed by epigastric pain in 97 (71.7%), fever in 73 (54.0%), Jaundice in 19 (14.0%) and abdominal pain in 23 (17.0%) as shown in graph – 1. Table – 2 shows the clinical laboratory findings of participants.

Table No.1: Demographic data of participants (n=135)

	Mean	SD
Age (years)	51.3	9.13
Pulse (bpm)	71.3	5.11
Systolic BP (mmHg)	119.9	5.76
Diastolic BP (mmHg)	78.7	6.12

H. pylori were positive in 91.1%, and elevated WBC counts in 79.1% cases. Liver function test profile was found deranged in majority of cases (table – 2). Serum amylase was found elevated in 28.7% of cases. Graph – 2 shows the Sonography findings in cases.

Table No.2: Clinical laboratory findings of participants (n=135)

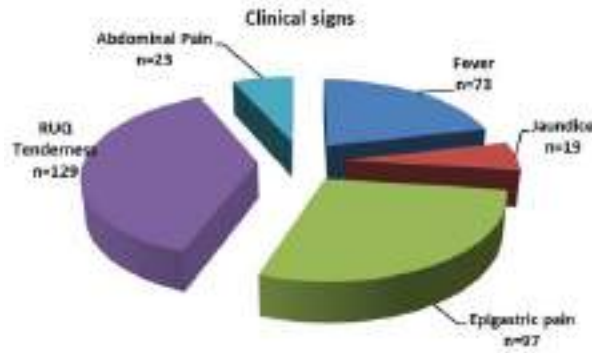|	No.	%
ALT	63	46.6
AST	51	37.7
ALP	107	79.2
LDH	59	43.7
Serum Bilirubin	71	52.5
PT (seconds)	36	26.5
Serum Amylase	39	28.7
WBC (µL)	107	79.1
H. Pylori positive	123	91.1

Figure No.1: Frequency of Clinical signs
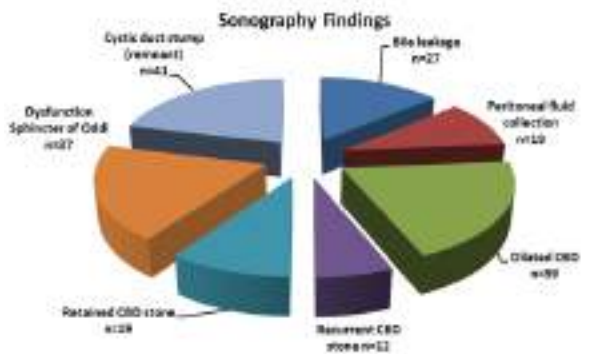
Figure No.2: Frequency of Sonography findings in cases
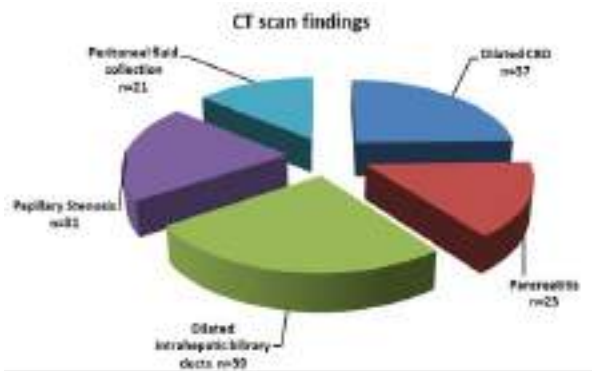
Figure No.3: Frequency of CT scan findings in cases

Bile leakage was noted in 27 (20.0%), peritoneal fluid in 19 (14.0%), dilated CBD in 39 (28.7%), recurrent CBD stone in 12 (8.8%), retained CBD stone in 19 (14.1%), Oddi sphincter dysfunctioning in 37 (27.4%) and cystic duct stump (remnant) in 41 (30.3%). CT

scanning findings are depicted in graph – 3. It shows dilated CBD in 37 (27.3%), pancreatitis in 23 (17.0%), dilated intrahepatic biliary ductile in 39 (28.7%), papillary stenosis in 31 (22.9%) and peritoneal fluid collection in 21 (15.5%).

DISCUSSION

The present prospective cross sectional study determined the clinical patterns, sonography and computed tomography scan findings of PCS reporting at the tertiary care hospital. Mean (± SD) age of participants was 51.3±9.13 years, that agrees to previous studies.[11,12] Reported average age of gallstone is 4 – 5th, a match finding. Of 135 PCS cases, 25 (18.5%) were male and 110 (81.4%) were female with a male to female ratio was 4.4:1. The findings of present study are also concordant to previous studies.[13,14] We found most common presenting symptoms were the epigastric pain, digestive problems and upper gut symptoms. In present study, the frequent clinical signs were right upper quadrant (RUQ) tenderness in 129 (95.5%), followed by epigastric pain in 97 (71.7%), fever in 73 (54.0%), jaundice in 19 (14.0%) and abdominal pain in 23 (17.0%). The findings are agreeing with previous studies.[13-15] In present study H. pylori was detected positive in 91.1%, elevated WBC counts in 79.1% and deranged liver function test most of PCS cases. We found serum amylase was found elevated in 28.7% of cases. Findings are supported by previous studies.[14-16] They have reported similar presenting clinical findings. We are opinion any patient with history of cholecystectomy should be screened thoroughly to detect the underlying cause of clinical symptoms. In present stud, the fever and jaundice were found in 73 (54.0%) and 19 (14.0%) cases respectively. Sonography detected the findings of; bile leakage in 27 (20.0%), peritoneal fluid in 19 (14.0%), dilated CBD in 39 (28.7%), recurrent CBD stone in 12 (8.8%), retained CBD stone in 19 (14.1%), Oddi sphincter dysfunctioning in 37 (27.4%) and cystic duct stump (remnant) in 41 (30.3%). Findings are consistent to previous studies.[16,17] Present study finds recurrent CBD stone in 12 (8.8%) and retained CBD stone in 19 (14.1%), these are supported by previous studies.[17-19] We found cystic duct remnants in 48 (17.6%) patients that are less compared to a previous study[16] that reported in 41 (30.3%). Cystic duct remnant is commonest etiology of PCS that is consistent to previous studies.[16-18] A previous study[19] reported 17 – 25 % of PCS cases revealed an occluding stone in the cystic duct stump. The present study noted dilated CBD in 37 (27.3%), pancreatitis in 23 (17.0%), dilated intrahepatic biliary ductile in 39 (28.7%), papillary stenosis in 31 (22.9%) and peritoneal fluid collection in 21 (15.5%), the findings are consistent with previous studies.[12,20,21] The present study notes bile leakage 27 (20.0%) of PCS cases. The findings are supported by

past studies.[20-22] Biliary leakage occurs by ductile injury, sectioning of biliary ductile, and slipping of clips, ligatures and also caused by electro cautery thermal injuries. Bile ductile injury manifest clinically as leakage causing peritonitis. Past studies[16-19] reported biliary leakage in 19 (7%) of PCS cases that is incomparable to present study. We found peritoneal fluid collection in approximately 29 (10.7%) in present study that is in accordance to previous studies.[21,22] In present study, the cystic duct stump (remnant) was found in 41 (30.3%) PCS cases that is inconsistent to a previous study[16] as they found in 48 (17.6%) cases. We found Oddi sphincter dysfunctioning in 37 (27.4%) PCS cases that is also in disagreement with previous studies.[22-24] Past studies reported Oddi sphincter dysfunctioning in 9-11% PCS cases.[24,25] Dysfunctioning Oddi Sphincter occurs due to the abnormal local gut hormones[25] due to the imbalance in nerve and hormone stimuli after cholecystectomy.[26] In present study, the H. pylori were positive in 91.1% of PCS cases that is comparable to previous studies.[27,28] However, a previous study[16] reported 15.8% H. pylori that is contrary to present finding. The reason is clear, in our country, the H. pylori positivity rate exceeds 90%.[27,28] We conclude, the clinical patterns of post cholecystectomy syndrome are quite heterogeneous and this group of patients needs evaluation by multi-disciplinary approach.

CONCLUSION

The present study concludes the clinical patterns of post cholecystectomy syndrome vary amongst patients, arise from different etiologies that need specific diagnostic and therapeutic strategies by a multidisciplinary team. Majority of clinical symptoms are caused by coexistent upper gut disorders of biliary and non- biliary etiologies, hence multidisciplinary collaboration is crucial. It is stressed cholecystectomy patients should be investigated thoroughly by imaging techniques for a proper etiology. Future large scale prospective studies should be conducted at country level on this health problem for embodying national guidelines on post cholecystectomy syndrome.

Author's Contribution:

Concept & Design of Study:	Faiza Syed
Drafting:	Faiza Syed
Data Analysis:	Faiza Syed
Revisiting Critically:	Faiza Syed
Final Approval of version:	Faiza Syed

Conflict of Interest: The study has no conflict of interest to declare by any author.

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Morphology of Hepatocytes in Methotrexate Induced Hepatotoxicity and Evaluate the Preventive Role of Antioxidant Agents in Rats: A Comparative Study

Syed Muhammad Masood Ali[1], Sara Sughra[2], Muhammad Iqbal Ahsan[3], Sonia Khan[1], Fareeda Islam[3] and Qurat-ul-Ain Khan[4]

ABSTRACT

Objective: Compare the oxidative role of β-carotene (BC) and Resveratrol (RSV) in Methotrexate (MTX) induced liver toxicity based on histopathology.

Study Design: A comparative study

Place and Duration of Study: This study was conducted at the Pharmacology, Al-Tibri Medical College, Isra University Karachi Campus from January 2021 for a period of October 2021.

Materials and Methods: 48 healthy Wistar albino rats were included in the study and divided into 6 groups each consisting of 8 subjects, Group I(Control group) was given Normal Saline, Group II was given BC, Group III was given RSV, Group IV MTX, Group V BC+MTX, Group VI RSV+MTX for a period of 24 days. On the 25th day, subjects were euthanized and the liver organ was extracted and sectioned to be studied under a light microscope with H&E staining being performed. For glycogen study, staining was carried out using PAS and for collagen fibers it was carried out using Trichome staining.

Results: Normal Morphology, glycogen content, and deposition around the central vein was shown in Group I, II, and III. In Group IV central architecture was lost, congestion was seen around central vein, glycogen content was depleted, and deposition in collagen was present. In the both intervention Group V and VI, hepatic lobular architecture and hepatocytes were normal, uneven distribution of glycogen along with restoration was present, and no collagen was present.

Conclusion: Beta-carotene and Resveratrol showed hepatoprotective effects in methotrexate induced hepatotoxicity in rats.

Key Words: Methotrexate, Beta-carotene, Resveratrol, Hepatotoxicity

INTRODUCTION

The liver is the second largest organ of the human body, and is considered to be one the most remarkable

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organ that protects the human from various insults from xenobiotic compounds. Unfortunately, as it protects the body and performs other myriad of functions, it is still susceptible to injuries caused by other chemical compounds[1]. Loss of liver activity is deemed to be detrimental not just to it, but to other multiple organs as well because of the release of many detrimental toxic factors that causes injury to the liver[2]. In medicine there are many drugs that through scientific data have shown to cause hepatotoxicity. These includes Anti-epileptic, Anti-tuberculosis drugs, and NSAIDs to name a few [3-5]. One of these drugs is Methotrexate, a key drug in the treatment of rheumatoid arthritis and other rheumatic diseases. The folate antagonism is known to be a contributing factor to the effects that are required to treat against malignant diseases in methotrexate[6]. Although methotrexate is a widely used drug in clinical medicine, the most common side effect associated with its use is also hepatic injury. Use of repeatedly high doses of methotrexate or chronic use of methotrexate is associated with damaged to the liver [7]. Beta-carotene is a lipid soluble carotenoid, which is a naturally

occurring antioxidant that can boost up the antioxidant defense of the body by inhibiting the single oxygen and fighting off oxygen radicals [8]. Presence of beta-carotene in nanoparticles substantially improves its biological activity in aqueous media[9]. Similarly, another antioxidant compounds Resveratrol, a bioactive compound found in plants such as plums, grapes, and peanuts, is also said to have anti-inflammatory and antioxidant effects [10-11]. If antioxidant effects can be initiated by these elements, then the possibility of reducing the hepatotoxic effects caused by methotrexate can also be reduced. With that in mind a study was conducted to compare the oxidative role of Bea-carotene and Resveratrol in methotrexate induced liver toxicity on the basis of histopathology.

MATERIALS AND METHODS

We conducted an experimental study on 48 healthy Wistar albino rats after ethical approval was granted from the institutional review board of the university. The length of the study spanned from January 2021 for a period of October 2021. The subjects were acquired by the animal house of the college with each albino rats weighting 210-310 grams that were measured using a weight balance. The animals that were acquired were also kept in a well-ventilated room with adequate light and ambient temperature (23-25◦C) inside clean cages. Food and water were supplied ad libitum. From a local pharmacy shop near the institute, we purchased Methotrexate, Beta-Carotene, and Resveratrol. The subjects were then divided into 6 different each having 8 subjects with the following interventions taking place in each group.

- Group I (control) rats received equivalent volumes of saline `
- Group II (β-carotene) rats received β-carotene (10mg/kg/ day intraperitoneal) for 24 days.
- Group III (Resveratrol) rats received resveratrol (10mg/kg/ day intraperitoneal) for 24 days.
- Group IV (MTX) rats were given MTX as a single intraperitoneally dose (in saline, 20mg/kg) on day 21 of the experiment.

- Group V (β-carotene + MTX) rats were given β-carotene by intraperitoneal injection in vehicle (saline) 10 mg/kg/day for 24 days and then further administered MTX at a dose level of 20 mg/kg on day 21 of the experiment.

On the 25th day of the studies all the rats were euthanized under anesthesia after being weighted. Midline longitudinal incision was given to expose the organs and the liver was extracted from the subjects. Histopathological study was carried out at the institution. The liver was thoroughly washed with normal saline and then cut into small sections, fixed into 10% formalin for PAS for 36 hours. H&E staining for histological studies were carried out on the liver samples. For glycogen content, the tissue sections were stained using Periodic acid Schiff (PAS) and for collagen fibres, sections were stained using Masson's trichome stain.

RESULTS

Microscopic Observation in Group I: The morphological examination of H& E stained section of liver of Control group revealed normal architecture of parenchyma with plates of hepatocytes (Figure 1, 2 & 3)**.**

PAS stained section showed glycogen was evenly distributed throughout the lobule (Figure 2). Massons' Trichrome stained section of liver showed deposition of collagen around central vein grade I (Figure 3).

Group II

Deposition of Glycogen: PAS stained section showed that the glycogen was evenly distributed (Figure 5). Massons' Trichrome stained section revealed deposition of collagen fibers around portal triad grade I (Figure 6).

Microscopic Observation in Group III: The morphological examination of H &E stained section of liver in group III showed normal architecture of liver parenchyma (Figure 7). PAS stained section showed even distribution of glycogen (Figure 8). Massons' Trichrome stained section revealed deposition of collagen around central vein grade I (Figure 9).
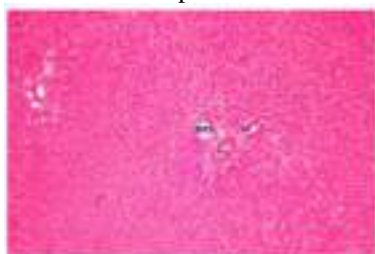
Figure 1: H&E Stained section 5 µm thick section of control (Saline) Group I of liver showing sinusoids (HS), bile duct (BD), Portal vein(PV) and hepatic artery (HA).(Photomicrograph X 100)
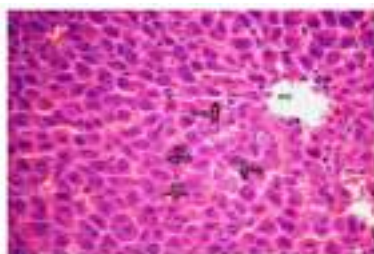
Figure 2: PAS stained section 5 µm thick section of liver of Control Group I showing central vein (CV), hepatocytes(HC), Sinusoids(HS) and kupffer cells (KC). PHOTOMICROGRAPH X 400.

Figure 3: Massons Trichrome stained 5 µm thick section of liver of Control Group I showing Collagen Fibers around central vein (white arrow) Photomicroghraph X 100.
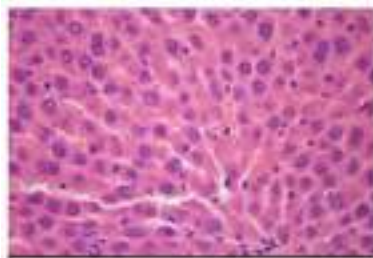
Figure 4: H & E stained 5 µm thick section of ß-CAROTENE treated group II liver showing normal architecture Photomicroghraph X 400.
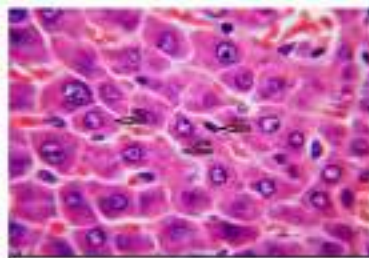
Figure 5:PAS stained 5 µm thick section of ß-CAROTENE treated group II liver showing hepatocytes (HC), sinusoids (HS) and kupffer cells (KC). PHOTOMICROGRAPH X 1000.
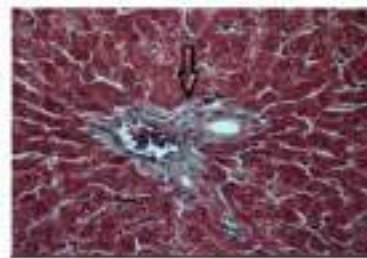
Figure 6: Trichrome Stained, 5 µm thick section of ß-carotene treated group II showing deposition of collagen fibers (black arrow showing Portal triad) (photomicrograph x400)
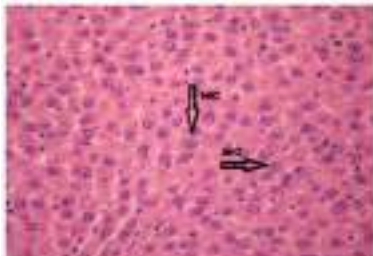
Figure 7: H&E stained 5 µm thick section of liver of Resveratrol treated group III liver showing normal architecture and Hepatocytes (HC-arrows) Photomicrograph X 400.
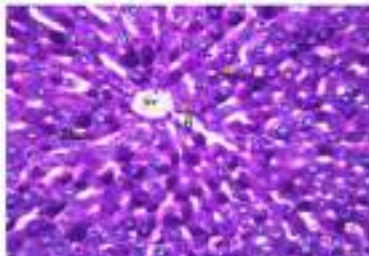
Figure 8: PAS stained 5 µm thick section of Resveratrol treated liver of Group III showing normal glycogen content (GL), Central vein (CV). Photomicroghraph X 400.
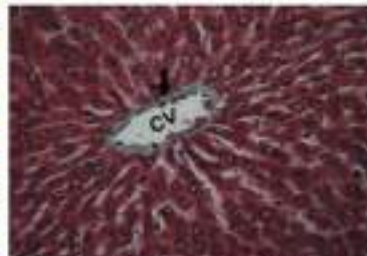
Figure 9: Masson's Trichrome stained 5 µm section of resveratrol treated group III of rat liver showing deposition of collagen fibers around central vein (black arrow) photomicrograph x400

DISCUSSION

Methotrexate is a highly potent drug having anti-folate and anti-metabolite activity. Used in the therapy leukemia, lymphoma, and various other solid tumors. Whereas Beta-carotene and Resveratrol are both potent antioxidant as they have the ability to reduce the oxidative stress, free radical levels, and inflammatory levels in various organs in the body. The study was design to see the hepatoprotective effects of Beta-Carotene and Resveratrol on methotrexate induced hepatic toxicity in wistar rats. The dose used in the study for methotrexate was 20mg/kg of body weight, recommended by Vardi et al (2010)[12]. Changes were seen in the present study that occurred after treatment with methotrexate. These changes include distorted hepatic lobular architecture, congestion of central vein, dilated central vein, ballooning of hepatocytes, mononuclear infiltration, and dilated sinusoids. These findings are similar to another study by Patel et al (2014) who showed similar histopathological changes such as vascular congestion and sinusoidal dilation of hepatocytes with effects on misoprostol on hepatotoxicity caused by methotrexate [13]. When there was administration of Beta-carotene and Resveratrol in Group V and VI respectively, the tissue damage was less and was reported by Firdous et al (2011) that the administration of Beta-carotene had a protective effect against the generation of free radical and oxidative stresses, further reporting an improvement in the architecture of the hepatocytes when Beta-carotene was administered in paracetamol induced hepatotoxicity [14]. The methotrexate treated group showed marked depletion , which can be due to the inhibition of mitochondrial energy metabolism and the lack of liver to store glycogen. In the intervention groups (Group V & VI), restoration of glycogen content was seen due to enhanced protein synthesis. This is in agreement with another study by Kose (2012), who observed restoration of glycogen content after using resveratrol. In our current study, there was also a significant rise in the hepatic tissue collagen content in the methotrexate group, which demonstrated fibrolytic activity also observed by Tunali-Akbay et al (2010) in his own study[15]. The fibrous tissue is created in response to toxic insult and inflammation to liver. In the Beta-carotene and Resveratrol group there was no fibrosis found, a finding comparable to another study. This can be due to the reduction of the oxidative stresses. Future studies can be done on other drugs that cause similar hepatotoxic effects and see if these antioxidant agents provide the same effects in them as well.

CONCLUSION

Based on our study and the evidence from the study, it can be concluded that indeed methotrexate is a hepatotoxic drug, causing liver damage in rats. However, hepatoprotective effects can be seen by both Beta-carotene and Resveratrol. These promising results suggest us that these hepatoprotective effects can be also induced in humans who are chronically using methotrexate.

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Conflict of Interest: The study has no conflict of interest to declare by any author.

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Stance of Undergraduate Students of Nursing and Clinical Sciences Regarding Breast Feeding: A Comparative Study

Nighat Seema[1], Bushra Zulfiqar[2], Erum Saboohi[4], Zubaida Masood[6], Zeeba Saeed[3] and Neelam Saba[5]

ABSTRACT

Objective: To compare the stance of nursing & medical students in regards to breast feeding.

Study Design: Cross-sectional study

Place and Duration of Study: This study was conducted at the Al-Tibri Medical College, Karachi from March 2021 to August 2021.

Materials and Methods: This study was done among 200 students, 50 from nursing department & 150 from the institute's medical college were selected for the study, with all of them being informed about their inclusion in the study and seeking verbal consent. The questionnaire was distributed among all the participants and a brief explanation of the questionnaire was also given. The data was collected and then analyzed on SPSS 20.0 in the form of frequency and percentage. For comparison between nursing and medical students the chi-square test was applied with P-value set at <0.05.

Results: 44% Male & 66% Female participate from the medical side, and 56% Male & 34% Female were from the nursing group. In regards to awareness concerning breast feeding, No significant difference was seen between the nursing and medical students, except regarding the duration of breast feeding (P=0.012), the benefits of colostrum (P=0.023), and regarding digestion of Breast milk (P=0.035) which was significant. No significant difference was seen regarding the protective role of breast feeding for mother and child, however significant difference was seen when asked about the protective role of breast feeding in preventing ovarian cancer in the mother (P=0.045). No significant difference was found among medical and nursing students regarding the attitude towards breast feeding.

Conclusion: No significant difference was seen in the responses between nursing and medical students in regards to the awareness of breast feeding.

Key Words: Nursing Students, Breast Feeding, Breast Milk, Medical Students

INTRODUCTION

Breast milk is a compound secretion that is rich, nutritious source of food for infants especially for initial 6 months of life.[1] The breast milk is essential for the growth and development of healthy baby.

Breast feeding is also beneficial for mother's health. It minimizes the postpartum complications and reduces the mother's weight as well.

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Breast feeding also decrease the risk of Breast, Ovarian cancers and Type 2 diabetes mellitis.[2] The quantity and composition of breast milk depend on mothers diet and health. During lacto genesis II the composition of the milk changes and utilized as a biochemical markers of onset of profuse milk secretion.[1] The world Health Organization recommendation is exclusive Breast Feeding (EBF) which reduces 13% to 15% children death among children under five years age. Various researches shows that children who receiving (EBF) has minimal risk to developed Gastroenteritis infections and respiratory infections.[3] The breast feeding is help to maintain mother-child relationship, Hence it is to belief to secure the Bond between both of them.[4]

The significance and advantages of human milk for infants as well as mother and society benefits are proved through extensive research, advanced laboratory techniques. These advantages consist of health, nutritional, immunological, social, psychological and economic benefits.[5] In spite that knowing of its benefits, breast feeding is no longer a standard in many communities. The positive and desired outcomes are achieved, when breastfeeding awareness through

different programs, campaigns, workshops are delivered by health care providers properly. To realize the negative impact on breast feeding because of massive marketing of infant milk substitute is necessary which effects children, mothers health and create economic burden as well. Political support and financial investment are required to protect and acknowledge the advantages of breast feeding.[6] The antenatal breast feeding education is important to those mothers who are unable to follow the recommendation regarding breast feeding and having lack of education and less knowledge.[7] Training of the Health care staff is necessary for the implementation of breast feeding specially those who are close to mother, infants and children. Health workers who are not much trained cannot be expected to give mother proper guidance and skilled practice. Moreover the subject regarding breast feeding is required in curriculum of basic training doctors, nursing staff and midwives.[8]The encouragement and support the breast feeding by health care providers like Doctors, Nursing Staff may help to increase the rate of breast feeding.[9] The minimum hospital support and non-serious efforts by Doctors and nursing Staff to encouraging breast feeding and initiate the formula milk substitute were most common cause for termination of breast milk in immediate postpartum period and initial six months.[10] More education on breast feeding has found to belief for nursing staff, new mothers and families.[11] The nursing staff should having adequate knowledge of Ten steps of Baby-friendly Hospital initiative(BFHI),which is WHO and UNICEF recommendations for nursing staff and medical students. This is also the part of curriculum of nursing and medical course.[12]

MATERIALS AND METHODS

After taking an ethical approval from the concerned authority, the cross-sectional study was done among 50 numbers of students from the Al-Tibri nursing school and 150 students from the Al-Tibri Medical College and Hospital, Isra University Karachi campus. The study was conducted from the duration of March 2021 to August 2021. Verbal consent was taken from the students and the valid questionnaire were distributed with the briefing of the questionnaire. The questionnaire was filled by the students and the data were kept confidential. For the statical analysis the data were presented in the form of Frequency and percentage, and for the comparison between the response of the nursing and medical students the Chi-square test was applied. The level of significance was kept P=≤ 0.05.

RESULTS

Figure 1: shows the Percentage of gender-based distribution among different students

Table 1.1: shows the frequency and percentage of awareness regarding breast feeding among different students of Medicine and Nursing. The level of significance was shown with P value.

Table No.1: Shows the frequency and percentage of awareness regarding breast feeding among different students of Medicine and Nursing. The level of significance was shown with P value

Awareness of Medical and Nursing students regarding Breast feeding	Medical Students		Nursing Students		P-Value
	Yes (%)	No (%)	Yes (%)	No (%)	
Q1 Breast feeding should be started within half an hour after delivery	89	11	91	9	0.287
Q2 Breast feeding helps mother in reducing gestational weight gain	83	17	87	13	0.987
Q3 Breast feeding helps in birth spacing	88	12	99	1	0.891
Q4 Breast feeding should be continued exclusively for a period of 6 months	54	46	70	30	0.012
Q5 Colostrum should not be discarded	65	35	79	21	0.668
Q6 Colostrum is beneficial for babies	66	34	85	15	0.023
Q7 Breast feeding should be continued for 2 years	87	13	100	0	0.365
Q8 Nothing should be given to exclusively breastfed babies	54	46	72	28	0.028
Q9 Weaning should be started at 6 months of age	72	28	89	11	0.231
Q10 Breast milk is always sterile	96	4	99	1	0.088
Q11 Breast milk is easier to digest	79	21	92	8	0.035
Q12 Bottle feeding should be discouraged	96	4	98	2	0.464
Q13 Bottle feeding has many adverse effects	99	1	99	1	7.088
Q14 Twin babies should be breastfed	74	26	72	21	0.568
Q15 expressed Breast milk can be given to preterm babies with improper sucking	54	46	71	29	0.142

Chi-square test was applied
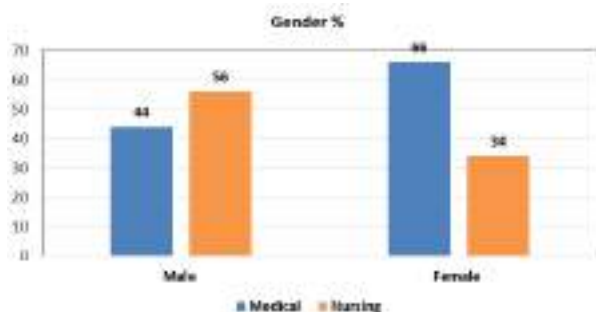
Figure No.1: Shows the Percentage of gender-based distribution among different students

Table No.2: Shows the Awareness about the protective role of breast feeding for both mother and child. The level of significance was shown with P value

		Medical Students		Nursing Students		P-Value
		Yes (%)	No (%)	Yes (%)	No (%)	
Q1	Breast feeding protects mother from ovarian cancer	66	34	87	13	0.045
Q2	Breast feeding protects mother from breast cancer	85	15	89	11	0.698
Q3	Breastfeed infants are more intelligent	74	26	88	12	0.613
Q4	Breast feeding protect babies from infection	100	0	100	0	0.565
Q5	Breast feed is ideal nutrition for babies	87	13	96	4	0.846

Chi-square test was applied

Table 2: shows the Awareness about the protective role of breast feeding for both mother and child. The level of significance was shown with P value.

Table 3: Shows the Attitude of the medical and allied students towards the breast feeding. The level of significance was shown with P value.

Table No.3: Shows the Attitude of the medical and allied students towards the breast feeding. The level of significance was shown with P value

	Medical Students		Nursing Students		P-Value
	Yes (%)	No (%)	Yes (%)	No (%)	
Breast feed should be started immediately after caesarean section	74	26	89	11	0.054
Breast feeding should be continued with maternal Hepatitis C infection	76	24	79	21	0.495
Breast feeding should be continued with maternal Hepatitis B infection	71	29	74	26	0.715
Breast feeding should be continued with maternal HIV infection	44	56	51	49	1.000
Breast feeding should be continued with active maternal Tuberculosis	48	52	61	29	0.874
Breast feeding should be continued if baby develops diarrhoea	81	19	94	6	1.000
Breast feeding should be continued if baby develops respiratory infection	89	11	93	7	0.617
Breast feeding should be continued if baby develop oral ulcers	87	13	97	3	0.847

Chi-square test was applied

DISCUSSION

The present study was conducted at Isra University Karachi Campus. The aim of this study is to determine the frequency and percentage of awareness regarding breast feeding importance among medical students and nursing students. There were 50 nursing students and 100 medical students who were participated. The verbal consent has been taken before given them the questionnaire based proforma. The results of present study showed bar graph, which shows the comparison

between nursing students and medical students along with the gender difference. The result shows that in nursing students males are more aware than female nursing students. Although in medical students males are less aware than female students. The other study was conducted in 2018 regarding awareness of breastfeeding laws and provisions of medical students, staff, and employees of higher learning in Georgia. Results of the study showed Chi-square test were used as similarly we used in present study to know the differences between groups. Most of the participants were females and the results of this study shown less awareness regarding breast feeding laws. Similarly as in the present study that the female nursing students were less aware among all participants.[1] In the present study the questions were asked to participants and the results were made on the basis of frequency of awareness between 2 groups consists of nursing students and medical students. The question was that continuation of breast feeding should be continued for exclusively 6 months? The nursing students were showed more awareness than medical students responding to this question with statistically p-value of (0.012). The another study which was conducted to know the association between type of health professionals at birth and exclusive breastfeeding. The results of this study suggests that initially 76% of mother were on breast fed on discharge but there was a decline in postpartum exclusively 3 months breastfed which was up to 27%. Two variants analysis showed statistically significant with type of health professionals at birth and exclusive breastfeeding at discharge (p= .001), and 3 months postpartum (p<0.001).The results were showed insignificant association between type of health professional at birth and breastfeeding at discharge. However, there were differences shown in breastfeeding at 3 months postpartum are increase in women those delivered by midwives and nurses-midwives and comparatively those who delivered by obstetricians.(p<0.001). In the present study one of the variable was about continuation of exclusive breast feeding for 6 months after delivery.[2] In the present study the another variable which is about the benefits of colostrum for babies with p-value is (0.023).One of the relevant study which was conducted in rural teaching hospital in India regarding awareness in breastfeeding postnatal mothers. According to the study results there is no significant difference seen among health professionals regarding advantages of breastfeeding and benefits of colostrum. Similar in the results of present study.[3] In the context of the other variable in present study regarding anything should not give to babies except breastfeeding in early six months. There is a cohort study taken in South Africa at rural and urban setting Kwazulu-Natal, there were ten teenage mothers

participants age in between 15 to 19 years.5 are rural(n=5) and 5 are urban (n=5) to assess their knowledge regarding breast feeding recommended practices. Health care providers plays important role to educate such an immature mothers regarding breastfeeding practices. Among ten participants 8 stated that their intention regarding exclusive breastfeeding based on their knowledge which they were getting from nurses and midwives. And one of the statement noted that nurse told me not to give anything except breast milk. Similarly one of the given variable in present study with p-value of 0.02.Which shows the awareness in nurses regarding exclusive breast milk.[4] The another important variable of present study regarding easily digestion of breast milk with p-value of (0.035).The study were found in the literature regarding benefits of breast feeding. That breast milk is best gift for baby from mother. It is easily digest and having all nutrients in the breast milk.[5] C-section is considered to be related to be initiation and spell of breastfeeding comparatively with natural child birth. C-section may delay breastfeeding and also may effect on the duration of feeding. Initiation of breastfeeding after C-section is highly recommended to mothers.[6] one study conducted in 2018 in India by nurses, pediatricians, obstetricians and anesthetics to determine the possible factors of delayed of immediate breastfeeding after delivery. And this study is quality enhanced based study were conducted in labor room in tertiary care hospital. The aim of the study is to improve the rates of first hour initiation of breastfeeding in neonate's birth from C-section. The results of this study suggest increased rates of first hour initiation of breastfeeding after C-section over the study period. This means that nurses and health providers are aware and insist to mother for start breastfeeding. Similarly as present study results showed that both groups are much aware regarding immediate start of breastfeeding after C-section and statistically shown insignificant difference with p value=(0.054).[7]

CONCLUSION

No significant difference was seen in the responses between nursing and medical students in regards to the awareness of breast feeding.

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To Analyze Association between Central Corneal Thickness and Anterior Chamber Depth in Patients with Type 2 Diabetes Mellitus by Optical Biometry

Shazia Fahmi[1], Hira Ahmed[1], Talat Samreen[1], Asma Aijaz[1], Hina Jabeen[2] and M.S. Fahmi[3]

ABSTRACT

Objective: To determine the anatomical variations in central corneal thickness (CCT) and its association with anterior chamber depth (ACD) in patients with type 2 Diabetes Mellitus and to compare them with non-diabetics.

Study Design: Descriptive Cross-sectional study

Place and Duration of Study: This study was conducted at the Eye OPD and ward of Ruth Pfau Civil Hospital Dow University of Health Sciences, Karachi from January, 2019 till June 2019 for a period of six months.

Materials and Methods: There were 100 patients in the study, among which 50 were diabetics and 50 were non-diabetics. After written consent and history, patients were selected according to inclusion and exclusion criteria. The CCT, and ACD measurements were estimated with the help of Optical Biometer AL Scan Nidek (non-contact method). The comparison of mean CCT and ACD was done between diabetics and non-diabetics.

Results: The difference of CCT was found statistically significant (p value 0.01), whereas comparison of ACD among diabetes and non-diabetics was statistically insignificant (p value 0.22).

Conclusion: The present study showed that CCT was increased in patients with type 2 Diabetes Mellitus as compared to non-diabetics with more than 5 year of duration. However no significant changes and correlation were found between CCT and ACD on optical biometry.

Key Words: Corneal thickness, Non-Diabetes Mellitus, Diabetes Mellitus Type 2, Anterior chamber depth

INTRODUCTION

The cornea is convex, clear, avascular transparent refracting part of the eye, accounting for approximately 70% (42 of the 58.6 D) of the total refractive power of eyeball, the average dioptric power is 43-45 D. Its horizontal diameter is 11.7 mm and vertical is 10.6 mm anteriorly while posteriorly it is circular and is about 11.7 mm[1]. Corneal hydration and high degree of myopia can affect central thickness [2, 3]. Normal value of CCT (central corneal thickness) globally varies from population to population.

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In European population, the mean CCT was found to be 549 μm, in Asians, it was 518.3 μm and in Pakistanis, it was 503.96 μm[4,5,6]. Normal values of ACD (anterior chamber depth) in Europeans were found to be 3.52±0.28 mm9, where as in Asians 2.9 mm respectively. In Pakistani population the measurement of ACD in emmetropic (normal) eye was, 3.19 ±0.28 mm [7, 8].

T2DM (type 2 diabetes mellitus) is a metabolic disorder characterized by high glucose level. It is caused when the pancreas cannot produce adequate insulin or the resistance of body to insulin occurs, both resulting in raised blood glucose levels[9]. About 382 million people are diagnosed with T2DM all over the world. It is a common cause of blindness and can lead to diabetic retinopathy as well as keratopathy. A component of diabetic polyneuropathy is keratopathy which significantly affects the vision in T2DM patients. Diabetes can also develop corneal abnormalities and changes in intraocular pressure (IOP) [10] According to American Diabetic Association (ADA), people with diabetes mellitus are 40% more likely to suffer from glaucoma and 60% more likely to suffer from cataract than people without diabetes. Thicker corneas, its anatomical changes and association of T2DM can be seen in different studies[11].

The changes in the morphology and metabolism of endothelium of cornea in patients with T2DM are observed in many studies, and the association of diabetes with thicker cornea and other anatomical changes has been observed earlier[12]. Literature shows, many diabetic patients have thicker corneas, less cell density and hexagonality with irregular corneal endothelial cells to be significantly associated with duration of diabetes[13]. Variation in the thickness of cornea is observed in different populations and races. Its measurement is an important parameter and an indicator of corneal health status and refractive surgeries are sometimes dependent on it[14]. CCT is also reported to be associated with duration of diabetes where patients with more than ten years duration of diabetes are more likely to have increased CCT.

Anterior chamber is a space bounded anteriorly by posterior surface of cornea and posteriorly by pupil and iris, filled with a clear fluid the aqueous humor[15]. The depth of the anterior chamber of the eye varies between 1.5 and 4.0 mm, averaging 3.0 mm. It is deepest centrally and contains approximately 250 µL of aqueous humor. It tends to become shallower at older age and in hypermetropic eyes[16]. Determining the ACD is important in estimating the risk of narrow angle glaucoma. There are various method of measuring ACD, including examination through a slit lamp, ultrasound and Scheimpflug photography. As depth decreases below 2.5 mm, the risk for close angle glaucoma increases. Decrease in anterior chamber depth has also been reported to be associated with the duration of diabetes[17].

The present study was done in order to establish a relevant local population data, to assist in future comparisons and decision making about corneal health. The aim of this study in the given contest therefore was to examine the effects of diabetes type 2 on CCT and ACD, and to compare these with non-diabetic controls.

MATERIALS AND METHODS

It was a clinical cross-sectional study. The data was collected from Eye OPD and ward of Ruth Pfau Civil hospital Dow University of Health Sciences, Karachi. Total number of 100 patients were included, among which 50 were diabetics and 50 were non-diabetics. After written consent and history, patients were selected according to inclusion and exclusion criteria. The CCT, and ACD measurements were estimated with the help of Optical Biometer AL Scan Nidek (non-contact method). The subjects with history of intraocular surgery, trauma, corneal opacity, uveitis, contact lens users and topical steroid drops users were excluded. All data were collected and recorded at Ruth Pfau Civil hospital, DUHS.

RESULTS

The mean comparison of CCT (µm) was done between non diabetic and diabetic subjects. Mean CCT of non-

diabetic control was 497.60±34.32 µm and of diabetic patients was 514.58±30.99 µm. Independent two tailed sample t-test at alpha 0.5 was used to compare the mean differences of CCT between two groups. P-value 0.01 was statistically significant as shown in Table 1 and Figure 1.

Table No.1: Comparison of Central Cornel Thickness and Anterior Chamber Depth between Type II Diabetics and Non Diabetics

Parameters 95%	Diabetic (n=50)		Non-Diabetic (n=50)		P-value
Central Corneal Thickness (µm)	Mean	SD	Mean	SD	
	514.58	30.99	497.60	34.32	0.01*
Anterior Chamber Depth (mm)	3.09	0.27	3.17	0.43	0.22

SD- Standard deviation. P-value≤0.05 was considered significant

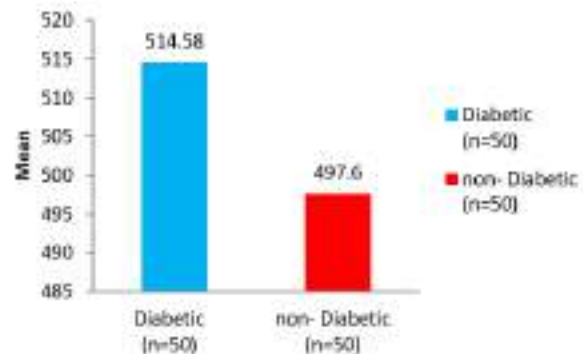**Figure No.1: Showing mean central corneal thickness between Diabetic and Non Diabetic groups**

The comparison of mean ACD (mm) was done between non diabetics and diabetics. Mean ACD of non-diabetic individuals was 3.17±0.43mm and of diabetic patients was 3.09±0.27 mm. P-value= 0.22 was statistically insignificant as shown in Table 1 and Figure 2.
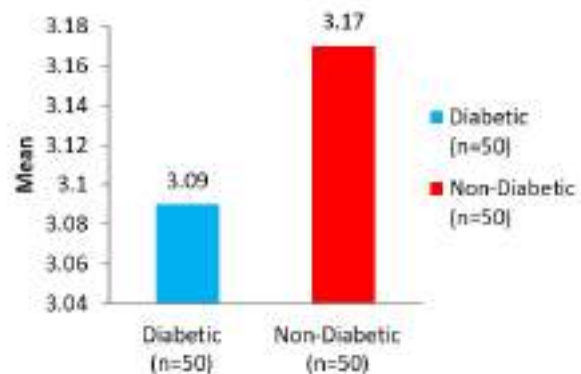

Figure No.2: Mean anterior chamber depth between Diabetics and Non Diabetics

Pearson's correlation analysis was performed between CCT and ACD in diabetic patients. A negative trend was observed in correlation analysis between CCT and ACD among diabetic patients. There was 3.8% negative correlation of ACD with CCT, found statistically non-significant with p-value 0.794 as shown in Figure 3.
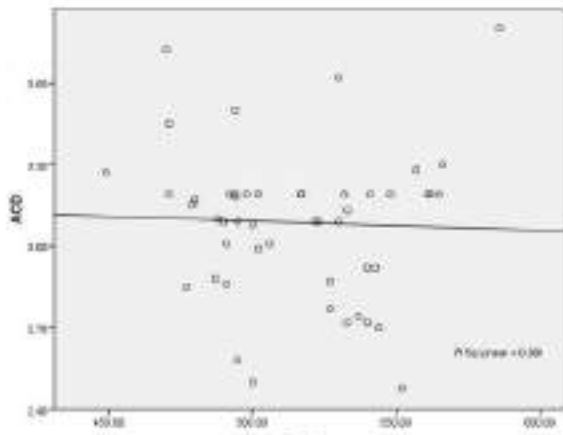
Figure No.3: Correlation analysis of Central corneal thickness with Anterior chamber depth in diabetic patients. (ACD- Anterior chamber depth, CCT- Central corneal thickness)

DISCUSSION

In this study, we have compared ocular parameters like CCT and ACD between diabetics and non-diabetic controls. Increased CCT is a common manifestation of diabetic keratopathy, a manifestation of an altered state of corneal metabolism. Despite the fact that duration of disease had adverse effects but uncontrolled diabetes can have these effects earlier on cornea[18]. In our study, the CCT was found to be significantly greater in diabetics than non-diabetics, p-value=0.01. Similar to our study in 2017, QU Islam and Jahangir S found that CCT was significantly higher in diabetics than non-diabetics (512±32.68 vs 498±28.93 μm) and (567±15.37 vs 532±9.4 μm) respectively[19]. Gupta M et al, in 2016 found significant increase in CCT of diabetics[20].

Similar findings were reported by Mathebula SD et al. in 2015 where the mean central corneal thickness of diabetic patients was reported to be 567.14 μm whereas that of non-diabetic individuals was 531.14 μm[21]. Briggs S et al. in 2016 also reported central corneal thickness to be significantly higher in diabetics than in non-diabetics (539.7±33.6 μm vs. 525.0±45.3 μm, p=0.003). He also found the association of increased CCT with the duration of diabetes more than 10 years[22]. Similarly, Storr-Paulsen A et al. in 2014 found diabetic subjects to have greater central corneal thickness than non-diabetic subjects (538 versus 546 μm, p < 0.05)[23]. Contrary to our finding O. Touzeau in 2004 did not find significant correlation of CCT with T2DM.[24]

The association between diabetes and ACD has been reported earlier. In our study the comparison of ACD between diabetics and non-diabetics was found to be insignificantly decreased with p value 0.22. Similar to our study Huseynova T et al. in 2016 did not find any significant difference in the anterior chamber depth of diabetics and controls (p>0.05)[25]. Okomoto F, in 2000 found non-significant difference in ACD of diabetics and non-diabetics (3.32mm vs 3.31mm). [25] Contrary to our findings Agrawal & Premnath G in 2015 reported that in patients with controlled diabetes the mean ACD was 2.96+0.21 mm as against 2.50+0.32 mm of patients with poorly controlled diabetes (*p*<0.0001)[26].

Decrease in ACD has also been reported to be associated with the duration of diabetes. Agrawal & Premnath G in 2015 also reported that the mean anterior chamber depth of patients with >5 years duration of diabetes was 2.59+0.42 mm compared to 2.74+0.33 mm of patients with less than 5 years duration of diabetes (P=0.056). The mean ACD of patients with >5 years duration of diabetes was decreased as compared to patients with less than 5 years duration of diabetes [26] Das S et al. in 2017 also concluded that ACD decreases with longer duration of diabetes[27]. Likewise, Costa L et al. in 2015 found diabetic patients to have narrow anterior chamber than healthy controls[28]. The results of above studies are not similar to our study.

In present study the Pearson's correlation analysis was performed between CCT and ACD in diabetics and non-diabetics. A negative correlation was observed between CCT and ACD with non-significant p-value=0.794 in diabetic patients. Slezkina I et al. in 2014, found ACD to be negatively associated with CCT in diabetic patients (p<0.05) [17]. Suraida AR and associates in 2018, found ACD to be significantly narrow when they performed the correlation between the considered ocular factors in diabetic patient[29]. Premnath and associates in 2018 found that diabetic patients with more than five year duration and poor glycemic control had narrow anterior chamber with increased CCT[26].

The present study was done in order to establish a relevant local data to assist in future comparisons and decision making about corneal health. Changes in corneal thickness in type II Diabetes Mellitus patients has prognostic value in different refractive surgeries. This study will provide the useful data about variation in different ocular parameters among type II Diabetes Mellitus patients which can help in assessing early manifestation of diabetic keratopathy that may become a problem leading to visual impairment. It is recommended that diabetic patients should undergo routine laboratory investigations for blood glucose level and ocular examination including assessment of corneal

structure for early detection and prevention of diabetic keratopathy.

CONCLUSION

We found increased CCT in patients with type 2 Diabetes Mellitus as compared to non-diabetics with more than 5 year of duration. However no significant correlation was found between CCT and ACD on optical biometry. Early diagnosis and screening the diabetic patients from local population and advising them for better control of diabetes will be helpful to prevent the ocular manifestation and visual impairment This study will provide a useful addition to the research data benefiting the clinical health professionals.

Author's Contribution:

Concept & Design of Study:	Shazia Fahmi
Drafting:	Shazia Fahmi, Hira Ahmed
Data Analysis:	Talat Samreen
Revisiting Critically:	Asma Aijaz, M.S Fahmi
Final Approval of version:	Shazia Fahmi

Conflict of Interest: The study has no conflict of interest to declare by any author.

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Original Article

Comparison between the Neutral Zone and Admixed Impression Techniques in the Management of Atrophic Mandibular Ridges

Irum Munir Raja[1], Mervyn Hosein[3] and Muhammad Athar Khan[2]

ABSTRACT

Objective: To compare the stability and comfort level of dentures fabricated either by the Neutral Zone or by Admixed impression techniques in severely atrophic mandibles.

Study Design: Randomized Clinical Trial, Uni center, Single blinded, Two arm study

Place and Duration of Study: This study was conducted at the Prosthodontics department, Liaquat College of Medicine and Dentistry, Karachi from January 2021 to October 2021 for a period of 09 months.

Materials and Methods: A total of 84 edentulous patients with atrophic mandibular ridges were selected using non-probability consecutive sampling technique. Subjects were randomly assigned to one of two groups (Neutral Zone technique/Admixed) and observed at one month, three months and six months.

Results: Total mean score of level of comfort during impression was statistically significant for both the techniques (p<0.001). Regarding comparison of mean stability score after six months, mean of denture fit was observed with statistically significant difference for both the techniques (p=0.041).

Conclusion: : Dentures made by Neutral Zone technique showed slight superior levels of patient satisfaction and stability than dentures prepared by Admixed technique in all functional features (immovability, masticatory capability, retention, swallowing and speech) in addition to comfort and aesthetics.

Key Words: Atrophic mandibular ridge, Neutral zone technique, stability, Admixed impression technique

INTRODUCTION

The Glossary of Prosthodontics Terms defines "edentulism" as a condition of being edentulous (toothless); lacking of teeth or without natural teeth. [1] Although edentulism is not harmful but it requires restorative treatment as early as possible to improve the quality of life of an individual. The main objective of complete denture prosthesis for an edentate person is to give support functionally and aesthetically and the as replacements of the missing structures. However, the stability of the mandibular denture can be affected by the phenomenon called Residual Ridge Resorption [2].

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In Pakistan the prevalence of being edentate (toothless) till 2003 was about 20% which was recorded by the FDI (Federation Dentaire International) Oral Health Atlas that emphasizes the extent of oral diseases globally [3]. As per the report of the National Institute of Dental and Craniofacial Research those people who had the minimum number of residual teeth were in the age group of 50-65 years [4].

The concepts of both the conventional and the Neutral Zone techniques are equally considered in denture fabrication. As far as the concept of neutral zone is concerned, in this technique teeth are set in a region where displacing-forces of the tongue, the lips and cheeks are neutralized and stable [5]. Various materials have been recommended for recording neutral zone while fabricating the complete mandibular denture by neutral zone technique such as silicone, soft wax, modeling wax, impression compound, a polymer of dimethyl siloxane filled with calcium silicate, and tissue conditioners and resilient lining materials [6]. Numerous materials have been proposed to document the neutral zone e.g. plastic impression compound, polymer of dimethyl siloxane filled with calcium silicate, soft wax, silicone, conditioners for tissue and resilient lining materials [7].

Removable complete denture (CD) treatment is the only therapeutic alternative for edentulous persons who do not have access to implant treatment. The concept of Neutral Zone technique in manufacturing complete dentures and its significance are well known, and numerous materials have been investigated to attain improved results in different populations. However, very little has been identified about stability, comfort and satisfaction as compared to conventionally fabricated dentures. The objective of this study was to compare the level of patients' comfort during impression and stability of complete denture in patients with atrophic mandibular ridges after one month, three months and six months post- insertion by using Neutral Zone and Admix Impression techniques.

MATERIALS AND METHODS

A randomized, patient-blind, single center, parallel group with 1:1 allocation was carried out in Prosthodontics department, Liaquat College of Medicine & Dentistry, Gulistan-e-Johar, Karachi. Baseline measures were obtained then participants were randomized with a 1:1 distribution to one of two interventions with Neutral Zone and Admixed Techniques. The randomization schedule was generated through a block randomized by another investigator who was not involved in determining eligibility or in baseline, and in follow-up data collection. A full size trial required a total of 84 participants (42 in each group).The two groups were then followed up one month, three months and six months to observe any differences in outcome. Patients having ages ranging from 50-70 years were recruited for the study with complete edeuntulism, non-denture wearers or with ill-fitting complete dentures prosthesis, Atwood class V and VI and medically compromised patients who were contraindicated for surgical placement of implants to accommodate implant-supported prosthesis attending the Prosthodontics OPD for treatment.

Questionnaire along with Likert scale was used to evaluate the stability and level of comfort in patients experienced with the impression technique for atrophic mandibular ridge. Statistical analysis was performed using IBM SPSS statistical package 21 for Windows. Continuous variables were presented as Mean ± SD. Categorical variables were shown as frequencies and percentages. The difference between 2 groups, according to continuous variables was determined by independent t-test. Categorical variables were compared using chi square test. A p-value of less than 0.05 was considered as statistically significant. Confounding factors were controlled by randomization and stratification in analysis.

A written informed consent was taken from all subjects after explaining the study purpose, procedure and outcome. The synopsis was then submitted to Ethical review committee of LCMD & Dar-ul-Sehat Hospital.

Patient's information and identification was kept confidential by using code numbers and security password for computer records.

RESULTS

In this study mean age of the patients was (60.29 ± 5.492) years for admixed impression technique while (58.29± 5.82) years for neutral zone impression technique. Our results showed that regarding admix technique, 9(21.4%) patients in 51-55 years of age, 13(31.0%) patients in 56-60 years, 12(28.6%) patients in 61-65 years and 8(19.0%) in 66-70 years of age whereas in NZ impression technique, 14(33.3%) patients in 51-55 years of age, 11(26.2%) patients in 56-60 years, 12(28.6%) patients in 61-65 years and 5(11.9%) in 66-70 years of age. In this connection, only insignificant difference was found statistically in the age group of 51-55 years between both the techniques (p=0.584).In respect of gender, impression of 16(38.1%) males and 26(61.9%) females were taken by using admixed technique whereas impression of 19(45.2%) males and 23(54.8%) females were taken using NZ technique (p>0.05).

Regarding level of comfort during impression of both the techniques, total mean of difficulty in tongue movements (2.93± 1.503) was reported with statistically significant difference between both the techniques (p=0.001). A total mean of irritation during impression (1.50±0.768) was observed with statistically significant difference between both the techniques (p=0.046). A total mean of difficulty to follow dentist instructions (2.05± 1.379) was found with statistically significant difference between both the techniques (p<0.001). A total mean of duration of procedure (3.10 ± 1.542) was reported with statistically significant difference between both the techniques (p<0.001). As far as total mean score (9.57±3.91) about level of comfort during impression for both the techniques are concerned statistically significant difference was found between both the techniques (p<0.001), as shown in and Table I.

Regarding comparison of mean Stability score after six months between Ad-mixed and NZ zone impression techniques, a mean of fitting of the denture for both the techniques (4.73 ± 0.588) was observed with statistically significant difference be-tween both the techniques (p=0.041). Moreover, total mean of chewing efficacy was observed as (4.86 ± 0.518) with statistically insignificant difference between both the techniques (p=1.000). The mean of Food impaction over the denture as (4.86 ± 0.352), with statistically insignificant difference between both the techniques (p=0.217), was also observed whereas insignificant differences were observed against swallowing (p=0.634) and speech (p=0.156) for both the techniques, as shown in Table 2.

Table No.1: Comparison of mean comfort level during impression between Admixed and NZ Impression technique

Groups	Neutral zone		Admixed		Total		t- test	
Characteristics	Mean	SD	Mean	SD	Mean	SD	Statistic	P-value
Difficulty in tongue movements	3.45	1.10	2.40	1.66	2.93	1.50	3.38	0.001
Irritation during impression	1.67	0.95	1.33	0.47	1.50	0.76	2.02	0.046
Difficulty in following dentist instructions	2.57	1.51	1.52	0.99	2.05	1.37	3.74	<0.001
Duration of procedure	3.69	0.95	2.50	1.78	3.10	1.54	3.81	<0.001
Total Score	11.38	2.28	7.76	4.37	9.57	3.91	4.75	<0.001

Table No.2: Comparison of mean Stability score after six months between Admixed and NZ impression technique

Groups	Neutral zone		Admix		Total		t- test	
Characteristics	Mean	SD	Mean	SD	Mean	SD	Statistic	P-value
Fitting of the denture	4.60	0.73	4.81	0.39	4.70	0.59	-1.66	0.100
Chewing efficacy	4.86	0.64	4.86	0.35	4.86	0.51	0.00	1.000
Food Impaction	4.90	0.29	4.81	0.39	4.86	0.35	1.24	.217
Difficulty in Swallowing	4.52	0.50	4.62	0.49	4.57	0.49	-0.87	.384
Difficulty in Speech	4.64	0.48	4.67	0.47	4.65	0.47	-0.22	.821
Total score	23.40	2.04	23.71	1.56	23.5	1.81	-0.778	.439

DISCUSSION

Over the severely resorbed mandibular ridges, it becomes difficult to make denture with good stability and retention. Therefore, dentures are fabricated with their outlines corresponding to the neutral zone in order to overcome the trouble. When a denture is contoured by using neutral zone technique it is essential to make sure that the forces applied by the surrounding musculature are functioning more efficiently in synchronization and provides benefit for balancing probable forces of oral and perioral musculature [8,9]. As far as our study is concerned, it was reported that dentures fabricated by using neutral zone impression technique were more retentive and showed more stability as compared to the admixed impression technique, whereas comfort level during impression was slightly higher in admix technique as compared to neutral zone.

Dentures that are fabricated by using neutral zone impression technique over severely resorbed mandibular ridge ensured that the forces imposed by the muscles assist in retention and enhances balancing of the denture rather than displacing during function. The dentures made by NZ impression technique also have additional benefits like decreased food impaction, superior esthetics because of facial support, appropriate positioning of the posterior teeth that permits adequate tongue space. Clinicians have to recognize and trace the neuromuscular dynamics of the tissues of oral cavity and this must be applied in the manufacture of the ultimate prosthesis[10]. Our study findings were not consistent with the above mentioned study and showed that difficulty in swallowing and speech were less obvious in denture fabricated by using NZ technique with the significant difference between both the techniques whereas chewing efficacy was better and food impaction was more obvious in NZ technique with an insignificant difference between both the techniques after one month following insertion of denture.

It is necessary for the clinician to recognize the neuromuscular dynamics of the oral cavity tissues for the clinician and is useful in the fabrication of the balanced prosthesis that will be seated in a balanced area of the neutral zone region where the forces exerted by cheeks and tongue will balance out each other [11]. Our study also supported the above research that placement of teeth were more balanced at neutral zone because all the imposing forces by muscles of cheeks and tongue are in equilibrium at that position after 1 months. Therefore, chances of dislodgment of denture during mastication, speech, and swallowing become reduced.

Similarly, in above mentioned research, merging of two-impression techniques to acquire a complete denture prosthesis that evenly cover up the remaining

crest of ridge, thus raising the surface area of the denture that gets in touch with the residual ridge avoiding dislocation of denture base in both rest and functional position. Therefore, the immovability and retention of the mandibular complete denture prosthesis is enhanced along with higher patient satisfaction [12]. As far as our study is concerned, stability against the dislodging and masticatory forces was maximum in the prosthesis fabricated by using NZ technique as compared to Admixed.

Another clinicians conducted a clinical trial that involved 52 participants [13]. Each participant received two sets of complete denture, one fabricated conventionally and the other fabricated by neutral zone impression technique (NZ) perception with a 1-month failure period. Participants indiscriminately selected 1 of 2 sealed obscure envelopes with 2 denture series, either conventional followed by NZ or NZ followed by conventional. Therefore, participants were unsighted for the dentures they carried. Patient gratification with each denture type was reviewed after 6 weeks of placement by an unsighted staff member by means of a 5-scale questionnaire designed for the most imperative purposeful features (esthetics, masticatory capability, retention, immovability, verbal communication, and comfort). Patient satisfaction scores were considerably superior with the NZ dentures as compared to the conventional dentures in all aspects; P=.001 for question 2 (judgment of denture look) and P<.001 for all other questions [13]. Our study is consistent with the above mentioned study in which complete dentures were fabricated by two different techniques such as neutral zone and admixed techniques. On comparison of both the techniques using a 5-scale questionnaire developed for the most important functional aspects (food impaction, masticatory ability, fitting of the denture, swallowing and speech after insertion), the outcomes were more pronounced with a significant difference in denture made by NZ technique than admix in masticatory ability, swallowing and speech while they were less pronounced with insignificant differences in food impaction and fitting of the denture. Similarly, Patient satisfaction scores regarding stability were significantly higher with the NZ dentures than with the admixed technique dentures with respect to swallowing (p=0.007) and speech (p<0.001) after one month. Chewing efficacy was significantly improved after three months whereas fitting of denture was also significantly improved after six months (p=0.041) in dentures made by neutral zone technique.

Fahmy and Kharat presented a study that involved two groups of patients, one with dentures fabricated conventionally and the others with dentures that were fabricated through the neutral zone technique. Mastication, comfort level and verbal communication were compared in both the groups. Majority of the patients were pleased with those dentures that were made by the NZ technique [14]. Our study is consistent with the above research revealed that stability scores were higher in dentures made by the NZ technique while comfort level during impression were higher to some extent in dentures made by the admixed technique.

A consideration of speech is of vital significance while fabricating complete dentures. Tongue plays an important function during speech. Rilandi and Sharry revealed that the dimensions of the tongue do not reduce with the increasing age such as widespread degeneration and weakness of all other tissues in older age. There is approximately 10% increase in the dimension of tongue in edentulous patients if they are not wearing complete dentures [15]. Zaigham also supported that neutral zone method presented adequate space for tongue [16].Goyal and Greenstein shaped the palatal outlines of the maxillary dentures according to their function and evaluated verbal communication with conventional dentures. Their study illustrated that verbal communication was noticeably enhanced with functionally contoured dentures [17]. In our study, in neutral zone approach, the position and movements of tongue is specified because position of tongue is recorded through various functional movements. Therefore, dislodging forces by the tongue were minimized by this approach and improved the speech.

Therefore, it was demonstrated that NZ impression technique integrates the features previously present in the form of muscular structures, to control the vanished retentive features particularly in cases of resorbed ridges. This offers acceptance of outcomes as stability is concerned, despite compromised residual ridge condition. This technique merely explains the perception that synthetic teeth should not be positioned over the crest of ridge or buccal or lingual to it but somewhat it should be positioned as directed by the functional movement of cheeks, lips, and tongue that retain the denture in its position.

CONCLUSION

Dentures made by NZ technique showed slight superior levels of patient satisfaction and stability than dentures prepared by Admixed technique in all functional features (immovability, masticatory capability, retention, swallowing and speech) in addition to comfort and aesthetics.

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Pre and Post
Workshop
Evaluation on
Hospital
Acquired
Infection

Original Article

Pre and Post Workshop Evaluation on Hospital Acquired Infection at Al-Tibri Medical College

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ABSTRACT

Objective: To find out the awareness and knowledge regarding the prevention of HAI's.
Study Design: Descriptive Study
Place and Duration of Study: This study was conducted at the Al-Tibri Medical College, Isra University Karachi from November 2020 to January 2021 for a period of three months.
Materials and Methods: The Workshop was conducted for one day; Pre and Post evaluation questioner were filled by the participants. Participants were 50 faculty members from Clinical Sciences. After taking proper inform consents from the precipitants and willing to participate in the survey were included. Mobility and Immobility time was taken to identify the Depressive behavior of mice.
Results: Among the 50 participants only 22% participants were aware to correctly use the PPEs, and remaining 78% know partially to use the PPEs. That 82% of the participants does not know about containment. The remaining 18% were aware about containment. Statistical analysis chi-Squares test was applied and P value 0.001 was significant.
Conclusion: This study showed that awareness regarding the prevention of hazardous materials is very low among clinical faculty members.
Key Words: HAIs, prevention, Personal protective equipment, contaminant level

INTRODUCTION

Infection which is being caught after getting interaction with the hospital are knows as Hospital acquired infections (HAI's)[1]. The term HAI's at first implied those defilements associated with admission to a serious thought facility (formerly called nosocomial pollutions), but the term at present fuses defilements made in several surroundings where patients attain clinical benefits (e.g., long stretch consideration, family drug focuses, home thought, and strolling care). HAIs are pollutions that at first appear to be 2 Days or more after hospitalization or inside a month resulting to having gotten prosperity care [2].

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Numerous assessments show that the most notable sorts of hostile events impacting hospitalized patients are ominous medicinal events, and HAIs[3–6]. The US Community for Infectious prevention and Anticipation perceives that practically 1.7 million hospitalized patients consistently secure HAIs while being treated for other clinical problems and that more than 98 thousand of these patients (one out of 17) fail miserably due to HAIs[7]. The Organization for Medical care Exploration and Quality declared that HAIs are the most notable disarrays of crisis center consideration and one of the super 10 driving purposes behind death in the United States of America[8]. Study reported that the 7% of the hospitalized patients in the developed countries and 10% in under developing countries suffers HAIs[9]. Different examinations drove in high level compensation countries found that 5 to 15 percent of the hospitalized patients get HAIs which effects from 9 to 37 percent of those borne thought ICUs units [10]. Various investigation focuses on report that in Europe clinical facility complete inescapability speeds of HAIs range from 4.6 to 9.3 percent [11–19]. The WHO reports in any case that HAIs ordinarily get public thought exactly when there are epidemics.[20] HCAIs moreover influence essentially wiped out patients with 0.5 million cases of HAIs occur alone in ICUs every year.[7,14] Those patients are regularly in an in a general sense wiped out, immuno-compromised position which constructs their weakness to HAIs [21,23].

MATERIALS AND METHODS

A cross sectional analytical study was lead at Al-Tibri Medical College and Hospital, Isra University Karachi Campus. Total 50 numbers of participants were participated in the study on the basis of convenient sampling technique. After taken an ethical approval, the data was collected through workshop that was conducted on October 2020. The hand-on workshop was based on Hospital Acquired Infections and its Preventions and all faculty members and postgraduate candidates of both genders form the basic and clinical sciences were included from the same institute. Pre and Post Workshop questioner was filled by the participants. The Data set was statically analyzed by SPSS v20.

RESULTS

Among the 50 participants only 22% participants were aware to correctly use the PPEs, and remaining 78% know partially to use the PPEs. That 82% of the participants does not know about containment. The remaining 18% were aware about containment. Statistical analysis chi-Squares test was applied and P value 0.001 was significant.

Table I: Shows Gender distribution

Table II: Shows the frequency of Pre and Post Workshop Responses of the participants regarding HAIs Questioner

Figure I: Shows Frequency of Participants according to the designation.

Table No.1: Gender distribution

Male	48(96.0%)
Female	2(4.0%)
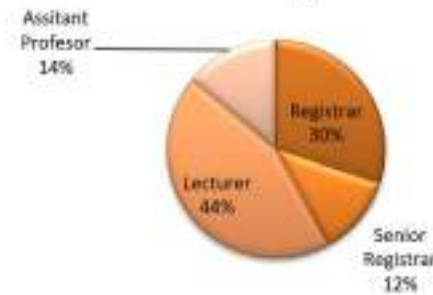
Figure No.1: Shows Frequency of Participants according to the designation

Table No.2: Shows the frequency of Pre and Post Workshop Responses of the participants regarding HAIs Questioner

		Pre-Workshop	Post-Workshop	*P-value
What are HAIs?	Yes	22(44.0%)	44(88.0%)	≤0.001
	No	28(56.0%)	06(12.0%)	
Cleaning, sanitization and Disinfectant are three different techniques or not?	Yes	28(56.0%)	48(96.0%)	≤0.001
	No	22(44.0%)	02(4.0%)	
Microbes and entry through skin, eyes and ears?	Yes	28(56.0%)	46(92.0%)	≤0.001
	No	22(44.0%)	4(8.0%)	
Waiting are, Sampling area, diagnostics lab, and operation theaters area lies in which containment level respectively?	Yes	24(48.0%)	49(98.0%)	≤0.001
	No	26(52.0%)	1(2.0%)	
While wearing gloves can you get infection?	Yes	24(48.0%)	50(100.0%)	≤0.001
	No	26(52.0%)	0(0.0%)	
Are you responsible for the environment safety?	Yes	25(50.0%)	59(98.0%)	≤0.001
	No	25(50.0%)	1(2.0%)	
Correct order of donning of PPEs?	Yes	30(60.0%)	42(84.0%)	≤0.001
	No	20(40.0%)	8(16.0%)	
Correct order of doffing of PPEs?	Yes	28(56.0%)	45(90.0%)	≤0.001
	No	22(44.0%)	5(10.0%)	

*Chi-Square Tests was Applied

DISCUSSION

The study revealed that the participants of the study were not very much aware with the preventions of hospital acquired infections. It was observed through pre and post evaluation almost 50% of the participants did not know about the Hospital acquired infection and only 30% knows the correct order of donning and doffing of PPEs. The pre and post responses were statistical significant at $p<0.001$.

The results of distributed expressed that larger piece of staff orderlies had ordinary data scores (51.25%), self-definite practice scores (58.75%) and saw practice scores (68.75%) while larger part (72.50%) of staff clinical guardians had inspiring standpoint scores (51.25%) concerning illness expectation and control.

The revelations of this review are near with the delayed consequences of various examinations wherein staff clinical specialists had ordinary data and practice[12,24, 25]. Various examinations showed that staff clinical specialists had powerless data[26,27]. Where as in various examinations, staff clinical chaperons had a for the most part magnificent data and extraordinary demonstration of infectious prevention[28-31]. In the current audit there was a straight relationship among data and demeanor (r = 0.161, p < 0.05), and data and practice scores (r = 0.146, p < 0.05). All things considered, there was no association among disposition and practice scores of individuals concerning pollution contravention and control. The survey revelations are not dependable with disclosures of various assessments where there was a strong association among data and attitude concerning standard and detachment wellbeing measures and basic association among data and practice [12, 32-35]. The finding of straight association among data and practice suggests data doesn't by and large change over into extraordinary practice. Nonattendance of resources, bounty obligation and time limit has been represented as essential issue affecting the powerless demonstration of pollution control in clinical consideration workplaces.

This may be the way that those haven't at any point taken preparing would be less inclined to get refreshed data, which frustrates refreshing their insight on contamination avoidance.

CONCLUSION

As per the outcomes, larger part members had normal information and practice, uplifting outlook about contamination control and biosafety rehearses. Consequently, it is important that clinical staff and experts ought to be prepared with regards to the avoidance of emergency clinic gained contamination dependent on fruitful instructive models.

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Analysis of Cesarean Sections Carried out at Liaquat Memorial Hospital Kohat using Robsons Ten Group Classification

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ABSTRACT

Objective: To accomplish an analysis of cesarean sections carried out in Liaquat Memorial Hospital (LMH) Kohat and assess its rate using 10 Groups Robson classification system.

Study Design: Descriptive cross sectional study

Place and Duration of Study: This study was conducted at the Obstetrics/Gynae department of Liaquat Memorial Hospital (LMH) Kohat from the duration of January, 2019 to December, 2019 for a period of one year.

Materials and Methods: All patients attending the Obstetrics/Gynae department for delivery were enrolled in the study after taking verbal consent. A predesigned questionnaire including questions for data collection on maternal characteristics (i.e. age, gravidity, parity, previous history of c-section) pregnancy-related information (i.e. gestational age, fetal presentation, number of fetus and onset of labor) were used. The outcome of each patient either caesarian or normal delivery according to Robson's classification, cases of ruptured uterus, maternal mortality and still birth were also noted. Data was entered and analyzed using SPSS version 16.

Results: A total 2041 (19.83%) caesarian sections out of a total 10292 deliveries were carried out in the study center over this period. The highest caesarian sections (CS) 899 (44%), 243 (11.9%) and 201 (9.8%) were observed in Robson's classification R5 (multiparous women with at least one previous CS). The trend analysis of all cesarean cases showed that out of 2041 cesarean section cases, previous cesarean 670(32.83%), failure to progress 317 (15.53%) and fetal distress 210 (10.29%) were the predominant indications.

Conclusion: The rate of cesarean section (CS) was slightly higher in LHM hospital Kohat (19.89%) than the WHO recommended average cesarean rate of 15%.

Key Words: Robson classification, audit, cesarean section (CS), observational, labor, pregnancy, morbidity, fetal distress, induced labor

INTRODUCTION

The escalating rate of cesarean sections across the globe during last few decades presented deep concerns to the health policy makers. The rate of cesarean section was just 5% in 1940 and increased up to 15% in 1970 and even beyond 30% in some areas[1]. The World health organization (WHO) and US healthy initiatives 2000 guideline shows that cesarean sections should not be greater than 15% of the total births[2]. Cesarean section is an important component of the emergency obstetric care and performed mostly to save the lives of mother and fetus only when they are required for medically indicated reasons.[3] Caesarean section (CS) rates have increased to unprecedented level worldwide without enough evidence indicating substantial maternal and perinatal benefits. It has been reported that rates higher than 9–16% are not associated with decreases in maternal and neonatal mortality[4,5]. There is growing concern over the higher incidence of long-term complications following one or more CS such as placenta accreta, retained placenta, and uterine rupture with possible need for peripartum hysterectomy[6–8]. It can also cause significant and sometimes permanent complications, disability or death particularly in settings that lack the facilities and capacity to properly conduct safe surgery and treat surgical complications. Every effort should be made to provide caesarean sections to women in need, rather than striving to achieve specific rates. At the heart of the challenges in defining the optimal caesarean section rate there is also lack of a reliable and

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internationally accepted classification system to produce standardized data. Among the existing systems used to classify caesarean sections, the 10-group classification (also known as the 'Robson classification') has become widely used in many countries. The WHO, in its statement of April 10, 2015, proposed that the Robson classification of C-sections be used as a global standard to assess, monitor and compare cesarean rates over time at the same hospital or among different hospitals in the same region or country [11].

MATERIALS AND METHODS

A formal approval for the study was taken from institutional ethical review board (IERB). All patients attending the Obstetrics/Gynae department for delivery were enrolled in the study after taking verbal consent. A predesigned questionnaire regarding clinical history of patients were filled and post-delivery outcome either caesarian or normal delivery of each patient was noted[10, 11]. The women were categorized into 10 groups based on their basic obstetric characteristics parity, gestational age, and number of fetuses, fetal presentation, previous cesarean and mode of onset of labor. Data was entered and analyzed using SPSS version 16. Descriptive statistical analysis using frequency and proportion were used in the study.

RESULTS

The total number of women who delivered in two obstetric units of LMH was 10292. Around 2041 C-Sections were carried out with an overall C Section rate of 19.83% for the specific time period .The analysis of our data showed that the most representative group in our population was Robson's Group 3 at 58.86% followed by Group 1 (20.85%) and Group 5 (9.40%). Groups 9 and 10 were minimal in our statistical data at 0.51% and 1.43% respectively (Table 1). Highest contribution to the total section rates was by Group 5(44.05%) followed by Group 1(11.9%) and G3 at 9.85%. These three groups utterly contributed to 65% of the total Cesareans Then came group 4 and 10. When all five groups were summed up they contributed to 78% of the C section rate. The least contribution was by Group 9 (Table 1). Primary CS rate contributed to 33.96% to the overall C section rate which is done in (Groups 1, 2, 3, 4), while in other studies primary CS rate approached 50%. The CS rate in Robson group 1 (nulliparous women with singleton pregnancy in spontaneous labour was 11.32%, which is slightly higher than Robson's recommended guidelines of rate under 10%. The CS rate in group 2 (nulliparous women with singleton pregnancy, who had induced labour or pre-labour CS) was 55.98 %, much higher than Robson's guideline (CS rate between 20 and 35).

While assessing indications of CS in Robson group 1(primi with spontaneous labour) and Robson group 2 (primi with induced labour), 35%, and 7 % CS were performed due to failed progress of labor and 24% and 12 % following non-reassuring cardiotocogram (CTG) in two groups respectively. Noticeably this proportion of relative indications of C section can be lowered by appropriate use of partogram, implementation of new WHO recommended labour guide, ample use of oxytocin and reducing the interobserver difference in interpretation of CTG by arranging teaching workshops for the obstetric staff. The CS rate in Robsons group 3 (multiparous women without previous CS, with singleton pregnancy in spontaneous labour) had a CS rate of 3.32% which is within the range of Robsons recommendation (3%–5%) while the CS rate in Robsons group 4 (multiparous women without a previous CS, with singleton pregnancy, who had induced labour or pre-labour CS) was 50% much higher than the Robsons recommendation of 15%. The main indications of C-section in Robsons group3 were failure to progress (34%), fetal distress (19%) and obstructed labour (16%) while in Robsons group 4 about 23% of CS were done due to antepartum hemorrhage, 16% fetal distress , 6% obstructed labour, 3% failure to progress. The CS rate in group 5 (multiparous women with at least one previous CS) in our study was 92.97%, which is higher than the Robson recommendation (50%–60%). In our study, only few women were offered TOLAC (trial of labour after C-section) because there is shortage of staff on floor one to one monitoring was not possible.

Table No.1: Robson 10 group of classification system

Group	Description
R1	Nulliparous, single, cephalic,>37wks in spontaneous labour
R2	Nulliparous, single, cephalic, induced or CS before labour
R3	Multiparous (excluding previous CS), single cephalic >37wks in spontaneous labour
R4	Multiparous (excluding previous CS), single cephalic >37wks induced or CS before labour
R5	Previous CS, single cephalic >37 weeks
R6	All nulliparous breeches
R7	All multiparous breeches (including previous CS)
R8	All Multiple pregnancies (including previous CS)
R9	All abnormal lies (including previous CS)
R10	All preterm < = 36 weeks(including previous CS)

Table No.2: Frequency of total deliveries, Cesarean section rate and contribution made by each group of Robson Classification

Robson classification	A Total deliveries in a year (n)	B Total Cesarean sections in a year (n)	C Total veginal deliveries	D Rate of c-sections in each group (B/A) x 100 %	E Relative size in each group (A/Total obstetrical population)×100%	F Contribution of each group to overall CS rate (B/Total obstet-rical population)×100%
Group 1 Nulliparous, single, cephalic,>37wks in spontaneous labour						
	2146	243	1903	11.32	20.85	11.91
Group 2 Nulliparous, single, cephalic, induced or CS before labour						
	184	103	81	55.98	1.79	5.05
Group 3 Multiparous excluding previous CS),single cephalic >37wks in spontaneous labour						
	6058	201	5857	3.32	58.86	9.85
Group 4 Multiparous (excluding previous CS), single cephalic >37wks induced or CS before labour						
	292	146	146	50.00	2.84	7.15
Group 5 Previous CS, single cephalic >37 wks						
	967	899	68	92.97	9.40	44.05
Group 6 All nulliparous breeches						
	112	81	31	72.32	1.09	3.97
Group 7 All multiparous breeches (including previous CS)						
	155	122	33	78.71	1.51	5.98
Group 8 All Multiple pregnancies (including previous CS)						
	177	62	115	35.03	1.72	3.04
Group 9 All abnormal lies (including previous CS)						
	52	52	0	100.00	0.51	2.55
Group 10 All preterm < = 36 weeks(including previous CS)						
	147	132	15	89.80	1.43	6.47
Total	**10292**	**2041**	**8251**	**19.83**	**100.00**	**100.00**

Table No.3: Frequency of serious outcomes during deliveries in a year

No	Month	PNM/Still Birth n	%	premenstrual dysphoric disorder (MD) n	%	Raptured Uterus n	%
1.	January	25	10.72	0	0.00	1	
2.	February	0	0.00	0	0.00	1	3.13
3.	March	0	0.00	0	0.00	2	6.25
4.	April	29	12.46	1	33.33	4	12.5
5.	May	44	18.88	0	0.00	1	3.13
6.	June	10	4.29	0	0.00	1	3.13
7.	July	20	8.58	0	0.00	1	3.13
8.	August	33	14.16	0	0.00	0	0.00
9.	September	24	10.30	1	33.33	0	0.00
10	October	18	7.73	0	0.00	9	28.13
11	November	0	0.00	0	0.00	3	9.38
12	December	30	12.88	1	33.33	9	28.13
	Total	**233**	**100.00**	**3**	**100.00**	**32**	**100.00**

Table No.4: Frequency distribution of cesarean sections (CS) on the basis of clinical presentation

Clinical presentation	R1 n	%	R2 n	%	R3 n	%	R4 n	%	R5 n	%	R6 n	%	R7 n	%	R8 n	%	R9 n	%	R10 n	%	Total n	%
Obstructed labour	50	20.58	3	2.91	34	16.92	9	6.16	27	3	7	8.64	9	7.38	7	11.29	1	1.92	1	0.76	148	7.25
Failure to progress	86	35.39	7	6.8	69	34.33	5	3.42	84	9.34	20	24.69	30	24.59	4	6.45	0	0	12	9.09	317	15.53
Fetal distress	60	24.69	13	12.62	40	19.9	24	16.44	36	4	7	8.64	6	4.92	8	12.9	0	0	16	12.12	210	10.29
Pre eclampsia	3	1.23	9	8.74	4	1.99	10	6.85	20	2.22	0	0	3	2.46	2	3.23	0	0	5	3.79	56	2.74
Previos cesarean	0	0	0	0	0	0	0	0	597	66.41	2	2.47	16	13.11	10	16.13	1	1.92	44	33.33	670	32.83
Prom	12	4.94	2	1.94	8	3.98	9	6.16	14	1.56	4	4.94	11	9.02	3	4.84	2	3.85	6	4.55	71	3.48
Breach	1	0.41	0	0	0	0	3	2.05	2	0.22	34	41.98	27	22.13	10	16.13	3	5.77	2	1.52	82	4.02
Failed induction	6	2.47	15	14.56	4	1.99	13	8.9	4	0.44	0	0	1	0.82	0	0	2	3.85	3	2.27	48	2.35
Antepartum haemorrhage	3	1.23	4	3.88	17	8.46	35	23.97	6	0.67	1	1.23	3	2.46	1	1.61	0	0	26	19.7	96	4.70

(aph)																						
Oblque/ transverse lie	0	0	1	0.97	1	0.5	0	0	6	0.67	0	0	3	2.46	2	3.23	37	71.15	0	0	50	2.45
Hand prolapse	1	0.41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	5.77	1	0.76	5	0.24
Cephalopelvic disproportion (cpd)	3	1.23	15	14.56	1	0.5	4	2.74	9	1	0	0	0	0	3	4.84	1	1.92	0	0	36	1.76
Others	2	0.82	5	4.85	7	3.48	8	5.48	3	0.33	1	1.23	2	1.64	2	3.23	0	0	3	2.27	33	1.62
Intra uterine growth restriction (iugr)	2	0.82	0	0	1	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0.15
Oligohydromnios	8	3.29	11	10.68	12	5.97	15	10.27	17	1.89	3	3.7	6	4.92	2	3.23	0	0	6	4.55	80	3.92
Preciuos preg/boh	4	1.65	9	8.74	1	0.5	7	4.79	1	0.11	1	1.23	4	3.28	5	8.06	1	1.92	3	2.27	36	1.76
Scar tenderness	0	0	2	1.94	0	0	0	0	66	7.34	0	0	0	0	0	0	0	0	4	3.03	72	3.53
Cord prolapse	2	0.82	1	0.97	2	1	2	1.37	0	0	1	1.23	0	0	0	0	0	0	0	0	8	0.39
Multiple birth	0	0	1	0.97	0	0	0	0	0	0	0	0	0	0	1	1.61	0	0	0	0	2	0.10
Post date	0	0	4	3.88	0	0	2	1.37	7	0.78	0	0	1	0.82	0	0	0	0	0	0	14	0.69
Brow presentation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1.92	0	0	1	0.05
Retained second twins	0	0	1	0.97	0	0	0	0	0	0	0	0	0	0	2	3.23	0	0	0	0	3	0.15
Total	243	100	103	100	201	100	146	100	899	100	81	100	122	100	62	100	52	100	132	100	2041	100

DISCUSSION

This study was designed to assess and analyze the high influx of cesarean reporting in the study center using Robson 10 group classification system. The Robson 10 Group classification system was used to assess the patients attending LMH Kohat in order to determine each Robson classification group contribution in the high rate of cesarean sections carried out in this unit. The study showed 19.83% cesarean rate in the study unit, which is slightly higher than the standard WHO protocol that cesarean sections must not be greater than 15%[12].The study unit majorly attending patients of rural areas, and the rate of cesarean sections are even more in urban population as described in a study conducted in Canada from the duration 199-2003[13]. Other studies also presenting the same pattern of increased cesarean rate during the last few years. A study carried out in Farid Abad India in 2018 showed that out of 531 deliveries 286 (53.86%) were cesarean in a six month period[1]. A study conducted in Pakistan institute of Medical science (PIMS) Islamabad in 2017 presented 33.3% cesarean rate which is significantly high than present study with similar causes described in present study[14]. The difference in CS rate is because the PIMS is a huge referral center with huge catchment and patient's influx. Robson's classification 5, 3 and 1 were with highest rate of cesarean in present study also justified in other studies by T kazmi et al, 2012[15] and MP Hehir et al 2018 [16] where these three groups are the main contributing factors in total cesarean. It has been determined that the induced labour and previous cesarean are the causes of increased cesarean. Induction of labour increased the chance of cesarean sections[17]. The present study showed that rate of cesarean in group R1 is less 11.32% as compared to group R2 (55.98%) due to the main cause of induction. Previous cesarean, fetal distress and failure to progress were the major factors behind cesarean sections in most of the Robson classes in present study. These clinical factors are also being highlighted in other studies as causative factors of cesarean[1,18]. The finding results of this study are in consistence with other studies mentioned in references.

CONCLUSION

The overall cesarean sections rate in LHM hospital Kohat was moderately high than the WHO recommended average rate of 15%. As our hospital is the referral center in the Southern District of KPK and receives numerous patients in critical condition from other hospitals which are not well equipped to provide EMOC services. In such situations emergency C-section is done to prevent maternal and fetal morbidity and mortality. To generate C-section rate of our hospital truly illustrative of the population catered we have to add all the live births of other hospitals from where we do receive referrals. The highest cesareans were in Robson classification group R5, R3 and R1. Previous cesarean, failure to progress, induced labor and fetal distress has been reported as the main indications of cesarean section. Although the rate of cesarean sections have increased than assumed level, it can be minimized by using standardized institutional protocols of IOL, reducing primary section rates, discouraging undue inductions, adequate counseling and encouraging for VBAC, changing the protocols for dystocia and non-reassuring fetal status, training and encouraging obstetricians to perform versions and breech vaginal deliveries and adopting monitoring system to manage the non-serious cases in normal deliveries. More studies using this classification could further help obstetricians and hospitals formulate

strategies to reduce their section rates till they reach the proposed WHO recommendations.

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Original Article

Comparison of Short Term Post-Operative Complications in Developmental Cataract Surgeries between 05-10 Years Aged Children with Hydrophobic Acrylic Intra Ocular Lens (IOL) Versus Poly Methyl Meth Acrylate Intra Ocular Lens Implantation

Cataract Surgeries in Children with Hydrophobic Acrylic IOL VS Poly Methyl Meth Acrylate IOL Implantation

Muhammad Khalid Shaikh[1], Attaullah Shah Bukhari[2], Mushtaque Chandio[1], Arif Rabbani[1], Kainat Saleem[1] and Khan Muhammad Nangrejo[1]

ABSTRACT

Objective: To Compare Short Term Post-Operative Complications in Developmental Cataract Surgeries between 05-10 Years Aged Children with Hydrophobic Acrylic Intra Ocular Lens (IOL) Versus Poly Methyl Meth Acrylate Intra Ocular Lens Implantation.

Study Design: Prospective and Interventional study

Place and Duration of Study: This study was conducted at the Ophthalmology division, PUMHSW, Nawabshah from June 2014 - May 2015.

Materials and Methods: Proposed clinical imminent interventional concentrate included 50 sequential pediatric patients (i.e., 100 eyes) of 05-10 years old, with reciprocal or one-sided formative waterfalls suffered waterfall medical procedure through back chamber essential implantation of intra ocular lens, without essential foremost vitrectomy and back capsulotomy. Average age of kids was 7.48 yrs. in which there were 51 guys and 49 females out of 100 participants. Most of the kids were in the age gathering of 5 to 9 years. All pediatric waterfall patients were partitioned in 2 groups.

Results: Children's average age was 7.48 years old. Males comprised 51% of the total, while females accounted for 49%. In table 1 all the variables about age, post-operative complications, (immediate and delayed) shown in table 1 and chart 1 and 2.

Conclusion: Posterior capsular opacification is a successive intricacy postoperatively connected with PMMA bunch contrasted with Hydrophobic Acrylic bunch. Subsequently Hydrophobic Acrylic Intra Ocular Lens is prescribed to use in formative waterfall medical procedures.

Key Words: Cataract Surgeries, Children, Hydrophobic IOL, Poly Methyl Meth IOL, Implantation

INTRODUCTION

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Intraocular lense (IOL) is an implantation of focal point into an eye which is utilized for treating the refractive errors shortfall after evacuation of waterfall. IOL's sort utilized for waterfall treatment and are embedded after expulsion of cataractous regular lens is the pseudophakic IOL. [1] They comprises as a rule of plastic little focal point with sides upholds called haptic, to be confined in the focal point inside pack of case inside the eye. [2] Harold has discovered that after waterfall medical procedure, implantation of IOL inside eye is a massively compelling interaction. [3] IOLs are generally comprised of rigid substance such as Poly Methyl Meth Acrylate (PMMA) and adaptable substances such as Acrylic, and silicon. [4]

Poly Methyl Meth Acrylate (PMMA) is the first utilized material effectively. Interpreting latent nature of PMMA is straightforward and valuable for implantation

of an eye. This intraocular focal point has been planned and embedded by Ridley. Improvements in the innovation of focal point fabricating have taken use of silicone and acrylic which are in genuine latent delicate foldable material. It licenses collapsing of focal point and addition of eye by cut which is little and makes a superior determination in people having retinopathy and uveitis history because of diabetes thus vitrectomy is required and silicone supplanting or at risk of separation of retina.[5] Previous record of less recurrence of postoperative complexities in waterfall with intra ocular lens implantation, has made us relaxed and less watchful regarding cautious evaluation and medical procedure system testing and more up to date visual prosthesis.[6] Recent advances in Ophthalmology have called attention to a few major issues related to opacification in regards to the post-usable waterfall IOL medical procedure, that incorporate,[7] anterior capsular opacification, opacifications inside hydrophilic intraocular lens, acryl soft IOL glistening, snow flake opacifications of PMMA intraocular lens and capsular opacification Posterior.

Subsequently grown-up a medical procedure for waterfall any inconvenience that might have happened can likewise result in a high school suffering implantation of focal point. No confusions must have been organized that are one of a kind to youngsters when contrasted with grown-ups. However, the powerful reaction of aggravation of the youngster's eye to held cortical part and the inclination for another film creation, even where foremost and back capsulectomy have been done, commonly by and without implantation of IOL [8,9] produce a superior affinity for the synechae advancement & dislocations IOL.[10,11,13-15] Some proof recommends, but that essential intraocular focal point embedding diminishing its frequency in kids with glaucoma following formative and inborn waterfall medical procedure.[16]

MATERIALS AND METHODS

This study was conducted Ophthalmology division, PUMHSW, Nawabshah within a year i.e., June 2014 - May 2015.

Sampling: Proposed clinical imminent interventional concentrate included 50 sequential pediatric patients (i.e., 100 eyes) of 05-10 years old, with reciprocal or one-sided formative waterfalls suffered waterfall medical procedure through back chamber essential implantation of intra ocular lens, without essential foremost vitrectomy and back capsulotomy. Average age of kids was 7.48 yrs. in which there were 51 guys and 49 females out of 100 participants. Most of the kids were in the age gathering of 5 to 9 years. All pediatric waterfall patients were partitioned in 2 groups.

1) Group A: 50 eyes of pediatric waterfall patients were embedded inflexible PMMA IOLs in this bunch.

2) **Group B:**   This group consisted of every one of the excess 50 eyes of pediatric waterfall patients went through a medical procedure were embedded the foldable Hydrophobic Acrylic IOL in back chamber.

Transient postoperative complexities were thought about in the two gatherings An and B under study for Twelve a year.

Inclusion Criteria

• The pediatric cataract patients in the study ranged in age from five to ten years old.

• Patients with uniocular or binocular developing cataract in children.

• Pediatric cataract patients who followed the post-operative instructions to the letter.

Exclusion Criteria

• Patients with other eye problems, such as glaucoma, uveitis, microcornea, colobomas, microphthalmia, and corneal opacity, were not included in this study.

• Kids with traumatic and complex cataracts were ruled out of the research.

• B.Scan revealing various ophthalmic abnormalities such as retinoblastoma, retinopathy of prematurity (ROP), retinal detachment, and PHPV (primary hyperplastic primary vitreous).

Experiment: All activities were executed under broad sedation utilizing every one of the standard procedures of general sedation and under a qualified and accomplished anesthetist. Every one of the medical procedures were done by a specialist with at least 10 years of experience in the related field. Entire setting was done at Department of Ophthalmology, PUMHSW, Nawabshah.

Every patient with waterfall complication and had gone through treatment ranging between 05-10 years were encouraged to go to eye OPD at legitimate time stretches, where they were analyzed through actually looking at V/A, direct and aberrant ophthalmoscopy and cut light bio-microscopy by utilization of +90 D focal point or +78D focal point to notice any post usable difficulty uniquely back capsular opacification.

Follow up sessions of post usable patients was scheduled as mentioned below:-

1. first development on first post employable day.

2. second development following multi week of first development.

3. third development following fourteen days of second development.

4. fourth development following three weeks of third development.

5. fifth development following a month and a half of fourth development.

6. 6Th development following 03 months of fifth development.

7. 7th and last development following 06 months of sixth development.

RESULTS

Children's average age was 7.48 years old. Males comprised 51% of the total, while females accounted for 49%. A high percentage of the children were between the ages of 5-7 years (n=48%), between 7.1-9 years n=42%, and between 9.1-10 years n=10%.

When the two groups were compared by age, there was no significant difference in the age ranges that were affected (p value 0.781). In both the PMMA and acrylic IOL groups, no statistical difference was seen in terms of gender (i.e., p- value 0.841). Postoperative problems in early days (such as within 7 days) and delayed (such as from 2nd week to 12th month) were discovered. In both groups, the immediate complications were statistically negligible (p value 0.934). (Table 1).

Table No.1: Detail of both groups

Variables	Group 1	Group 2	P value
	PMMA IOLs (n=50)	Foldable acrylic IOLs (n=50)	
Age			
5-7yrs	24(48%)	24(48%)	0.781
7.1-9yrs	22(44%)	20(40%)	
9.1-10yrs	4(08%)	06(12%)	
Gender			
Male	25(50%)	26(52%)	0.841
Female	25(50%)	24(48%)	
Postoperative Complications			
Immediate			
Iritis	08(16%)	07(14%)	
Raised Intra ocular Pressure	04(08%)	03(06%)	0.934
Striate Keratitis	15(30%)	14(28%)	
Endopthalmitis	0	0	
None	23(46%)	26(52%)	
Delayed			
Posterior capsular opacification	19(38%)	08(16%)	
Decentred IOL	13(26%)	04(08%)	
Raised Intra Ocular Pressure	01(02%)	0	0
Pupillary Capture	12(24%)	04(08%)	
Retinal Detachment	0	0	
None	05(10%)	36(72%)	

Post-operative immediate complications in patients were noted as, in iritis 16% in PMMA lens implantation, and 14% in hydrophobic acrylic lens implantation, while in raised intraocular pressure 08% in PMMA lens implantation, and 06% in hydrophobic acrylic lens implantation, and in striate keratitis 30% in PMMA lens implantation, and 28% in hydrophobic

acrylic lens implantation were the most common immediate complications, with the PMMA group having a higher frequency of complications than the Hydrophobic Acrylic group (chart 1)
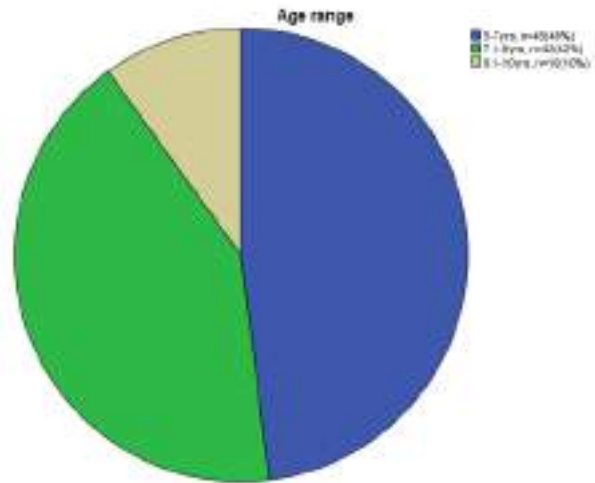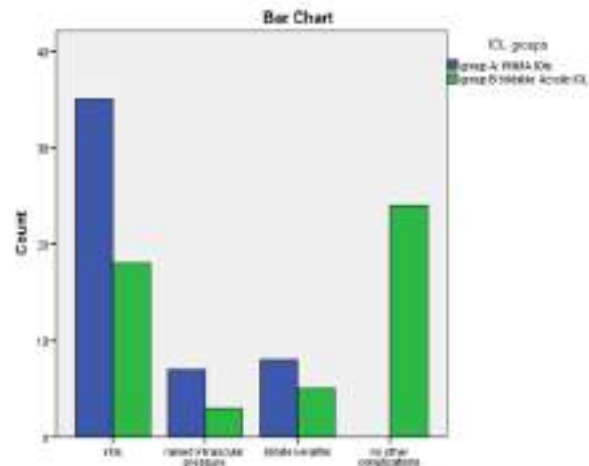

Figure No.1: Age range.

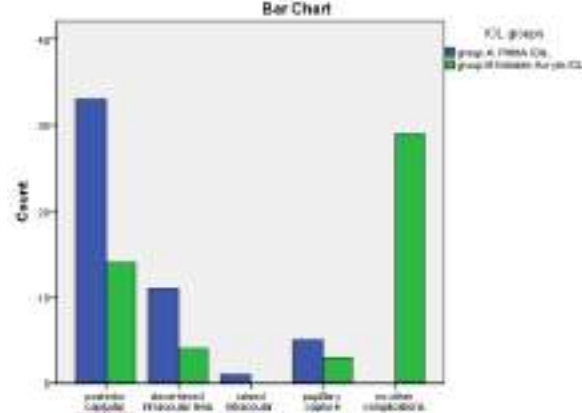**Chart No.1:Postoperative immediate complications**

Chart No.2:Postoperative delayed complications

The delayed complication rate in both groups was statistically significant, with the PMMA group experiencing more difficulties than the Hydrophobic

Acrylic group (p value-0.000). In posterior capsular opacification delayed complications were observed as 38% in PMMA lens implantation versus 16% in hydrophobic acrylic lens implantation, in de-centered intraocular lens 26% in PMMA lens implantation versus 08% in Hydrophobic Acrylic lens implantation, while in raised intraocular pressure 02% in PMMA lens implantation versus 0% in Hydrophobic Acrylic lens implantation, and in pupillary capture 24% in PMMA lens implant versus 0% in Hydrophobic Acrylic lens (chart 2).

DISCUSSION

These days waterfall careful result have worked on impressively because of headway in advances and treatment in present day medical procedure [1,17,18]. These days each 3 out of 10,000 youngsters are found to have waterfall, but fluctuation lies all through the world. In Pakistan as per one review waterfall assessed to be 0.12% detailed visual issues[19].

In our concentrate each of the youngsters have a place with 05-10yrs old enough. This is like ages impacted generally as obvious from various studies [20,21]. There were more guys in our review contrasted with females. This has likewise been steady finding in various examinations [21,22], Sami et al has additionally tracked down expanded occurrence in guys than females [21,23].

In this study, most severe continuous entanglement was back capsular opacification, which occurred in 27 patients out of 100. Back capsular opacification was discovered in 19 (38%) of the 50 cases of PMMA focal point implantation, and in 08 (16%) of the 50 cases of Hydrophobic Acrylic focal point implantation. Iritis increased intraocular pressure, Striate Keratitis, Decentred IOL, and Pupillary Catch were among the other issues discovered. Uveitis, hyphema, and back capsular opacification have all been identified by Asghar et al. Hasan et al discovered a 34% risk of back opacification in patients after a waterfall medical operation, with striate keratopathy being the most common early postoperative entanglement[22].

Foldable IOLs feature good visibility and excellent biocompatibility, with no surface modifications during collapsing and a low risk of damage. In a clinical trial with randomised control groups, Bazaz et al found that 10% of the acrylic group had uveitis after surgery, compared to 25% of the PMMA group 23. Other issues, such as shade affidavit, iridocorneal attachments, and Synechae arrangement in PMMA bunch, were also observed.

In our review there were additionally expanded difficulties found in PMMA bunch contrasted with Hydrophobic acrylic bunch. While in our review the most often happening confusion I-e; back capsular opacification anyway uncovered genuinely critical worth (p esteem 0.00). This is almost like outcomes closed from past studies.

CONCLUSION

Posterior capsular opacification is a successive intricacy postoperatively connected with PMMA bunch contrasted with Hydrophobic Acrylic bunch. Subsequently Hydrophobic Acrylic Intra Ocular Lens is prescribed to use in formative waterfall medical procedures.

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Conflict of Interest: The study has no conflict of interest to declare by any author.

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Original Article

Role of Tacrolimus Skin Ointment 0.03% in Severe Vernal Keratoconjunctivitis

Attaullah Shah Bukhari[1], Sarmad Jamal Siddiqui[2], Vijia Kumar Gemnani[1], Shahid Jamal Siddiqui[1], Mohammad Ali Shar[1] and Suhail Ahmed Shah[1]

ABSTRACT

Objective: To determine the role of tacrolimus skin ointment (0.03%) in severe vernal keratoconjunctivitis.
Study Design: Interventional study
Place and Duration of Study: This study was conducted at the Department of Ophthalmology KMC Civil Hospital Khairpur Mir's, Al Ibrahim eye Hospital Malir Karachi PUMHS Nawabshah (SBA) from February, 2020 to February, 2021 for a period of one year.
Materials and Methods: After ERC approval and take informed consent, all sociodemographic variables were gathered from pts:/guardians. The best spectacle-corrected visual acuity was assessed, biomicroscopy, slit lamp was done, and conjunctival/corneal fluorescein staining was performed on all of them. Clinical signs like conjunctival Hyperemia, papillae, trans dots, and SPK were graded as no symptoms represent no any symptoms, mild, moderate, severe means grade 0,1,2 and 3.
Results: A total of 48 cases (48 eyes) were included in the study. The mean age was recorded as 10.75 ± 4.19 years. After starting Tacrolimus skin ointment 0.03%, patients were followed for 1 month. All symptoms improved significantly; itching was the first symptom to be improved. By 1month of treatment, the symptom only included mild redness observed in 3 patients with 93.7% improvement and mild photophobia in 5 patients with 89.5% improvement. Conjunctival hyperemia improved in 40 patients (83.3%). In addition, papillae showed improvement in 39 eyes (81.25%). There was an improvement in Trantas dots in 34 cases 70.8%. SPK improved in 29 (60.4%) cases.
Conclusion: It was concluded that improvement in signs and symptoms was observed and recorded by use of topical tacrolimus skin ointment 0.03% from grade 3 to1 and grade 2 to 0 within 1 month of therapy. No complications were observed during the 1month use of this medicine.
Key Words: Tacrolimus, Role, skin, severe, VKC.

INTRODUCTION

Vernal keratoconjunctivitis is an inflammatory infection of conjunctiva and cornea which might be acute on chronic, mostly happens in 1st decade of life, more frequent in boys and more seemed in hot and dry region[1] (Mediterranean basin, the mid-east, Africa and Indian subcontinent). In hot and dry season boys have usually affected. [2]
Symptoms with itching, redness, photophobia along with watery discharge. Signs which can be seen on Slit

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Lamp Microscope include Conjunctival Injection (hyperemia), Limbitis (Trantas Dots), Punctate Epithelial Keratopathy (superficial punctate keratitis SPK), and Giant Papillae (GPC).
There is a recurrence of about 95% of cases in adult teens.[3] Patients usually are visually disturbed due to intense itching, redness, and watery discharge along with photophobia. Symptoms are aggravated by a hot and humid environment.
If properly not managed, VKC generally results in sight-threatening complications [4] over some time like cataract glaucoma, corneal thinning, ectasia (keratoconus), and shield ulcer. Topical antiallergic, mast cell stabilizers, nonsteroids anti-inflammatory drugs, steroids, and immunomodulators are some of the treatment choices for Vernal keratoconjunctivitis. [5]
Mainly steroids are used in the treatment of VKC, which causes serious side effects like glaucoma, cataract, and secondary infections. [6] Certain immunomodulators are used to reduce the onset of steroid-induced problems in VKC patients.[8] Two of these are cyclosporine and tacrolimus, the tacrolimus of them is a powerful, nonsteroidal macrolide

immunomodulator derived from Streptomyces tsukubaensis that is comparable to cyclosporine in terms of potency.[9]

Tacrolimus ointment two times per day given good progress in symptoms of VKC, same as cyclosporine eye drop four times per day. [7] Tacrolimus showed itching relief through mast cells (inhibit the release of histamine).[8] FDA approved Tacrolimus, to apply in visceral transplantation (liver),[9] and extended other body viscera and body parts. Skin problem such as vitiligo is broadly treated by Tacrolimus and are also so efficient and secure option in the management of vitiligo among children. [10]

The present study is designed to evaluate improvement in signs and symptoms of VKC with Topical Ocular Tacrolimus use, so it can be utilized in the future to avoid long-term use of steroids, while simply anti-allergy eye drops (tropical) are not enough to manage Vernal Keratoconjunctivitis. Tacrolimus topical Ocular ointment is not available in Pakistan, due to this Skin ointment is used in this study.

MATERIALS AND METHODS

Before the start of the study, approval was taken from the Ethical review committee from KMC Teaching Hospital Khairpur Mir's. Written consent was taken from all eligible patients and demographic information was taken including age, name, and sex was recorded descriptively. A total of 48 patients was included in the study. There were 10 new instances and 38 recurrent cases, all of which were resistant to earlier treatment with topical antihistamines, mast cell stabilizers, and steroids.

A questionnaire was given to all participants to evaluate the clinical symptoms grading such as Itching, redness, photophobia, etc on Likert like scale in grades 0,1,2,3 (no, mild, moderate, and severe symptoms)

Eye examinations were taken from all patients ie Spectacle-corrected visual acuity, slit-lamp biomicroscopy, and conjunctival/corneal fluorescent staining were performed on all of them.

Clinical signs like conjunctival Hyperemia, papillae, trans dots, and SPK were graded as in table No. 3 and described in the operational definition. The benefits and drawbacks of the treatment were thoroughly described to the patients or their guardians.

Tacrolimus 0.03 percent ointment was recommended for use in the inferior fornix in o2 times per day, whereas all other VKC management (antihistamines, mast cell stabilizers, and NSAIDS) were stopped, except for steroids, which were tapered down.

Prescription, TearcoolR (Lubricant eye drops) 02 times daily was applied to minimize irritation, seemed uncommon with tacrolimus ointment.

The success of the medication was determined both subjectively by the patient's symptoms and objectively

by improvements in clinical indicators observed with a slit lamp microscope.

Additional treatment should be recorded. Any therapeutic side effects, such as eye pain, were asked about, as well as any prospective problems, like a raise in ocular pressure, secondary bacterial infections, and lens opacification.

All these results were documented at the start of therapy as well as at all subsequent follow-ups of one week, two weeks, and one month.

During the follow-up period or after 3 months, notified all recurrence of symptoms or indications after quitting all therapies.

Statistical Analysis: Data analysis was analyzed by applying SPSS version 23.0. Mean and Standard deviation will be computed of quantitative variables. Frequency and percentages will be calculated for categorical variables. Pie Chart is used to define the gender distribution. Pre and Post-treatment frequencies will be noted to calculate improvement for each sign and symptom.

RESULTS

A total of 48 cases (48 eyes) were examined in the study, male (31) participation seemed doubled as compared to female (17) patients. Gender distribution is depicted in Figure-I. The mean age of the study participants was 10.75 ± 4.19 years. Itching and watering, as well as photophobia and redness, were the most prevalent symptoms. Table-I. Papilla was seen in all 48 cases (21 cases in Grade 2 and 27 cases in grade 3), Trans Dots were observed in patients as n=23 moderate cases and n=25 cases, SPK observed in patients as n=21 moderate cases and n=27 severe cases, conjunctival hyperemia observed in patients as n=4 mild cases, n=23 moderate cases and n=21 severe. Table-2.

After starting Tacrolimus skin ointment 0.03%, patients were followed for 1 month. All symptoms improved significantly; itching was the first symptom to be improved. By 1monthtreatment, the residual symptom only included mild redness observed in 3 patients with 93.7% improvement and mild photophobia in 5 patients with 89.5% improvement, which disappeared after a further 1 month of therapy. Table-1

Noticeable progress was noted objectively. Conjunctival hyperemia was the primary sign to show progress in 2 weeks of therapy. Conjunctival hyperemia improved in 40 patients (83.3%), while it disappeared further 1 month of treatment in the remaining cases. In addition, papillae showed improvement in 39 eyes (81.25%). There was an improvement in Trantas dots in 34 cases 70.8%. SPK improved in 29 (60.4%) cases. Table-2.

The patients remained mostly asymptomatic during the treatment period, while 10 (20.83%) patients had recurrence after 1 month of treatment though in a

milder form. Table-3. Consequently, more than four weeks remained to continue and then slowly tapering within 04 weeks. No, additional treatment is needed such as topical antiallergic or steroids, while treating with tacrolimus.

There were only three cases of complaining of slight burning when applying the ointment; no complaint was observed in remained 45 cases. Figure-II In all cases intraocular pressure remained normal. In addition, no other complication was seen in the case while using tacrolimus skin ointment.

Table No.1: Symptoms before start of treatment and one month after treatment

Symptom	Grades prior to Rx				Grade After 1-month treatment				Improvement
	0	1	2	3	0	1	2	3	
Itching	0	0	n=25	n=23	n=48	0	0	0	100%
Redness	0	0	n=18	n=30	n=45	3			93.7%
Watery discharge	0	n=12	n=22	n=14	n=48	n=0	0	0	100%
Photophobia	0	n=3	n=20	n=24	n=43	5	0	0	89.5%

Table No.2: Signs before start of treatment and one month after the treatment

Signs	Grades prior to Rx				Grade After 1-month treatment				Improvement
	0	1	2	3	0	1	2	3	
Conjunctival Hyperemia	0	n=4	n=23	n=21	n=40	n=8	0	0	83.3%
Papillae	0	0	n=21	n=27	n=39	n=9			81.25%
Trantas Dots	0	0	n=23	n=25	n=34	n=14	0	0	70.8%
SPK	0	0	n=21	n=27	n=29	n=19	n=0		60.4%

Table No.3: Recurrence of Signs & Symptoms

Status	Frequency	Percent
None	38	79.1
Yes	10	20.83
Total	48	100
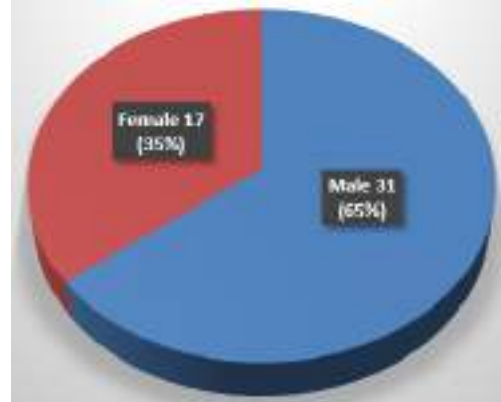
Figure No.1: Gender Distribution
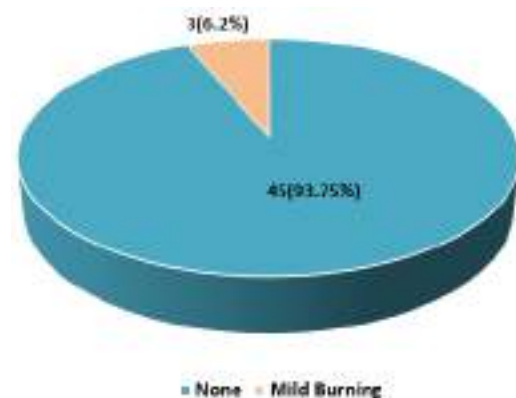
Figure No.2: Side Effects of Tacrolimus

DISCUSSION

Since, VKC is an immune-mediated illness with significant ocular morbidity, in moderate to severe instances, the use of an immunomodulation medicine to treat the debilitating symptoms of itching and watering in children becomes important. In most studies, the disease is recurrent after stopping therapy, hence treatment is used for a longer period. The preferred choice for VKC is Topical steroids in that cases, however, long-term usage can result in vision-threatening problems such as glaucoma, cataracts, corneal thinning, and corneal ectasia. As a result, Tacrolimus ointment has emerged as a highly safe and effective steroid-free alternative, inhibiting all immunological processes involved in VKC development.

The only drawback of this study was the off-label use of tacrolimus skin ointment 0.03% in the conjunctiva, though an ophthalmic preparation is not available in Pakistan. This study confirms that Tacrolimus skin cream (0.03%) in such a mild concentration is safe and effective in improving signs and symptoms of VKC and a safe alternative to topical steroids for VKC. The effectiveness of tacrolimus was also observed in other studies as we opted for this medicine after going through all this research. Tacrolimus 0.1% 'skin' cream applied to the skin of lower eyelid in previous studies[11] had effectively controlled VKC. Sengoku et al used 0.01 – 1% eye drops in an animal study for ocular allergy while Ohashi et al used an 0.1% ophthalmic suspension in another clinical study.[12,13] In the study, in all cases not only was there effective management of the patient's symptoms. (Table-I) Not only was there effective management of the patient's symptoms in all

cases (Table-I) but there was..s also a subjective improvement immediately after commencing the medication, according to our findings.

This study confirmed the improvement in signs and symptoms of VKC with Tacrolimus skin ointment 0.03%, which were refractory to conventional treatment. All signs and symptoms showed noticeable progress with no developing side effects. O3 patients showed burning (mild), however, it was subsided within 07 days. In their research population, it was also observed a minor transitory stinging sensation that lasted a few days.[14]

The itching was the most prevalent symptom in our research, and it was also the earliest to go away. Incomparable research, it was found that 5 out of 20 patients had itching, with all instances improving within a week. [15,16]

The commonest feature was papillary hypertrophy that was occurred in all 48 cases with n=21 moderate and n=27 severe which were also resolved with a success rate of 81.25% within one month of therapy. Conjunctival hyperemia resolved responded to treatment first and resolved within one month with an 83.3% success rate. Bardot et al. also reported conjunctival hyperemia to get resolved within 1 month in 60% of patients[14]. Trantas dots, SPK, redness, photophobia, watery discharge all showed marked improvement.

In the current study, an attempt to stop Tacrolimus skin ointment 0.03% after 1month results in recurrence of a mild form of VKC in 10 cases 20.83% as depicted in table no. III, as a result, they were instructed to utilize it for at least 2– 3 weeks before progressively tapering it over the next month. Topical Tacrolimus was terminated after 4 weeks in VKC in previous investigations, and no recurrence was seen. No complication of tacrolimus ointment used in our study was observed. A study, in which topical Tacrolimus was used for up to 42 months in patients with AKC16, while it was used for up to seven months in another study in patients with AKC[17-22] and no negative effects were recorded.

No extra drugs, such as antihistamines or mast cell stabilizers, were required in our trial. It can be applied as preventive medicine in less severe illnesses to stop aggravation during the hot, humid season of the year because long-term usage has been proved to be safe.

Tacrolimus creates a minor burning sensation when used for the first time in 3 out of 48 patients which also resolved after 2 weeks spontaneously. This mild burning sensation with tacrolimus was also observed in other studies.[15]

CONCLUSION

We highlighted that using 0.03 percent Tacrolimus skin cream two times per day in the lower conjunctival fornix seemed significant improvement in VKC; all

patients experienced effective remission of their symptoms after four weeks of treatment. During the research, no extra drugs such as antihistamines or steroids were required. As a result, it was an alternative for steroid responders to reduce the risk of steroid-induced problems.

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Conflict of Interest: The study has no conflict of interest to declare by any author.

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The Frequency of Pre-Eclampsia and Eclampsia in Un-booked Pregnant Patients Presenting in a Tertiary Care Unit

Umme-Farwa, Farah Deeba Nasrullah, Ana Mehreen, Saima Shaikh and Pushpa Bai

ABSTRACT

Objective: To determine the frequency of pre-eclampsia and eclampsia in un-booked pregnant females aged 18-40 yrs. presenting to a gynecology unit III CHK.

Study Design: Descriptive, cross sectional.

Place and Duration of Study: This study was conducted at the Department of Gynecology and Obstetrics until III CHK Karachi from May, 2018 to November, 2018 for a period of six months.

Materials and Methods: A total of 245 un-booked primigravida and multigravidas between 18 - 40 years of age were included in the study. Patients with complications due to any other diagnosed medical disorders i-e chronic hypertension, diabetes, thyroid disorders, known renal disease were excluded. In study population complete blood count, liver function tests, renal function tests, coagulation profile and 24 hours urine for protein was performed. All patients were managed according to the existing protocol in the department. Pre-eclampsia was diagnosed by blood pressure monitoring and proteinuria by using urine dipstick, urine detailed report or 24 hours urinary protein.

Results: the study included women between 18 to 40 years with mean age of 29.61 ± 4.48 years. Majority of the patients 127 (51.84%) belonged to later age group (31 to 40 years). The mean gestational age of women was 26 ± 4.59 weeks. Mean gravidity was 3.31 ± 0.80. Mean parity was 2.22 ± 0.78. Mean BMI was 29.06 ± 2.56 kg/m2. Frequency of pre-eclampsia and eclampsia in un-booked pregnant females was found in 29 (11.84%) and 19 (7.76%) women respectively.

Conclusion: This study concluded that frequency of pre-eclampsia and eclampsia in un-booked pregnant females is significantly high.

Key Words: preeclampsia, eclampsia, un-booked, high risk pregnancy, medical disorders.

INTRODUCTION

The primary aim of antenatal care is to achieve better maternal and fetal outcome and early recognition and management of high risk patients. Studies have shown increases prevalence of adverse fetal and maternal outcome in unsupervised and un-booked pregnancies which is more than pregnancies receiving adequate antenatal care. [1] Delay in reaching health facilities may be related to poor knowledge about health problem and may have a definite role in cases of adverse pregnancy outcome [2]

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Un-booked patients are defined as those who due to any reason fail to seek antenatal care services in health care facility. [3] Childbirth in the low income countries like Pakistan may be associated with life threatening complication due to poverty and lake of awareness. WHO/UNICEF estimated maternal mortality ratio in Pakistan to be 340/100,000 livebirths. According to one Pakistani study 4.6% of un-booked patients encountered major obstetric hemorrhage while 2% of patients developed severe preeclampsia while in booked cases obstetric haemorrhage and pre-eclampsia was observed in 1 and 0.5 % women respectively. [4] According to another study16.6% of un-booked patients had PIH while rate of cesarean sections among un-booked patients was 18.3% in booked cases it was 8.6 and 8.5% respectively. [5] An early antenatal visit to a health care facility has many benefits, including accurate dating by LMP and ultrasound, early recognition of high risk pregnancies and detection of pregnancy complication like gestational diabetes, pregnancy induced hypertension and pre-eclampsia by objective assessment of maternal baselines weight, blood pressure and urine analysis. [6]

Mitu et al conducted a study on pre-eclampsia in developing countries and observed prevalence as low as 1.8% to as high as 16.7% [7] A Nigerian study conducted in dept. of Obs and Gyn Jos university on un-booked pregnant females found 40% of patients ending up in preterm labor, 9% pregnancies ending in utero fetal demise, 4.2% of patients with abruptio placentae, 2.8% with antepartum eclampsia and cesarean section rate of 15.1% in un-booked patients. [3] In and another Nigerian study observed 92.2% of matern al deaths occurring in un-booked patients and significantly higher rate of eclampsia, hemorrhage, instrumental delivery, emergency cesarean section, ruptured uterus and obstructed labor in these women, while only 7.8% of cases of maternal deaths were observed in booked cases .[8] In our setup of Civil Hospital Karachi which is a tertiary care centre, majority of the patients are un-booked due to poor socio-economic status, unawareness and lack of health care facilities in remote areas. Many complications are avoidable but delay in diagnosis and management leads to poor maternal and fetal outcomes with resultant maternal and fetal morbidity and even mortality in many cases. In the light of current situation and poor outcomes of unsupervised pregnancies, this study was aimed to assess the complications due to un-booked status of mother in CHK, so as to counsel them for further pregnancies and early booking to avoid these complications. Making females aware of these unwanted complications associated with their negligence that may result in long term morbidity of mother and/or baby may motivate them to visit hospitals during their pregnancies to end up with a healthy mother and baby.

MATERIALS AND METHODS

This was a descriptive, Cross-sectional study conducted in the Department of Gynecology and Obstetrics unit III CHK Karachi from 23rd May 2018 to 22nd November 2018. [6]Non-probability, consecutive sampling technique was used to calculate sample size to be 245 by using epi version 3.0 taking hypertensive disorders of pregnancy in un-booked patient to be 19.8% with 95% confidence level and 5% confidence limit.[6] Un-booked pregnant women between 18-40years were included in the study, Un-booked women were defined as those having less than three visits to hospital during pregnancy. Women of any parity presenting to Civil Hospital Karachi with gestational age between 24-42 weeks of pregnancy calculated by LMP/ early available scan, patients visited elsewhere and referred due to pre-eclampsia or eclampsia were also included in the study.

Women with complications due to any other diagnosed medical disorder i-e chronic hypertension, diabetes, thyroid disorders, patients with autoimmune disorders like SLE and APLS and patients with known renal disorders were excluded from this study.

All patients admitted in labor room who fulfilled inclusion criteria were enrolled. Informed verbal consent was taken from patients or attendants for use of their data for study purpose. Detailed history included age, parity gestational age and past medical and obstetric history. Physical examination included general physical examination i-e, height ,weight and blood pressure measurement on two occasions at least 2-4 hours apart, per abdominal for symphysio-fundal height, fetal heart sounds and vaginal examination was performed to diagnose labour by researcher. Gestational age was calculated from LMP or available early trimester scan. Investigations included complete blood count, liver function tests, renal function tests, coagulation profile and 24 hours urine for protein. All patients were managed according to the existing protocol in the department. Pre-eclampsia was diagnosed by blood pressure ≥140/90 mmHg and proteinuria by urine dipstick, Urine DR or 24 hours urinary protein. All the data was entered in pre-designed Performa.

All data was entered and analyzed using SPSS version 22. Mean and standard deviation were calculated for quantitative variables including patient's age, height, weight, BMI, gestational age, gravidity, parity, number and duration of fits. Frequency and percentages were calculated for presenting complaints, residence, pre-eclampsia and eclampsia. Chi-square test was used to assess outcomes like age, gestational age, gravidity, parity, BMI, residence and presenting complaints. P-values of less than or equal to 0.05 was taken as significant.
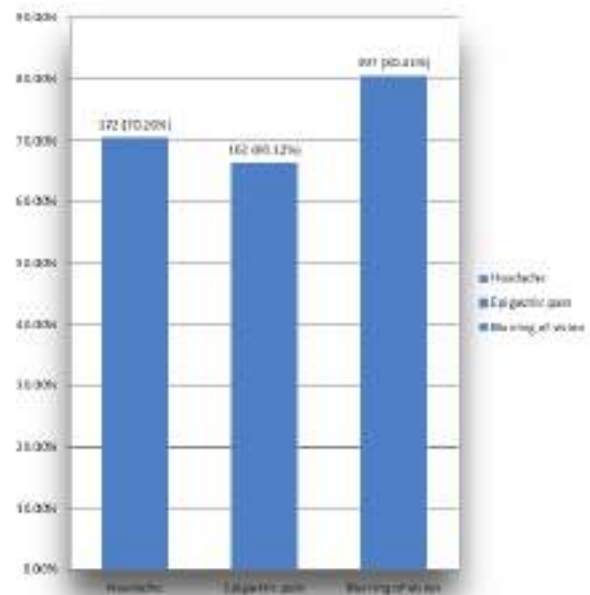
RESULTS

Figure No.1: Distribution of patients according to presenting complaints

Table No.1: Stratification of pre-eclampsia with respect to age, gestational age, gravidity, parity, BMI, residence and presenting complaints

		Pre-eclampsia		P-value
		Yes	No	
Age (years)	18-30	13	105	**0.702**
	31-40	16	111	
Gestational age (weeks)	≤36	21	194	**0.007**
	>36	08	22	
BMI (kg/m²)	≤27	20	49	**0.0001**
	>27	09	167	
Presenting complaint	Headache	19	153	**0.842**
	Epigastric pain	21	141	
	Blurring of vision	25	172	
Gravidity	0-3	11	136	**0.010**
	>3	18	80	
Parity	0-2	14	136	**0.127**
	>2	15	80	
Residence	Rural	18	117	**0.422**
	Urban	11	99	

Table No.2: Stratification of eclampsia with respect to age, gestational age, gravidity, parity, BMI, residence and presenting complaints

		Eclampsia		
		Yes	No	
Age (years)	18-30	10	108	**0.685**
	31-40	09	118	
Gestational age (weeks)	≤36	12	203	**0.001**
	>36	07	23	
BMI (kg/m²)	≤27	11	58	**0.003**
	>27	08	168	
Presenting complaint	Headache	14	158	**0.977**
	Epigastric pain	14	148	
	Blurring of vision	16	183	
Gravidity	0-3	15	132	**0.079**
	>3	04	94	
Parity	0-2	15	135	**0.099**
	>2	04	91	
Residence	Rural	11	124	**0.799**
	Urban	08	102	

Mean age of women was 29.61 ± 4.48 years (range 18-40 years). Majority of the patients 127 (51.84%) belonged to age group of 31 to 40 years. Mean gestational age was 26.11 ± 4.59 weeks. Mean gravidity was 3.31 ± 0.80. Mean parity was 2.22 ± 0.78. Mean height was 159.89 ± 14.52 cm. Mean weight was 71.22 ± 7.52 kg. Mean BMI was 29.06 ± 2.56 kg/m2.

Pre-eclampsia and eclampsia in un-booked pregnant females was observed in 29 (11.84%) and 19 (7.76%) women respectively .Stratification of pre-eclampsia & eclampsia with respect to age, gestational age, gravidity, parity, BMI, residence and presenting complaints is shown in table I and 2.
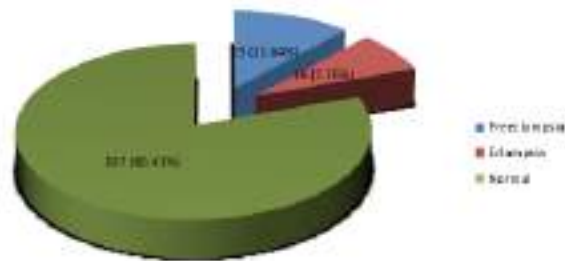

Figure No.2: Frequency of pre-eclampsia and eclampsia in un-booked pregnant females (n=245)

DISCUSSION

Preeclampsia is defined as a disorder involving multiple systems and characterized by hypertension and new-onset proteinuria developing after 20th week of pregnancy.[9,10] However, even in the absence of proteinuria pre-eclampsia is diagnosed in the presence of any of the following conditions : new-onset thrombocytopenia, impaired liver function, renal insufficiency, pulmonary oedema, or visual or cerebral disturbances.[11]

Severe pre-eclampsia is diagnosed as the systolic blood pressure of at ≥ 160 mm Hg and/ or diastolic blood pressure of at ≥ 110 mmHg with significant proteinuria. The other criteria for diagnosis of severe pre-eclampsia include thrombocytopenia (platelet count less than 100,000/microliter),abnormal liver functions indicated by elevated levels of liver enzymes, acute/severe epigastric or right upper quadrant pain (caused by stretching of liver capsule by micro haemorrhages), abnormal renal function tests (serum creatinine concentration greater than 1.1mg/dl and elevated uric acid level),presence of pulmonary oedema and cerebral or visual disturbances including severe headache, blurring of vision and altered consiousness.[12]

Eclampsia is an acute obstetrical emergency which is defined as occurrence of new onset tonic clonic seizures during pregnancy or postpartum in a woman with signs and symptoms of preeclampsia.[12,13] Seizures are usually preceded by certain symptoms/signs such as headache, blurring of vision, epigastric pain and hyper-reflexia which occur in women previously having only mild disease and therefore prediction of timing of eclampsia is very difficult.[13] There is great variation of incidence of preeclampsia/eclampsia among different parts of the world. The incidence being low in developed countries owing to some excellent care during antenatal period.[14,15] In contrast there is high incidence of pre-eclampsia/eclampsia in the developing countries due to lack of antenatal carea as a result of poverty, ignorance, negligence, lack of

transportation and health care facilities in remote areas.[14] The incidences of 0.42%, 1.32% and 1.66% were reported in Zaria, Benin and Lagos, respectively.[15,16]

Studies carried out in Ibadan and Zaria observed higher incidence of pre-eclampsia/eclampsia among younger women in their first pregnancy with age less than 25 years .[17] Eclampsia is reported as a major cause of maternal mortality among women residing in Kano, Sokoto, Jos and other Nigerian cities.[18,19,20] Severe Pre-eclampsia/eclampsia is associated with significant fetal complications comprising placental abruption, utero=placental insufficiency leading to fetal growth restriction, iatrogenic pre-term delivery and intrauterine fetal death.[21] The maternal complications of preeclampsia/ eclampsia includes HELLP syndrome (Haemolysis, Elevated Liver enzymes, Low platelet count) , Disseminated Intravascular Coagulation (DIC), acute kidney injury, cerebrovascular hemorrhage, cortical blindness, focal motor deficit ,posterior reversed encephalopathy and adult respiratory distress syndrome9=(ARDS).[22,23] Studies have shown that the women with pre-eclampsia/eclampsia are likely to be among low income group, subjected to early marriage resulting in teen age pregnancy ,high parity and mainly from rural areas.[25,26]

In this study mean age of women was29.61 ± 4.48 years. Pre-eclampsia and eclampsia in un-booked pregnant females was observed in 29 (11.84%) and 19 (7.76%) women respectively. One Indian study showed 17.2% of un-booked mothers had uncontrolled PIH which is almost similar to our findings.[7] In a nigerian study it was observed that 92.2% of maternal deaths encountered in un=booked patients and with significantly higher rate of eclampsia, hemorrhage, instrumental delivery, emergency cesarean section, ruptured uterus and obstructed labor while only 7.8% of cases of maternal deaths were reported in booked patients.[8] Low socio-economic status, poor nutrition and inadequate antenatal care have close relationship with preeclampsia and eclampsia.

CONCLUSION

This study concluded that frequency of pre-eclampsia and eclampsia in un-booked pregnant females is significantly high. So, we recommend that national awareness programs should be arranged in which pregnant women can be encouraged and emphasize for early antenatal care, accurate dating, early detection of maternal disorders that can threaten pregnancy and its outcome, objective assessment of maternal baselines including weight, blood pressure and urine analysis in order to improve the fetomaternal outcome.

Author's Contribution:

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Final Approval of version:	Umme-Farwa

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Original Article

Frequency of Restless Legs Syndrome among End-Stage Renal Disease Patients on Maintenance Hemodialysis

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ABSTRACT

Objective: To determine the frequency of restless leg syndrome among patients of end-stage renal disease undergoing hemodialysis.

Study Design: Cross-sectional study

Place and Duration of Study: This study was conducted at the Department of Nephrology Department, Ganga Ram Hospital, Lahore from 20th October 2019 to 20th April 2020.

Materials and Methods: One hundred and sixty patients on hemodialysis were enrolled. Patients were assessed for age, gender, body mass index, presence of hypertension, diabetes, anemia, and RLS as per operational definition.

Results: 98 (60.5%) were male patients and 64 (39.5%) were female patients, 37% were from the age group of 18-40 years, 35 patients (21.6%) were having an iron deficiency, 151(93.2%) were hypertensive, 59(36.4%) were diabetic, 45(27.8%) were on antipsychotic/antidepressant drugs and 21(13%) were using antihistamines. 85 patients (52.5%) were having RLS. Among 45 patients who were on antipsychotics/antidepressants, 31 (68.9%) were having RLS with statistical significance (p-value 0.009). Among 21 patients who were on antihistamines, 19(90.5%) were having RLS with a statistically significant p-value of 0.00018. Among iron deficient patients 35(21.6%), 16(45.7%) were having RLS and 19(54.3%) were not exhibiting RLS symptoms, showed no statistically significant difference (p-value 0.366).

Conclusion: The frequency of Restless Legs Syndrome is 52.5% among end-stage renal disease patients on maintenance hemodialysis.

Key Words: Restless leg syndrome, End-stage renal disease, Hemodialsis

INTRODUCTION

Unpleasant sensation in lower limbs that compels the individual to sways his legs, is a neurological pathology often termed as Restless legs syndrome (RLS)[1]. These feelings are often explained by patients as creepy, pin pricking, stretching, or distressing sensation in lower limb muscles. These feelings tend to worsen at night time especially during sleep and movements of legs help in overcoming these symptoms.

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RLS follows a specific day and night cycle, the appearance of symptoms occurs in the evening and becomes severe during nighttime sleep, whereas little or no symptoms occur during daytime.[2]

Fluctuation in the severity of these symptoms persists lifelong and complete resolution is rarely seen.[3] In many cases no cause has been identified hence called idiopathic RLS, whereas it could be secondary to some systemic diseases like anemia, peripheral sensory neuropathy, Diabetes, and thyroid disorders. It has been observed in alcoholic individuals and pregnant females as well.[4] A significant proportion of chronic kidney disease (CKD) patients experience these symptoms. RLS is one of the chief problems of hemodialysis (HD) patients reported to nephrologists. Maintenance HD is a lifelong therapeutic option for end-stage renal disease (ESRD) patients, which not only brings financial constraints, reduction in physical and mental wellbeing, altered sleep patterns, and severe depression. RLS is frequently observed in patients with the HD-induced ailments.[5]

RLS is also considered a part of sleep disorder as it augments insomnia, poor sleep quality, interrupted sleep, and reduced sleep duration. Lack of normal sleep, in turn, augments anxiety, depression, and

deterioration in overall quality of life.[6] It has been observed that an increase in cardiovascular accidents and nocturnal hypertension is strongly associated with RLS-induced sleep disorders.[7]

RLS incidence of 5–15% is documented in the normal population.[7] Hallmark REST trial (RLS epidemiology symptoms and treatment) conducted in 2014 among 23 thousand normal individuals showed an 11.9% prevalence of RLS.[8] In Pakistani study conducted by Khalid M, et al reported 23.6% prevalence in the general population.[9] As compared to the normal population, the prevalence in CKD patients is around 24.2% and, the prevalence in HD patients is 35.5-40.7%. RLS prevalence varies from country to country, the lowest reported incidence is 17% whereas the highest is 62%.[10] In Pakistani HD patients prevalence is 24%.[11]

The pathophysiology of RLS is complex and multiple abnormalities play a crucial role in the development and severity of RLS. Endothelial cells at the blood-brain barrier act at storage sites of iron for the brain, in iron-deficient states uptake of iron by neurons is reduced resulting in altered neuronal dopaminergic function. This signifies the role of iron deficiency anemia in the development of RLS.[12] Apart from iron deficiency, structural and functional abnormalities in central or peripheral dopamine-producing neurons have been observed in the uremic milieu among CKD and HD patients.[13] The presence of RLS in other family members signifies the role of genetic defects. Females and longer duration on HD were linked to the severity of RLS documented by different studies.[10]

Although multiple studies have been conducted to explore RLS in HD patients worldwide, there is a lot of variation in results especially in its burden and confounding factors. The results of this study will help us to understand the frequency of RLS in our population and it will help in the early recognition and treatment of the patients suffering from RLS.

MATERIALS AND METHODS

This cross-sectional study was conducted in Nephrology Department, Ganga Ram Hospital, Lahore, from October 20, 2019, to April 20, 2020. The sample size of 162 was estimated by using a 95% confidence level with a 5% margin of error and taking an expected percentage of RLS as 12.4% in ESRD patients undergoing hemodialysis.[9] Patients of both gender, ages between 18-70 years who were on HD for at least 3 months were included. Patients having acute kidney injury, musculoskeletal disorders, recent myocardial infarction or unstable angina, any catabolic process were excluded from the study. After approval of the Hospital Ethical Committee, written informed consent, demographic information was recorded. Patients were assessed for age, gender, body mass index, presence of hypertension, diabetes, smoking, and anemia. RLS was

assessed using the International Restless Leg Syndrome Study Group rating scale.[14]

Data were entered and analyzed using SPSS-25.0. For post-stratification, a Chi-square test was applied to see the significance. A p-value ≤ 0.05 was considered significant.

RESULTS

There were 98 (60.5%) male patients and 64 (39.5%) female patients. Among these patients 37% were from the age group of 18-40 years, 63% were from the age group 41-70 years. Among these patients, 43.8% had BMI>25 and 56.2% had BMI between 18-25.

Table No.1: Stratification of gender, age, diabetes, hypertension, iron deficiency, BMI, HD duration, antidepressants and antihistamines according to RLS (n=162)

Variable	RLS		P value
	Yes	No	
Gender			
Male	45 (45.9%)	53 (54.1%)	0.039
Female	40 (62.5%)	24 (37.5%)	
Age (years)			
18-40	28 (46.7%)	32 (53.3%)	0.257
41-70	57 (55.9%)	45 (44.1%)	
Diabetes			
Yes	32 (54.2%)	27 (45.8%)	0.733
No	53 (51.5%)	50 (48.5%)	
Hypertension			
Yes	78 (51.7%)	73 (48.3%)	0.442
No	7 (63.6%)	4 (36.4%)	
Iron Deficiency			
Yes	16 (45.7%)	19 (54.3%)	0.366
No	69 (54.3%)	58 (45.7%)	
BMI			
Low or normal	44 (48.4%)	47 (51.8%)	0.235
Overweight	41 (57.75)	30 (42.35)	
HD Duration			
6-12 Months	2 (25%)	6 (75%)	0.051
1-3 Years	26 (66.7%)	13 (33.3%)	
>3 Years	57 (49.6%)	58 (50.4%)	
Antidepressants			
Yes	31 (68.9%)	14 (31.1%)	0.009
No	54 (46.2%)	63 (53.8%)	
Antihistamines			
Yes	19 (90.5%)	2 (9.5%)	0.00018
No	66 (46.8%)	75 (53.2%)	

Among them, 4.9% were on MHD for 6-12 months, 24.1% for 1-3 years, and 71.0% for >3 years. 35 patients (21.6%) were having an iron deficiency, 151(93.2%) were hypertensive, 59(36.4%) were diabetic, 45(27.8%) were on antipsychotic/antidepressant drugs and 21(13%) were using antihistamines. Our study showed

that 85 patients (52.5%) were having RLS Eighty five patients (52.5%) were having RLS. On stratification of RLS with age, 46.7% were having RLS in 18-40 years age group, and 55.9% in 41-70 years age group, with no statistical significance (p-value 0.257). In our study group, among 98 male patients, 45.9% (45) were having RLS & among 64 female patients, 62.5% (40) were having RLS, with statistical significance (p-value 0.039). Among 59 diabetics, 32(54.2%) were having RLS and among 151 hypertensives 51.7% were having RLS without any statistical significance (p-value0.733, 0.442 respectively).Among 91 patients who have (BMI 18-25) 44 patients (48.41%) were having RLS and 71 patients (BMI >25), 41 (57.7%) were having RLS without any statistical significance (p-value 0.235). Among these 8 patients who were on HD for 6-12 months, 2(25%) were having RLS, and among 39 pts who were on HD for 1-3 years,26(66.7%) was having RLS and among 115 pts who were on HD for >3 years, 57 (49.6%) were having RLS without any statistical significance (p-value 0.051).Among 45 patients who were on antipsychotics/antidepressants, 31 (68.9%) were having RLS with statistical significance (p-value 0.009). Among 21 patients who were on antihistamines, 19(90.5%) were having RLS with a statistically significant p-value of 0.00018. Among Iron deficient patients 35(21.6%), 16(45.7%) were having RLS and 19(54.3%) were not exhibiting RLS symptoms, showed no statistically significant difference (p-value 0.366) (Table 1).

DISCUSSION

Diagnosis of RLS depends upon the presence of four symptoms as proposed by the International RLS Study Group, that includes: (1) unpleasant sensation in legs that produces a desire to move legs, (2) occurring in resting state, (3) resolved by legs movements, and (4) exhibiting circadian rhythm with maximum symptoms appearance at night. But these symptoms must be differentiated from other closely related clinical conditions that can mimic RLS. These disorders are leg cramps, peripheral sensory neuropathy, arthritis, habitual leg movements, and sleeping position discomfort. It has been seen that these 4 criteria demonstrate a positive predictive value of <50% in the general population whereas the specificity of 84% is present in RLS patients.[15]

In different studies done all over the world the frequency of RLS in the general population is reported to be between 20 to 25%,[16] and in patients of ESRD on HD is 23.3 to 38%.[17,18] Our study showed 52.5% of patients have RLS. There could be three major reasons for this variable reports of RLS frequency, first the genetic heterogeneity of the different study groups population, second the difference in diagnostic criteria and tools used for RLS, third and the most important, the presence or absence of confounding factors that can precipitate RLS. Studies have proved that genetic factors play an important role in the pathogenesis of RLS and autosomal dominant pattern in familial RLS has been observed in Canada, Italy, and France.[19]The frequency of RLS was 52.5% in our study as compared to 26% in the Indian population,[20] 33% in the Japanese population,[21] 20-50% in the Saudi population,[22] and 14-21% in Caucasians.[23] Different scoring scales for RLS are IRLSSG diagnostic criteria (International Restless Legs Syndrome Study Group)[24], RLS-6 scale, JHRLSSS (John Hopkins RLS Severity Scale), and the investigator-based CGI (Clinical Global Impressions).[7] Diversity in these diagnostic tools can be a contributing factor for diverse RLS prevalence studies results.

In our study females are affected more as compared to male patients, possibly due to hormonal differences in both genders.[25]Advanced age is also considered as a risk factor for an idiopathic class of RLS. However, some researchers proved that this link between old HD patients and RLS is not always present.[25] In our study advancing age does not affect RLS frequency. Several studies have proved increased RLS occurrence in iron deficiency anemia[10] but in our study, no statistically significant correlation is found. The presence of depression and use of antidepressants has been linked to increased severity of RLS,[26] likewise in our patient's use of antidepressants showed more prevalent RLS. Links have been proved between antihistamine use and RLS as shown in our study as well.[27]

CONCLUSION

The frequency of Restless Legs Syndrome is 52.5% among end-stage renal disease patients on maintenance hemodialysis.

Author's Contribution:

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Data Analysis:	Sajad Ahmad, Hafiz Tahir Usman, Zahid Anwar
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Original Article

Appropriate Dialyzer Selection among Patients on Hemodialysis

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ABSTRACT

Objective: To determine the appropriate dialyzer type for the individual patient which is effective for adequate hemodialysis?

Study Design: Cross-sectional study

Place and Duration of Study: This study was conducted at the Department of Nephrology, Sir Ganga Ram Hospital, Lahore from 1st October 2021 to 2nd November 2021.

Materials and Methods: Seventy adult dialysis patients undergoing regular hemodialysis at our dialysis center were included in the study. Patients with acute renal failure were excluded. Biodata of patients including gender, age, height, weight, and BMI were recorded, total body water was calculated using Watson's equation. "K" was be calculated by rearranging the Kt/V=1.4 equation. In-vivo to in-vitro conversion is done by dividing the value of "K" by 0.85.

Results: The mean age was 48.09±11.63 years, mean weight was 62.06±11.86 kg, mean BMI was 23.63±4.45 kg/m^2 and mean TBW was 34.18±5.31 L. At QB of 250ml/min, 300 ml/min, and 300 – 400 ml/min, TBW mean value helped in the choice of dialyzer.

Conclusion: Hemodialysis should be performed after the selection of an appropriate dialyzer and blood flow rate to prevent inadequate hemodialysis.

Key Words: Dialyzer, Hemodialysis, Kt/V

INTRODUCTION

Hemodialysis (HD) is the treatment of choice for end-stage renal disease (ESRD) patients if renal transplantation is not possible due to any cause.[1] HD not only improves the quality of life but also reduces morbidity and mortality as compared with chronic kidney disease (CKD) patients who refuse HD.[2] Offering HD to ESRD is not enough as HD should be adequate. Adequacy of dialysis is deciding factor for the reduction of morbidity and mortality among these patients.[3]

Adequacy of dialysis is measured in terms of Kt/V and urea reduction ratio (URR) proposed by National

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Kidney Foundation-Kidney Disease Outcomes Quality Initiative guidelines.[4]

Frank Gotch and John Sargent first introduced the idea of Kt/V as a measurement tool for the dose of dialysis after analyzing data from the National Cooperative Dialysis Study.[5] Kt/V is a so-called "dimensionless ratio in which (K) is dialyzer urea clearance, treatment time (t), divided by the urea distribution volume (V).[6] There are multiple variants of Kt/V; spKt/V (single pool), eKt/V (equilibrated), and stdKt/V (standardized). The most common formula used for dialysis dose is spKt/V but it does not incorporate post-treatment rebound. Rebound is a major issue when clearance rates are high and/or treatment times are short; spKt/V should be converted into eKt/V that incorporates rebound issues.[7] Several formulas are available online to translate spKt/V to eKt/V as it is not an easy task for clinicians to do it manually. The target recommended dose should be a spKt/V of 1.4 or eKt/V of 1.2. A weekly dose of dialysis is measured by stdKt/V (Online calculator); NKF-DOQI Guidelines recommend a minimum stdKt/V of 2.0 per week and is roughly equivalent to a spKt/V of 1.2.[8]

The most important factor of Kt/V is K; which represents the dialyzer clearance, the rate at which blood clears its solutes as it passes through the dialyzer, expressed in milliliters per minute (mL/min). Increasing the blood flow rate (QB), clearance (K) will increase linearly initially but as QB reaches near dialysate flow rate (QD) there will be no additional increase of

clearance. However, this ability of the dialyzer for the removal of solutes (K) is proportional to the mass transfer area coefficient (KoA). KoA is simply a product of dialyzer membrane permeability (Ko) and the membrane surface area (A). KoA is specific to urea (or any other solute used for measurement) and is independent of QB and QD. The greater the KoA, the greater will be the clearance of urea and other toxins, and the greater will be delivered dialysis dose when expressed in terms of Kt/V. The KoA of a dialyzer is checked by in vitro aqueous solutions usually provided on the dialyzer datasheet by the manufacturer.[9] Usually, in vitro KoA is almost 20% less as compared to in vivo calculations due to the actual performance of dialyzer on patient's blood that contains various proteins and red blood cells.[10]

There are multiple factors of inadequate dialysis or in others words failure to achieve target Kt/V. Studies have proved that errors in calculating V and/or V greater than 40L will lead to inadequate dialysis.[1]. The total duration of the hemodialysis session of fewer than 4 hours will greatly affect Kt/V; usually the shortcoming of dialysis technicians or the patient's desire of ending the hemodialysis session early[12]. Most importantly "K" is not achieved as desired because of low QB due to Arteriovenous (AV) fistula stenosis leading to Access recirculation. Suboptimal use of dialyzer with low KoA and surface area less than 1.4 m^2 affects "K" of Kt/V resulting in inadequate hemodialysis.[13] It is now a well-known fact that Standardized hemodialysis prescriptions (fixed QB, QD, and dialyzer type) affect the adequacy of hemodialysis in most patients.[14]

In Pakistan where the annual incidence of new cases of end-stage renal disease (ESRD) is >100 per million population[15], most of the patients receive twice-weekly hemodialysis usually in private setups but some Government-owned hospitals offer thrice-weekly hemodialysis free of cost.[16] Dialysis session duration is usually 3 to 3.5 hours in most dialysis centers because of the increase in patient burden. However tertiary care hospitals where dialysis centers are under the care of nephrologists, offer 4 hours duration hemodialysis[17]. Most dialysis centers follow standardized hemodialysis prescriptions; with only one or two types of dialyzers, 250-350 ml/min QB and QD of 500 ml/min.[18] Alarmingly 61% of hemodialysis patients are under dialyzed.[19] No serious effort has been made so far in the local nephrology community to choose the appropriate dialyzer for adequate hemodialysis. Now a day's wide variety of dialyzers is available in Pakistan where one can choose a dialyzer according to body volume of distribution of urea and QB.[20]

This research work is designed to determine the appropriate dialyzer type for the individual patient which is effective for adequate hemodialysis.

MATERIALS AND METHODS

This cross-sectional descriptive study was conducted in the hemodialysis unit of the Nephrology department at Fatima Jinnah Medical University/ Sir Ganga Ram hospital, Lahore from 1st October 2021 to 2nd November 2021. All adult dialysis patients (70 in number) undergoing regular hemodialysis at our dialysis center were included in the study. Patients with acute renal failure were excluded. After taking institutional ethical board permission and informed consent, biodata of patients including gender, age, height, weight, and BMI were recorded.

Dialyzer Selection procedure: To determine the dialyzer that will provide a target Kt/V of 1.4, the following steps were followed.[21]

1. Calculate the total body water (TBW = Urea volume of distribution) by using the Watson equation that will give the value of "V". (Suppose it is 40,000 ml).
2. Standard 4 hours hemodialysis session time will give "t" of 240 minutes. (fixed)
3. K will be calculated by rearranging Kt/V equation: K × 240 = 1.4 × 40,000 or K= 1.4 × 40,000/240 K= 233 ml/min
4. In-vivo to In-vitro conversion = 233/0.85 = 274 ml/min (fixed factor of 0.85)
5. A dialyzer with published in-vitro urea clearance of 274 ml/min at a QB of 200 ml/min, 250ml/min, 300ml/min, and QD 500 ml/min were selected based on data provided by the manufacturer on the dialyzer specification sheet.

These dialyzers were provided by hospital administration free of cost to patients. Almost all dialyzers specification sheets mentioned the value of "K" at QB of 200 and 300 ml/min, but the value of "K" at 250ml/min is not provided by the manufacturer so the average value was calculated.

Results were analyzed using SPSS 21 (24.0). Qualitative variables were described as percentages and numbers. Quantitative variables were described as means [± SD] for parametric variables or medians (minimum-maximum), for non-parametric variables. The chi-square and Pearson's correlation test were applied to take a p-value less than 0.05 as significant.

RESULTS

The mean age was 48.09±11.63 years, mean weight was 62.06±11.86 kg, mean BMI was 23.63± 4.45 kg/m^2, and mean TBW was 34.18±5.31 liters. The frequency distribution of different dialyzers at QB of 250 ml/min, 300 ml/min, and 300–400 ml/min is shown in Table 2.

When correlation was checked with choice of dialyzers concerning the weight of patient at QB of 250 ml/min, 300 ml/min, and 300 – 400 ml/min, no statistical significance was found with a p-value of 0.096, 0.893,

and 0.961 respectively. When correlation was checked with choice of dialyzers concerning BMI of the patient at QB of 250 ml/min, 300 ml/min, and 300–400 ml/min, no statistical significance was found with a p-value of 0.247, 0.195, and 0.215 respectively. When correlation was checked with choice of dialyzers concerning TBW of the patient at QB of 250 ml/min, 300 ml/min, and 300 – 400 ml/min, statistical significance was found with a p-value of 0.011, 0.003, and 0.005 respectively. At QB of 250ml/min, 300 ml/min, and 300 – 400 ml/min, TBW mean value helped in the choice of dialyzer as shown in Table 3.

Table No.1: Dialyzer's specification sheet

Surface area	Model	Manufacturer	K at QB 200 ml/min	K at QD 250 ml/min (average)	K at Qb 300 ml/min
1.1m^2	11 L	Nipro	188	215	242
1.3m^2	13 L	Nipro	192	222	251
1.4m^2	FX8	Fresenius	191	223	254
1.5m^2	15 L	Nipro	194	228	261
1.6m^2	F7	Fresenius	Not mentioned	Not mentioned	247
1.7m^2	17L	Nipro	195	231	267
1.8m^2	F8	Fresenius	Not mentioned	Not mentioned	252
1.8m^2	FX10	Fresenius	193	227	261
1.9m^2	19 L	Nipro	196	235	273
2.1m^2	21 L	Nipro	197	237	277

Table No.2: Frequency distribution of different dialyzers

Surface area	Model	Manufacturer	QB 250	QD300	QB 300-400
1.1m^2	11 L	Nipro	21 (30%)	44 (62.9%)	44 (62.9%)
1.3m^2	13 L	Nipro	6 (8.6%)	2 (2.9)%	2 (2.9%)
1.4m^2	FX8	Fresenius	-	-	-
1.5m^2	15 L	Nipro	2 (2.9%)	-	-
1.6m^2	F7	Fresenius	-	1 (1.4%)	1 (1.4%)
1.7m^2	17L	Nipro	-	-	-
1.8m^2	F8	Fresenius	-	-	-
1.8m^2	FX10	Fresenius	-	2 (2.9%)	2 (2.95)
1.9m^2	19 L	Nipro	6 (8.65)	8 (11.4)	8 (11.4%)
2.1m^2	21 L	Nipro	4 (5.7%)	5 (7.1%)	13 (18.6%)
		Didn't fit in any	31 (44.3%)	8 (11.4%)	-

Table No.3: Choice of dialyzer based on Total body water and Blood flow rates

Surface area	Model	Manufacturer	QB 250	QD300	QB 300-400
1.1m^2	11 L	Nipro	27.8±2.1	30.8±3.4	30.8±3.4
1.3m^2	13 L	Nipro	31.7±0.2	35.6±0.2	35.6±0.2
1.4m^2	FX8	Fresenius	-	-	-
1.5m^2	15 L	Nipro	33.1±0.1	-	-
1.6m^2	F7	Fresenius	-	36±0	36±0
1.7m^2	17L	Nipro	-	-	-
1.8m^2	F8	Fresenius	-	-	-
1.8m^2	FX10	Fresenius	-	37.8±0.4	37.8±0.4
1.9m^2	19 L	Nipro	34±0.2	39.1±0.5	39.1±0.5
2.1m^2	21 L	Nipro	34.3±0.4	40.3±0.1	41.5±1.4
		Didn't fit in any	39±2.7	42.2±1.3	-

DISCUSSION

To achieve adequate HD, four factors play a crucial role, QB, QD, duration of HD, and efficiency of the dialyzer.[9]It is well-documented fact that increasing QD can give better clearance[22] but in routine HD procedure QD plays the least important role because standard dialysate concentrate comes in the packaging that can support 4 hours duration of HD if QD is set at 500ml/min. In Pakistan most manufacturers prepare dialysate concentrates according to this idea. If we want to increase QD to 600-700 ml/min, two dialysate cans will be used for that patient which is not cost-effective.

So, achieving adequate HD by increasing QD is not a practical option.

Increasing the duration of HD can increase Kt/V[13], however, increasing time from standard 4 hours to 5 or 6 hours is also not a very useful technique because of 2 major reasons. Firstly, more than 4 hours of dialysis requires 2 dialysate cans and secondly HD units can manage 3 shifts of 4 hours duration back-to-back starting from 8 am to 10pm with almost 45 minutes time requirement for sterilization of machines after the end of every shift. Increasing the time of HD can be an option in the last shift for some selected individuals but patients on maintenance HD for many years usually don't find this option suitable for them as they are bound socially in other activities.

QB and choice of dialyzers are two factors that can be managed with ease. QB depends upon the AV fistula blood flow. A fully functional fistula should have a minimum blood flow of 800ml/min.[23,24] If the adequacy of HD is not achieved with a standard QB of 250ml/min then it can be managed by increasing QB to 300ml/min or even more. But high QB requires a fully developed fistula body having a measurement of at least 4mm in diameter.[25] However, fistulas with inflow/outflow stenosis and partial thrombosis may not allow high QB required for adequate HD. Choosing a dialyzer with high efficiency can be an alternative provided a full range of dialyzers are available.[26]

In this study dialyzers were selected according to patient TBW and Kt/V target of 1.4, keeping two factors constant, QD of 500ml/min and duration of HD (t) 4 hours as shown in table 2. To select a dialyzer for a patient, one should know the condition of AV fistula and maximum QB that can be achieved without triggering pre/post-pump arterial pressure alarms. If AV fistula only tolerates QB of 250ml/min then patients with TBW <34.3L can have the choice of dialyzers shown in table 3. If TBW is more than 39L then at QB of 250 ml/min 44.3% of patients will not achieve target Kt/V. That could be a reason that previous studies showed inadequate HD with dialyzers with a surface area of less than 1.4m[2]. If AV fistula tolerates high QB then dialyzers can be selected according to individual's TBW values (Table 3) which can be calculated easily by Watson's equation. Once appropriate dialyzer selection is done then the performance of the dialyzer at the given QB should be checked periodically by calculating the Urea reduction ratio and achieved Kt/V as proposed by KDIGO guidelines.[6]

CONCLUSION

Hemodialysis should be performed after the selection of an appropriate dialyzer and blood flow rate to prevent inadequate hemodialysis.

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Correlation of Fluid Overload and B-Lines Score on Lung Ultrasound among Chronic Kidney Disease Patients with Clinical Hypervolemia

Muhammad Muzaffar Habib[1], Shahid Anwar[1], Sajad Ahmad[1], Hafiz Tahir Usman[1], Mateen Akram[2] and Zahid Anwar[3]

ABSTRACT

Objective: To find a correlation between B-line score on lung ultrasound and fluid overload by clinical examination among CKD patients.

Study Design: Cross-sectional study

Place and Duration of Study: This study was conducted at the Department of Nephrology, Sir Ganga Ram Hospital, Lahore from 20th October 2020 to 20th April 2021.

Materials and Methods: Eighty seven patients meeting the inclusion criteria were enrolled. Clinical assessment for hypervolemia was done at the bedside and recorded. Lung ultrasound for B-line scoring was done for patients who fulfilled inclusion criteria. The lateral and anterior chest was checked sonographically from 2nd to 4th intercostal spaces on the left side and right-sided 2nd to 5th intercostal spaces, at parasternal to mid-axillary lines (total 28 scanning sites). At these positions, the visible B-lines were counted, and scoring was done.

Results: The mean age of the patients was 49.85±15.913 years, 46(52.87%) patients were male, and 41(47.13%) patients were females. There was a weak positive relationship identified between the B-line final score and fluid overload on clinical assessment i.e., r=0.356 (p<0.05).

Conclusion: B-lines detected on lung ultrasonography have a weak positive relationship with the severity of volume overload among chronic kidney disease patients.

Key Words: Chronic kidney disease (CKD), Lung ultrasound, Fluid overload, B-Lines score

INTRODUCTION

Chronic kidney disease (CKD) is an abnormality of renal function, defined on basis of irreversibility and persistence for 3 or more months. Chronic kidney disease is now recognized as a major worldwide health problem because of its increasing patient number, worse outcome, and serious complications.[1]

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Along with other complications of the disease, hypervolemia is a big problem that is frequently associated with CKD.[2] Impairment of renal function leads to poor handling of the body's water balance, thus causing fluid overload. This state of hypervolemia not only causes many harmful effects including stiffening of arteries, raised intra-arterial pressure, anaemia, proteinuria, hypertrophied left ventricular, but also proved to be a major risk factor for enhancement of all-cause mortality and morbidity.[3] Therefore, maintaining a euvolemic state is particularly required in nephrology. Various techniques have been utilized for patient volume status assessment. Gold standard techniques are the Isotope dilution technique and neutron activation analysis.[4] However, unfortunately, their use is limited to the research environment and cannot be practiced in the wards. Clinical assessment is a traditional way of evaluating a patient's hydration status but its precision has remained doubtful.[5]Along with other techniques, B-line score (BL score) based on lung ultrasound (L-USG) was probed in different studies and it was proposed that L-USG could be used for assessment of extravascular fluid accumulation inlungs and thus represented overall body fluid status.[6,7]

A study by Zoccali et al[8], on end-stage renal disease (ESRD) patients receiving regular maintenance hemodialysis, showed that pulmonary congestion demonstrated by BL score on L-USG is quite common and often goes unnoticed. It was observed that 45% of the dialyzed individuals had moderate-to-severe congestion, 14% had very severe pulmonary congestion, 71% of patients had significant lung congestion with minimal or without any symptoms.

B-lines are "discrete laser-like vertical hyperechoic artifacts (previously described as comet tails)evolving from the lung pleura and persisting ill L-USG screen ends and move concurrently with lung".[6]B-line/ Comet tail artifacts were mentioned by Ziskin et al[9] in 1982, however, their role in nephrology was first brought in light 2009 when Noble et al., published their findings regarding the correlation of BL score with extravascular lung volume and reduction in their number after reduction in fluid overload.[10]Since then, the study of BL score and their correlation with different modes of hypervolemia assessment has remained under focus.[11] Marino et al[12] demonstrated a significant association of BL score with fluid overload. It is now believed that BL scoring is a helpful technique that is easy to learn, reproducible, and has great potential in the evaluation of volume status.[7]

This research work was designed to find a correlation between BL score on L-USG and fluid overload by clinical examination among CKD patients.

MATERIALS AND METHODS

This cross-sectional study was performed at Nephrology Department, Sir Ganga Ram Hospital, Lahore, from 20th October 2020 to 20th April 2021. Using non-probability convenient sampling, a sample size of 87 was calculated by keeping α error as 5 and β as 10 and expected correlation between BL score and hypervolemia as 0.34.[12] CKD patients of both gender, from 18 to 80 years, having fluid overload were inducted in the research. Patients with normal GFR, CKD patients with clinically euvolemia/hypovolemia, and patients unfit for lung ultrasound were excluded.

After approval from the Institutional Ethical Review Board, 87 cases matching the criteria for inclusion were enrolled. Informed consent was taken from each subject. Clinical examination for hypervolemia was performed at the patient's bedside and hypervolemia severity was recorded. L-USG was done, and BL score was calculated and recorded (BL score: 0, 1, 2, and 3 if B lines were ≤5, 6–15,16–30, and >30 respectively). Lung ultrasound procedure: In presence of a trained radiologist and nephrologist L-USG was performed by a single doctor on each enrolled patient to avoid interobserver variability. The lateral and anterior chest was checked from 2nd to 4th intercostal space on the left side and 2nd to 5th intercostal spaces on the right side, at parasternal to mid-axillary lines, for a total of 28 scanning sites. At each of these sites, the number of BL seen was recorded. This number was used to calculate the BL score.

Data was entered in SPSS version 21.0 and analyzed. Correlation between fluid overload and B-line score was studied by Spearman correlation keeping p-value ≤0.05 as significant.

RESULTS

The mean age was 49.85±15.913 years respectively, 46 (52.87%) patients were male and 41 (47.13%) patients were females. The patient's mean GFR was 29.46±12.17 with minimum and maximum GFR of 9 & 50 respectively. On clinical examination, mild fluid overload was present in 33 (37.93%) patients, moderate fluid overload was present in 41 (47.13%) patients and severe overload was present in 13 (14.94%) patients.

The mean right BL number was 4.97±3.23 while the mean left BL number of the patients was 8.63±5.54. The mean total score was 13.57±7.77.In our study ≤5 number of BL (Score 0)was noted in 17 (19.54%) patients, 6-15 number of BL (Score 1) was noted in 34 (39.08%) patients, 16-30 number of BL (Score 2) was noted in 34 (39.08%) patients and >30 BL (Score 3) were noted in 2 (2.30%) patients. There was a very weak, although positive, and significant relationship existed between the final BL score and fluid overload on clinical assessment i.e., r= 0.356 (p-value = 0.001) as shown in Figure 1.

When data were stratified for the age of patients, a very weak but positive relationship existed between the final BL score and fluid overload for age<50 years i.e., r =0.269 (p>0.05) but for age ≥50 years, it is not so much weak i.e., r = 0.403 (p<0.05) as shown in Figure 2.

When data were stratified for the gender of patients, there was a very weak, but positive relationship found between the final score and fluid overload for females i.e., r = 0.373 (p<0.05) and for males i.e., r = 0.326 (p<0.05) as shown in Figure 3.
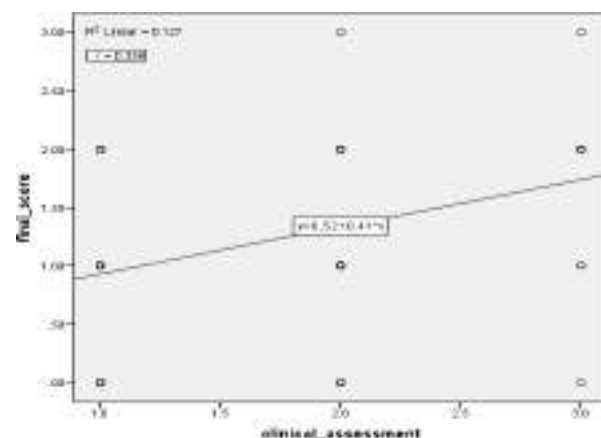

Figure No. 1: Weak but positive correlation between BL score and clinical overload assessment
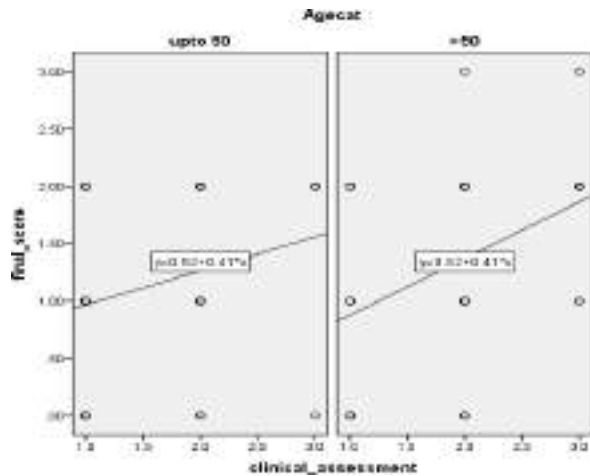
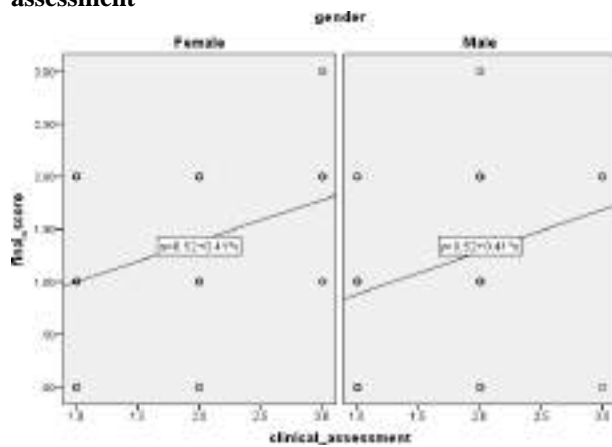**Figure No. 2: Age of patients and weak positive relationship between BL score and clinical overload assessment**

Figure No. 3: gender and weak positive relationship between BL score and clinical overload assessment

DISCUSSION

Accurate assessment of hypervolemia among CKD patients is not only important for ongoing treatment but also exhibits its mortality predictor quality especially at the point when these patients are getting support hemodialysis. Decreasing excessive volume and achieving euvolemic condition have demonstrated fruitful in maintaining normal blood pressure without the utilization of anti-hypertensive drugs in almost 90% of hemodialysis patients. In addition, this too has a critical positive effect on the quality of life of these patients.[13] BL score counting on L-USG has gained popularity as a bedside method of volume status assessment especially in emergency and hemodialysis units, keeping in mind the pitfalls of routine clinical examination for volume status noticeably the interobserver variability. L-USG for volume assessment can easily be learned and can be performed by a resident nephrology doctor obviating the requirement of a trained radiologist. In a study by Gargani et al[14], thirty doctors of general medicine were taught techniques of L-USG and quantification of BL with help of an online

teaching curriculum. Their capacity to count B-lines was viewed as exact contrasted with a specialist radiologist (r = 0.979, P < 0.0001). Even by using different ultrasound probes for L-USG, insignificant interobserver variability has been documented.[15]

Among nephrologists, the B-lines score has gained much attraction because of its strong correlation with volume overloaded states. Among patients presenting with acute dyspnea, the BL score on L-USG showed 97% sensitivity and 95%, specificity[16]. In hemodialysis ESRD patients, removal of excess body water by ultrafiltration demonstrated a decrease in BL number after dialysis.[10] Likewise study published by Trezzi et al[15], showed a BL score reduction having a statistically significant correlation at the end of the dialysis session. Increase in the number of BL in between two dialysis sessions were strongly associated with water accumulation and weight gain whereas disappearance of BL demonstrated water removal by dialysis and weight reduction. Even real-time disappearance of B lines have been evaluated in a study by Noble et al.[10]

Even among patients with acute coronary syndrome having pulmonary edema, <0.5L extravascular lung water can be detected by BL score with a 90% sensitivity of and 89%. Specificity. almost the same sensitivity is present with more than 0.5L extravascular lung water but specificity drops to 86%.[17] In our study there is a very weak, although positive relationship found between the final score and clinical assessment i.e. r=0.356 (p<0.05).

In the future, further studies should be done with a larger sample size to further explore the correlation between fluid overload and B-line score, especially among hemodialysis patients.

CONCLUSION

B-lines detected on lung ultrasonography have a weak positive relationship with the severity of volume overload among CKD patients.

Author's Contribution:

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Data Analysis:	Hafiz Tahir Usman, Mateen Akram, Zahid Anwar
Revisiting Critically:	Muhammad Muzaffar Habib, Shahid Anwar, Sajad Ahmad
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17. Ultrasound comet-tail images: a marker of pulmonary edema: a comparative study with wedge pressure and extravascular lung water 2022.

Causes of Acute Kidney Injury (AKI) in Pregnancy at Tertiary Care Center

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ABSTRACT

Objective: To find the frequency of common contributing factors of AKI during pregnancy.

Study Design: Descriptive, cross-sectional study.

Place and Duration of Study: This study was conducted at the Department of Nephrology and Obstetrics & Gynaecology, Fatima Memorial Hospital Lahore from 20th December 2020 to 19th June 2021.

Materials and Methods: One hundred and twenty female pregnant patients were any trimesters having acute kidney injury with ages between 18-45 years were included. Patients with renal transplantation and diagnosed CKD cases were excluded. Serum creatinine was measured at baseline along with complete blood count (CBC), peripheral blood smear, urine analysis, serum LDH, Coomb's test, ultrasound abdomen and pelvis, ABGs to determine the common contributing factors of AKI.

Results: The frequency of common contributing factors of acute kidney injury were found to be sepsis in 68 (56.7%), pre-eclampsia/eclampsia in 55 (45.83%), pre-renal/ischemic ATN in 45 (37.50%), acute glomerulonephritis in 11 (9.2%) and TTP/HUS in 08 (6.67%) patients.

Conclusion: Sepsis is the most common contributing factor of acute kidney injury in pregnancy followed by pre-eclampsia/eclampsia and pre-renal/ischemic ATN.

Key Words: Acute kidney injury, Pregnancy, Sepsis, Pre-eclampsia.

INTRODUCTION

Renal hemodynamic adaptation mechanisms come into play as pregnancy starts. There is a 40% rise in glomerular filtration rate (GFR) and renal plasma flow in the first trimester which falls gradually in the third trimester and touches normal baseline value as pregnancy ends, however, these changes may persist 6-8 weeks after delivery.[1] Clinically these changes can be observed by looking at serum creatinine (S. Cr) value which shows an average fall of 0.4mg/dl from baseline in pregnancy. To supply adequate nutrition to mother and fetus, maternal blood volume increases up to 1.2 liters.[2]

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In case there's an unexpected sudden or progressive decrease in blood volume, it'll lead to diminished renal blood flow and acute kidney injury (AKI). In the early phase of pregnancy hyperemesis gravidarum is one of the main causes of AKI.[3] However in later phases of pregnancy especially in the third trimester various medical ailments like high blood pressure, thrombotic microangiopathies (TMA), severe sepsis, antepartum, or postpartum uterine bleeding, fatty infiltration of the liver, and autoimmune disorders contribute to AKI.[4] In developing countries pregnancy-related AKI (P-AKI) frequency is nearly 5 to 20% which has declined altogether from 20 to 40% recorded in the 1960 decade. This improvement is because of the accessibility of better antenatal and post-pregnancy health care services yet underdeveloped nations are a long way behind in medical care as shown by <1% incidence of P-AKI cases in developed nations.[5] Among all the causes,90% of cases of P-AKI are due to sepsis, pre-eclampsia, and antepartum/post-partum hemorrhages.[6,4]

Clinical conclusion of AKI depends upon the serum creatinine rise of≥0.3 mg/dl and decreased urine output of <0.5 ml/kg/h for 6–12 h inside a week duration. Assuming kidney illness is irreversible and lingers for over 90 days, then at that point, the clinical diagnosis of chronic kidney disease (CKD) is labeled.[7]However, the naming of kidney illness that persists for one to three months is yet an issue of debate, and terminology of acute kidney disease (AKD) has been proposed for such

issues.[8] Customarily RIFLE and AKIN criteria are utilized for the determination of AKI. To keep away from disarray and contrasts between these two AKI classification systems, Kidney Disease Improving Global Outcomes (KDIGO) proposed a unified classification system of AKI.[9] In pregnancy utilization of these classifications of AKI arenot accurate however without any characterized P-AKI analytic framework, KDIGO AKI criteria have right now been utilized around the world.[10]

Sepsis is the leading cause of P-AKI in developing countries whereas it holds the fourth number in the USA. Diagnosis of sepsis becomes difficult in pregnancy as WBCs count rises normally up to 25,000 mm³.[11] Clinicians mainly rely on SIRS (systemic inflammatory response syndrome) and SOFA (Sepsis-related Organ Failure Assessment) criteria for sepsis diagnosis in wards and ICU settings, but results based on these criteria overestimated clinical diagnosis of sepsis and its associated mortality rates. Recently sepsis in obstetrics (SOS) score has been developed with 64% sensitivity and a negative predictive value of 98% for exclusion of sepsis. Abortions, pyelonephritis, bronchopneumonia, and pelvic inflammatory diseases are major causes of sepsis in pregnant females.[12] Pre-eclampsia progressively develops into eclampsia and HELLP syndrome which in a significant number of cases leads to P-AKI enhancing maternal & fetal mortality.[13] Haemorrhages occurring before or after the delivery may precipitate hypotension which is a risk factor for ischemic acute tubular necrosis.[14] Other causes like TTP/HUS, acute glomerulonephritis, acute fatty liver of pregnancy may contribute to P-AKI but these conditions are not frequently encountered.[5]

Availability of the limited number of local studies on contributing factors of P-AKI, this study was carried out to ascertain the frequency of causes leading to P-AKI.

MATERIALS AND METHODS

This Descriptive, cross-sectional study was conducted at the Department of Nephrology & Obstetrics &

Gynecology, Fatima Memorial Hospital Lahore from 20th December 2020 to 19th June 2021. A sample size of 120 cases was calculated with a 95% confidence level and 4.5% margin of error while taking the expected frequency of pre-eclampsia as6.8%.[15] Using Non-probability, consecutive sampling, female patients aged 18-45 years having pregnancy of any trimester were included. Female patients with renal transplantation and already diagnosed as CKD were excluded. After taking permission from the institutional ethical review board, patient information was taken using history, physical examination, and review of the previous record. Serum creatinine was measured at baseline along with complete blood count (CBC), peripheral blood smear, urine analysis, Serum LDH, Coomb's test, ultrasound abdomen & pelvis and ABGs to determine the common contributing factors of AKI. For the diagnosis of AKI, KDIGO guidelines were utilized.[9] Data was collected and compiled in the computer SPSS-20. Data was stratified for age and weeks of gestation. Post-stratification Chi-Square test was used and a p-value ≤0.05 was considered significant.

RESULTS

The age range between 18 to 45 years with mean age was 26.47±5.03 years. Most of the patients 104 (86.7%) were between 18 to 32 years of age. Mean gestational age was 25.12±7.97 weeks. Mean baseline serum creatinine was 0.55±0.18 mg/dL and mean baseline eGFR was 127.88±21.45 ml/min. Mean serum creatinine at diagnosis was 2.04±1.28 mg/dL and mean eGFR at diagnosis was 47.01±25.65 ml/min. The frequency of common contributing factors of acute kidney injury in pregnant females was found to be sepsis in 68 (56.7%) patients followed by pre-eclampsia/eclampsia in 55 (45.83%), Ischemic Pre-renal/ATN in 45 (37.50%), acute glomerulonephritis in 11 (9.17%) and TTP/HUS in 08 (6.67%) patients. Stratification of common contributing factors concerning age and gestational age.

Table No.1: Stratification of the contributing factors concerning age groups (n=120)

Contributing factors		Age (years)		Total	P value
		18-32 (n=104)	33-45 (n=16)		
Sepsis	Yes	55 (52.9%)	13 (81.2%)	68 (56.7%)	0.05
	No	49 (47.1%)	3 (18.8%)	52 (43.3%)	
Pre-Eclampsia/Eclampsia	Yes	50 (48.1%)	5 (31.2%)	55 (48.8%)	0.283
	No	54 (51.9%)	11 (68.8%)	65 (54.2%)	
Ischemic Pre-renal/ATN	Yes	37 (35.6%)	8 (50.0%)	45 (37.5%)	0.281
	No	67 (64.4%)	8 (50.0%)	75 (62.5%)	
Acute glomerulonephritis	Yes	10 (9.6%)	1 (6.2%)	11 (9.2%)	1.000
	No	94 (90.4%)	15 (93.8%)	109 (90.8%)	
TTP/HUS	Yes	8 (7.7%)	-	8 (6.7%)	0.595
	No	96 (92.3%)	16 (100%)	112 (93.3%)	

Table No.2: Stratification of the contributing factors concerning gestational age (n=120)

Contributing factors		Gestational age (weeks)		Total	P value
		≤20 (n=41)	>20 (n=79)		
Sepsis	Yes	11 (26.8%)	57 (72.2%)	68 (56.7%)	0.001
	No	30 (73.2%)	22 (27.8%)	52 (43.3%)	
Pre-Eclampsia/Eclampsia	Yes	20 (48.8%)	35 (44.3%)	55(45.8%)	0.701
	No	21 (51.2%)	44 (55.7%)	65 (54.2%)	
Ischemic Pre-renal/ATN	Yes	20 (48.8%)	25 (31.6%)	45 (37.5%)	0.076
	No	21 (51.2%)	54 (68.4%)	75 (62.5%)	
Acute glomerulonephritis	Yes	5 (12.2%)	6 (7.6%)	11(9.2%)	0.507
	No	36 (87.8%)	73(92.4%)	109(90.8%)	
TTP/HUS	Yes	1 (2.4%)	7 (8.9%)	08 (6.7%)	0.262
	No	40 (97.6%)	72 (91.1%)	112(93.3%)	

When the data was stratified concerning gestational age, a statistically significant correlation was found in sepsis with a p-value of 0.0001, however, no statistically significant correlation was present with Pre-eclampsia/eclampsia, ischemic pre-renal/ATN, acute glomerulonephritis, and TTP/HUS with p-values 0.701, 0.076, 0.507, and 0.262 respectively. A statistically significant correlation was found in sepsis with a p-value of 0.05, however, no statistically significant correlation was present with pre-eclampsia/eclampsia, ischemic pre-renal/ATN, acute glomerulonephritis and TTP/HUS with p-values 0.283, 0.281, 1.000, and 0.595 respectively (Tables 1-2).

DISCUSSION

Previously, AKI was viewed as a reversible condition however, studies have proved that AKI might expand the danger of creating persistent kidney damage. The frequency of P-AKI has diminished notably overall during the lasthalf-decade, likely due to a change in obstetric and pre-birth care and a decrease in the rate of illicit abortions. Even though the occurrence of PR-AKI has been declining, it stays a significant issue because of its relationship with maternal and fetal morbidity and mortality. As indicated by some researchers, the incidence of maternal mortality in patients with P-AKI has ascended to 30- 60% especially in developing countries.[16]

Sepsis is one of the major causes of AKI not only in the general population but also in pregnancy. Among hospitalized patients, almost 5-30% of individuals develop AKI secondary to sepsis. Sepsis-induced AKI has complex pathogenesis. Relative hypotension secondary to sepsis-induced vasodilatation is the initial pathology seen in the pre-renal stage of AKI. If sepsis remained untreated inflammatory molecules such as damage-associated molecular patterns (DAMPs) are released that exhibit their binding affinity to Toll-like receptors that are present on endothelial cells and renal tubular epithelial cells, resulting in damage and necrosis of glomerular vasculature and tubules.[12] Recently role of an individual's immune response and programming

for tolerance has been identified as an important factor for sepsis-induced AKI.[17] In our study 56.7% of patients developed P-AKI secondary to sepsis. Sepsis as a cause of P-AKI has been almost abolished in western countries but it is quite prevalent in Asian and African countries. In India, 15.4% sepsis-related P-AKI has been recorded including puerperal and septic abortion. Another study from Indian reported a decline in the rate of septic abortion-related AKI from 59% (1976), 20% (2008) to 6% (2014). However puerperal sepsis is still a leading aetiology accounting for 40-61.4% of cases of P-AKI.[18] In Pakistan situation is not different from India having reported percentages of 47-50% of sepsis-related AKI.[4] This high figure of sepsis is most likely due to handling of home deliveries by traditional non-professional ladies called "Dai's".

Preeclampsia and eclampsia (PE&E) are the biggest causes of P-AKI in Uruguay, South Africa, China, and Turkey with 47%, 48%, 21.2%, and 75% respectively.[19,20] Preeclampsia and eclampsia accounts for 12 to 16.6% in Pakistan and 15 to 30.5% in India.[19,21] In our study PE&E occurred in 45.83% of P-AKI cases. Diagnosis of PE&E is not as simple as it is thought to be, especially if antepartum hemorrhage, intrauterine death, sepsis, and DIC are present simultaneously. Because of overlapping features of all these conditions presumptive diagnosis of PE&E as the cause of P-AKI is usually made which in true sense is not correct. Whatever the reason, the presence of PE&E requires urgent termination of pregnancy, and reversal of P-AKI due to acute tubular necrosis is usually seen in the majority of cases.[5] Ischemic pre-renal/ATN secondary to uterine hemorrhages is the third major cause of P-AKI in our study. Placenta previa and abruptio placenta are common causes of antepartum haemorrhages which in most cases lead to volume depletion and pre-renal AKI, however, prolonged hypotension may cause acute tubular necrosis. The reported prevalence of antepartum haemorrhage (APH) is 11.5% in Malawi,[22] 4.8% in Pakistan,[15] 15% in Kashmir,[23] and 20% in India,[18] whereas postpartum hemorrhage (PPH) isseen in 10.2% to 41%of cases.[15,6] In our study pre-renal/ischemic ATN is present in

37.50% cases, this high frequency is because we have included all cases of uterine hemorrhages (APH, PPH), vomiting, and diarrhea. In our study, other causes include acute glomerulonephritis in 19.17% and TTP/HUS in 6.67% of patients. Almost similar reports with little variations have been reported from other parts of Pakistan and India.[15,18]

CONCLUSION

Sepsis is the most common contributing factor of acute kidney injury in pregnancy followed by pre-eclampsia/eclampsia and Pre-renal/ischemic ATN.

Author's Contribution:

Concept & Design of Study:	Kinza Karim
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Original Article

Clinical Profile of Hepatobiliary and Pancreatic Ascariasis

Dilaram Khan[1], Mohammad Iltaf[2] and Fakhare Alam[2]

ABSTRACT

Objective: To determine the clinical presentations of patients with hepatobiliary ascariasis

Study Design: Case series study

Place and Duration of Study: This study was conducted at the Department of Gastroenterology, Lady Reading Hospital, Peshawar from 1st October 2019 to 30th June 2020.

Materials and Methods: Eighteen patients of either gender, greater than 12 years of age and having ultrasonic evidence of hepatobiliary or pancreatic ascariasis were enrolled. Patients with hemodynamic instability or those who decline endoscopic retrograde cholangiopancreatography were excluded from this study. All patients were admitted to the ward. Necessary baseline investigations were carried out. Patients were treated symptomatically and endoscopic retrograde cholangiopancreatography was performed after taking consent. Worms were removed using snare and/or balloon.

Results: There were 6 (33.33%) males and 12 (66.66%) females. Majority of patients were between 21 to 30 years with mean age of 27.83±12.00 years. Epigastric pain was the most frequently occurring symptom present in all 18 (100%) patients, followed by vomiting in 12 (66.66%) patients. Obstructive jaundice was present in 10 (55.55%), anemia in 9(50%) patients, cholangitis in 6 (33.33%) patients and acute pancreatitis in 3 (16.66%) patients. Twelve (66.66%) patients were having single worms, 4 (22.22%) patients were two worms, 2 (11.11%) patients were multiple worms and maximum number of worms extracted was 10. Worms protruding from major papilla were seen in 9(50%), worms protruding from both major and minor papillae were seen in 1 (5.55%), seen fluoroscopically in 8 (44.44%) patients.

Conclusion: Hepatobiliary worms have not remained an uncommon entity in certain districts of KPK, affecting mainly young females, presenting with epigastric pain, vomiting and jaundices.

Key Words: Ascariasis, Jaundice, Epigastric pain, Endoscopic retrograde cholangiopancreatography (ECRP)

INTRODUCTION

Ascaris lumbricoides is the commonest nematode causing human ascariasis[1] and 33% of the world population is estimated to be infested with it.[2] The first scientific description of the genus Ascaris was given by Linnaeus in 1758 followed a century later by Epstan and Grassi who showed that the infection is preceded by ingestion of eggs.

Ascarias is found mainly in tropical countries having low standards of hygiene, malnutrition, heavy rainfall and where untreated sewage is thrown directly into rivers, lakes and agricultural land or is used as fertilizer.

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The spectrum of this disease consists of pulmonary, intestinal, appendicular, hepatobiliary and pancreatic ascariasis. Human infestation with ascarias is usually asymptomatic in the majority of infected persons or cause only vague abdominal symptoms.[3]

The distribution of Ascaris Lumbricoides in the whole world has caused 1.4 billion infections with it[5] and majority of the infected people belong to South East Asia. The prevalence of ascaris lumbricoides in South-East Asian countries and China is in the rates of 41-92% while in some parts of Africa it is about 95%.[3]

Hepato-pancreato-biliary ascariasis is found mainly in endemic parts of the world and large series of studies have been published from many parts of India including Kashmir[4], Kolkata[6] and Assam[3] and many other endemic countries like Saudi Arabia[6] and Syria[7].

The natural habitat of ascaris lumbricoides is jejunum but because of high load they move proximally into the duodenum. They have the natural inclination towards the orifices and as a result they enter the ampulla of water and the worms which are large in size blocks the ampullary orifice leading to obstruction of both the biliary and pancreatic ducts.[8]

Hepato-pancreato-biliary ascariasis mainly affects adult population predominantly female gender (female: male ratio 3:1)[5] and patients usually present with biliary

colic, cholangitis, cholecystitis, Liver abscesses and acute pancreatitis.[8]

Hepato-pancreato-biliary is diagnosis by ultrasoound, duodenoscopy, MRCP and ERCP. Endoscopic retrograde cholangiopancreatography is needed for the retrieval of live or dead worms from ampulla or biliary and pancreatic ducts.[8]

The main aim of this study is to know the common clinical presentation of hepatobiliary and pancreatic ascariasis in our local population and their management accordingly.

MATERIALS AND METHODS

This descriptive case series study was done carried out in the department of Gastroenterology MTI-LRH Peshawar from 1st October 2019 to 30th June 2020 on patients of either gender, greater than 12 years of age and having ultrasonic evidence of hepatobiliary or pancreatic ascariasis. Patients younger than 12 years, patients with hemodynamic instability or those who decline ERCP were excluded from this study. All patients were admitted to the ward. Necessary baseline investigations were carried out. Patients were treated symptomatically and ERCP was performed after taking consent. Worms protruding from papillae were removed through the snare, then cannulation done, cholangiogram taken, sphincterotomy carried out in all patients and extraction balloon was swept to clear the CBD of the worms. Patients were observed for post-ERCP complications. Data was analyzed by using SPSS.

RESULTS

There were 6 males (33.33%) and 12 females (66.67%) with a male to female ratio of 1:2. Mean age was 27.83±12.00. Majority of the patients were in the age range of 10-20 years (Table 1). Eight patients (44.44%) belonged to tribal district Bajaur, 7 (38.8%) were from District Dir while 1 (5.55%) patient each was belonging to District Swat, Shangla and Bunir.

Epigastric pain was the most frequently occurring symptom present in all 18 (100%) patients, followed by Vomiting in 12 (66.66%) patients. obstructive jaundice was present in 10(55.55%), anemia in 9 (50%) in 6patients. Cholangitis was present in 6 (33.33%) patients and acute pancreatitis in 3 (16.66%) patients. Twelve (66.66%) patients were having single worms, 4 (22.22%) patients were two worms, 2 (11.11%) patients were multiple worms, maximum number of worms extracted was 10. Worms protruding from major papilla were seen in 9 (50%), worms protruding from both major and minor papilla were seen in 1 (5.55%), seen fluoroscopically in 8 (44.44%) patients (Tables 2-4).

Table No.1: Frequency of genders (n=18)

Gender	No	%
Male	6	33.33
Female	12	66.67
Age (years)		
10-20	5	27.77
21-30	7	38.88
31-40	4	22.22
> 40	2	11.11

Table No.2: Frequency of symptoms

Symptoms	No.	%
Epigastric pain	18	100.0
Vomiting	12	66.66
Jaundice	10	55.55
Pallor	9	50.0
Cholangitis	6	33.33
Pancreatitis	3	16.16

Table No.3: Frequency of number of worms

No. of worms	No.	%
Single	12	66.66
Double	4	22.22
Multiple	2	11.11

Table No.4: Frequency of worms position

Worms position	No.	%
Protruding from major papilla	9	50
Protruding from major+minor papilla	1	5.55
Seen on flouroscopy	8	44.44

DISCUSSION

Hepatobiliary ascariasis (HBA) has become a common problem now a day in certain areas of our country than because frequent use of ultrasound, MRCP and endoscopy in the clinical practice. There are a variety of manifestations in hepatopancreatobiliary ascariasis and diagnosis depends on a high index of suspicion in endemic areas coupled with subsequent confirmation by sonographic or endoscopic demonstration of the worm. Since the early 90's increasing number of reports from several parts of the Globe has drawn attention to this issue especially as a cause for common bile duct obstruction.[9] According to the available literature, there is a female preponderance of HPA and it is commonly seen in the mid-thirties, with most of the patients presenting with acute abdomen and jaundice[3].

Our study results are comparable to the study of Nayak et al[10] done in India, in gender distribution and clinical presentations. Similarly, our study results are also compatible with the case report described by Sundriyal et al[11] and Madhumita mukhopadhyay[6] where majority of cases presented with pain epigastrium and other similar clinical complaints.

The limitations of this study are that the number of cases are small and may not truly represent the society so a large study are required to explain this issue specially to dig out the surge of hepatobiliary causes in districts Bajaur and Dir of KP to design effective preventive measures to avoid the complications caused by hepatobiliary ascariasis.

CONCLUSION

Hepatopancreatobiliary ascariasis has not remained an uncommon issue now in certain districts especially Bajaur and Dir of Khyber Pakhtunkhwa, affecting mainly young females, presenting with epigastric pain, vomiting and jaundices so Diagnosis of HPA needs a high index of clinical suspicion, while managing cases of biliary colic, physicians should consider biliary ascariasis as the possible cause. Ultrasound can be an effective diagnostic tool and endoscopic intervention through ERCP is effective, fast and therapeutic modality for HPA.

Author's Contribution:

Concept & Design of Study:	Dilaram Khan
Drafting:	Mohammad Iltaf
Data Analysis:	Fakhare Alam
Revisiting Critically:	Dilaram Khan, Mohammad Iltaf
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Conflict of Interest: The study has no conflict of interest to declare by any author.

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Original Article

Comparison between Outcomes of Conventional Dynamic Hip Screws and Proximal Femoral Nail (PFN) Fixation of Intertrochanteric Fracture of the Femur

Muhammad Kamran Shafi[1], Ghulam Qadir Khan[2], Yousaf Bin Tahir[2], Muhammad Ishfaq[2], Azhar Rasheed[2] and Asadullah Mehmood[3]

ABSTRACT

Objective: To compare the outcomes of conventional dynamic hip screws and proximal femoral nail fixation of intertrochanteric fracture of the femur.

Study Design: Randomized control trial study

Place and Duration of Study: This study was conducted at the Department of Orthopaedic Surgery, Nishtar Medical University Multan from 1st June 2020 to 31st October 2021.

Materials and Methods: Eighty four patients with unstable intertrochanteric fractures were enrolled. All patients between the ages of 25 and 75, of either gender, were enrolled. All patients with renal disease, pathological fractures, or open fractures were barred from participating. Patients were categorized into two groups. Group-I was allocated for dynamic hip screws and Group-II was given proximal femoral nail. Standard x-rays were taken for measuring initial collapse on zero post-operative day. After 4 weeks partial weight was allowed for patients whereas secondary collapse was measured after 6 weeks.

Results: The patient's mean age in Group-I and Group-II was 43.6±9.54 years, and 50.734±10.31 years respectively. The prevalence of stable, unstable, and reverse oblique fractures was 33%, 55%, and 13% respectively. About 100 and 250 mL average blood loss was observed in PFN and DHS respectively. In PFN, patients were more exposed to intra-operative radiation compared to DHS. The average operating time for PFN and DHS was 40minutes and 65 minutes respectively. Patients who received PFN began ambulation earlier because they had a higher Harris Hip Score in the beginning (at 4 and 12 weeks). In the long run, the functional outcomes of both implants were nearly identical.

Conclusion: The better outcomes were observed in the PFN group. Also, the unstable pattern was common in higher grade osteoporosis among elder patients. When compared to the DHS group, the PFN group has less blood loss and less operating time. Patients in the PFN group began ambulation earlier than those in the DHS group.

Key Words: Dynamic hip screw (DHS); Intertrochanteric fracture; Proximal femoral nail (PFN)

INTRODUCTION

In extracapsular fractures (intertrochanteric and subtrochanteric fractures), the cortical and compact cancellous bone is the primary focus.

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As a result of its non-homogenous osseous structure and geometry, the proximal femur is prone to fractures because of its complicated stress arrangement.[1] Trochanter femur fractures are common in the aged population, and they are commonly linked to loss in physical health as we get older. Surgery is the therapy of choice to avoid potentially fatal consequences. Morbidity rates are still high, despite advances in surgical care.[2-4] Intertrochanteric fractures can be treated surgically or non-surgically. Patients with non-ambulatory or chronic dementia, terminal diseases with a life expectancy of six weeks or less, unresolved medical comorbidities that preclude surgical treatment, an active infectious disease that is a contraindication to the insertion of a surgical implant and incomplete petrochanteric fractures diagnosed by MRI should be treated non-operatively.[5-6] Intertrochanteric fractures can be treated with a dynamic hip screw or proximal femoral nail[7-8]. The following are the main benefits of

using an intramedullary device: The implant acts as a counterweight to the proximal fragment's lateral translation. The implant's resistance to binding force is improved due to the nail-lag screw junction's intramedullary position.[9] The implant is closer to the weight-bearing axis because the intramedullary device's lever arm is shorter.[10] Upon contacting, the intramedullary device's transmission of bending loads to the intramedullary nail and medullary canal provides resistance.[11] The intramedullary hip screw is a more natural technique of fixation. A meta-analysis was done in order to examine if PFN or DHS fixation differed significantly in the treatment of trochanteric fractures. Hypothesis: PFN fixation is more efficient than DHS fixation in terms of minimising surgery duration and blood transfusions, along with hospital stay, wound problems, reoperation and death.

MATERIALS AND METHODS

This randomized control trial was carried out in the Department of Orthopaedic Surgery, Nishtar Medical University Multan during the June 2020 to October 2021 and 84 patients with unstable intertrochanteric fractures. All patients' between the ages of 25 and 75, of either gender, were enrolled. Participation in the study was not includedifthey were suffering from renal disease, pathological fractures, or open fractures. Patients were divided into two groups based on their symptoms. Those in Group-I received dynamic hip screws, while those in Group-II received proximal femoral nails. On the zero post-operative day, standard X-rays were taken to determine the extent of first collapse. Patients were permitted to regain some weight after four weeks, and subsequent collapse was measured after six weeks. Between the ages of 25 and 75, this study included individuals with pertrochanteric fractures from both sexes who had pertrochanteric fractures. The inclusion of patients with polytrauma, pathological fractures, and confirmed infection was strictly enforced.

Following the completion of all required lab tests and receipt of a fitness certificate from the anaesthesiologist, the patients were ready for surgery. Patients were randomised to one of two groups based on a random draw. Patients in Group 1 had DHS fracture fixation, whereas those in Group II received PFN fracture treatment, according to the study. A thorough explanation of both procedures was provided to the patients. Prior to executing the procedure, written informed permission was obtained from the patient. In the initial postoperative period, patients were cared for and then discharged as soon as they were deemed to be stable. Patients were evaluated for infection (diagnosed clinically when any two of the following signs appeared within four weeks of the operation: redness around the wound, serosanguinous discharge, and fever >100F) and union (defined as the absence of pain or tenderness

and the ability to walk without assistance at three months post-operatively) both clinically and radiologically (defined as solid bridging callus connecting the fracture fragments on both sides on both AP and lateral views at three months postoperatively). SPSS-25 was used to enter and evaluate the information. For the purpose of comparing the frequency of postoperative infection and fracture union between groups, the Chi-square test was utilised. A p-value of less than 0.05 was considered statistically significant.

RESULTS

Group-I had a mean age of 43.6±9.54 years, whereas Group-II had a mean age of 50.734±10.31 years, according to the data. Approximately 33%, 55% and 13% of the patients had stable, unstable, or reverse oblique fractures. In PFN and DHS, around 100 and 250 mL of average blood loss were reported. Patients in PFN received more intra-operative radiation than those in DHS because of this. PFN and DHS had 40-minute and 65-minute running times, respectively. They were able to walk sooner because they had higher Harris Hip Scores at the commencement of their treatment with PFN (at 4 and 12 weeks). Both implants had essentially comparable long-term functional outcomes. All of the participants' demographic information (Table 1). Demographic information is given in Table 2 after doing a chi-square analysis and independent test. Post-operative union and infection are shown in Table 3 for the study group after 12 weeks.

Table No.1: Demographic details of participants (n=84)

Parameters	No.	%
Age (years)		
25-40	14	16.7
41-60	41	48.8
61-75	29	34.5
Gender		
Male	33	39.3
Female	51	60.7

Table No.2: Demographic details based on Chi-square and independent test

Para-meter	Proximal Femoral Nail (N=42)	Dynamic Hip Screw (N=42)	P-value
Age (years)			
25-40	6 (14.3%)	8 (19.04%)	
41-60	21 (50%)	20 (47.6%)	0.831
61-75	15 (35.7%)	14 (33.3%)	
Gender			
Male	18 (42.9%)	15 (35.7%)	
Female	24 (57.1%)	27 (64.3%)	0.421

Table No.3: Prevalence of post-operative union and infection after 12 weeks

Outcome	Proximal Femoral Nail (N=42)	Dynamic Hip Screw (N=42)	P-value
Union			
Yes	33 (78.6%)	19 (45.2%)	0.002
No	9 (21.4%)	23 (54.8%)	
Infection			
Yes	0 (0%)	13 (31%)	≤0.002
No	42 (100%)	29 (69%)	

DISCUSSION

Hip fractures are the most commonly encountered fractures by orthopaedic surgeons, with a current annual rate of 250,000 in the United States.[12,13] It is expected that hip fractures rate by 2025, will reach 2.6 million globally, and by 2050, it will reach 4.5 million due to increased life expectancy. Gallagher et al[14] demonstrated that the risk of hip fracture doubles every ten years after the age of fifty. The goals of treating pertrochanteric fractures are to restore independence as soon as possible, to treat without complications, and to return patients to their pre-injury level of independence. The dynamic hip screw has always been the standard implant for fracture stabilization in patients with pertrochanteric hip fractures. However, the introduction of PFN has revolutionized pertrochanteric fractures, with proven benefits such as increased stability, decreased operative blood loss, and early mobilization. Recent studies claimed that PFN increased the rate of fracture union while decreasing the risk of infection, but the available evidence was disputed, necessitating the current study.

Many factors influence the trochanteric fractures successful treatment, including the patient's age, fracture treatment time, general health, and treatment adequacy, concurrent medical treatment, and fixation stability.[15,16] DHS placement requires a long exposure, anatomical reduction, and stripping of extensive soft tissue. Furthermore, bone stress riser caused by side plate and screw, increases chance of implant failure.[17]

The ability of PFN devices to tolerate cyclic and static loads is significantly greater than that of DHS implants. Gamma nail use, on the other hand, is associated with several problems, including anterior soreness in the thigh and femoral shaft fractures. [18] Multiple anatomical studies have demonstrated that the superior medial quadrant is the weakest link in the chain. There is a lot of cut-out in the bone, especially in osteoporotic bone. [19]

Increasing the contact surface area of the device with the femoral head cancellous bone is achieved by turning the column screw into a helical blade. As a result, the restricted amount of bone is compressed rather than removed. According to certain research, rotation of the head/neck fragment occurs in all types of head holding

devices in these fractures, requiring the use of a head holding device to keep the fragment from rotating until the fracture heals. [20] The presence of helical blades may help to increase the rotational stability of the proximal fragment and reduce femoral head overload. [21]

Finally, the PFN device was found to lower iatrogenic tissue trauma as well as the rate of re-operation. Based on the results of this study, it appears that the PFN device may be used effectively to treat trochanteric fractures and that it may be the best option, particularly in the treatment of unstable trochanteric fractures, because of its low re-operation rate. Based on the results of this study, it appears that the PFN device may be used effectively to treat trochanteric fractures and that it may be the best option, particularly in the treatment of unstable trochanteric fractures, because of its low re-operation rate.

CONCLUSION

The PFN group had much better outcomes than the other groups. Additionally, the unstable pattern was common in patients with greater grade osteoporosis, particularly in the elderly. When compared to the DHS group, the PFN group suffers from less blood loss and requires less time under anaesthesia. It was shown that patients in the PFN group began ambulating earlier than those in the DHS group.

Author's Contribution:

Concept & Design of Study:	Muhammad Kamran Shafi
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Conflict of Interest: The study has no conflict of interest to declare by any author.

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Original Article

Frequency of Appendicular Perforation in Acute Appendicitis Patients

Rahmat Ullah Shah[1], Sadia Shah[2], Gul Sharif[1], Adnan Badar[3], Monawar Shah[1] and Zia ul Islam[1]

ABSTRACT

Objective: To find out the frequency of appendicular perforation among patients with acute appendicitis.

Study Design: Descriptive cross-sectional study

Place and Duration of Study: This study was conducted at the Surgical Department of MTI, Lady Reading Hospital from 1st August 2020 to 31st January 2021.

Materials and Methods: This study was designed to determine the frequency of appendicular perforation in acute appendicitis patients. A total of 91 patients of both genders admitted and scheduled for appendectomy were enrolled.

Results: The mean age of study participants was 32.6±9.3 years. In our study 55 (60.4%) patients were male and 36 (39.6%) patients were female. 59 (64.8%) patients were admitted from emergency unit while 32 (35.2%) patients were admitted via OPD. During surgery, perforated appendix was recorded in 24 (26.4%) patients.

Conclusion: The frequency of appendiceal perforation is relatively high in our population who are subjected to appendectomy. It was found significantly higher in older age groups (p value <0.001), although perforation was seen more often in male patients but association with gender was insignificant (p value 0.810).

Key Words: Appendicitis, perforation, appendectomy, appendiceal perforation

INTRODUCTION

Appendicitis is the inflammation of the appendix that was first described by Reginald Fitz.[1] It is the leading cause of acute abdominal pain in young patients admitted to the hospital.[2] It is often regarded as disease of young age with 90% diagnosed in children & young adults and only 10% in patients above the age of 60 years.[3,4] In USA, the risk of developing acute appendicitis is around 8.6% for male population and 6.7% for female population but in comparison the incidence of acute appendicitis is low in Asia and Africa because of their more fibrous diet.[5]

There is wide geographical discrepancy in signs & symptoms, diagnostic investigations and treatment of acute appendicitis that is linked to the economic status of the countries.[6]

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Acute appendicitis is often diagnosed clinically without any difficulty.[7] Shchatsko et al[8] demonstrated in their study that pain in right iliac fossa with increased total leukocytes count and raised neutrophils levels were the commonest presenting features in patients who were operated. Abdelahim et al[9] reported that Alvarado score of ≥7 was associated with positive findings on exploration. In cases of vague presentation admitting the patient for observation is prudent, and increases the safety as well as the precision of diagnosis.[10] In equivocal cases some institutions are taking the help of Ultrasound as a first line imaging followed by Computed tomography as s second option in diagnosing appendicitis.[11,12]

Despite being one of the leading causes of acute abdomen, the diagnosis of acute appendicitis is still difficult.[2] Delay in the diagnosis of acute appendicitis often contributes to higher incidence of perforation.[13] Appendicular perforation is a complication of the acute appendicitis in which intraluminal contents leak into abdominal cavity resulting in peritonitis and grievous outcomes. The mortality risk of acute non-gangrenous, acute gangrenous and acute perforated appendicitis is less than 0.1%, 0.6% and around 5% respectively.[14] The rate of appendiceal perforation in adults is 28.5%.[15]

Various predictors of appendiceal perforation are anorexia, fever ≥38°C, male gender, pain duration and pre-hospital delay. It is difficult to ascertain when exactly the symptoms started and hence one cannot calculate the pre-hospital course of such patients

accurately. Some authors evaluated the pre-hospital course and the elapsed time from presentation to start of appendectomy but they faced various difficulties like small sample size and bias in reviewing the time and previous medical record. Among laboratory findings increased leucocyte count with neutrophilia plus increased levels of C-reactive proteins also predict the severity and increased risk of complications.[13,16]

MATERIALS AND METHODS

This descriptive Cross-sectional study was conducted at Surgical Department of MTI, Lady Reading Hospital from August, 2020 to January, 2021 after obtaining necessary Ethical approval from the IREB department (Ref: No.461/LRH/MTI). A total of 91 patients were enrolled in this study after obtaining informed written consent from every participant. Sample size was calculated using WHO calculator using 95% confidence level while taking expected rate of appendicular perforation as 28.5% [(15)] and taking 8% absolute precision. The Sampling technique was a consecutive non-probability sampling. All patients within age range of 20-50 years of both genders and presenting to the emergency department with acute appendicitis who underwent appendectomy were included in the study. Any patient with co-morbid condition like diabetes mellitus, hypertension, cardiac diseases was excluded from the study. All investigations needed were carried out such as complete blood picture (raise white blood cell and neutrophil count), ultrasound abdomen. Biopsy was taken for histopathological confirmation. Data of all the patients as name, age, gender, clinical findings, investigations, diagnosis, and operative procedure about appendicular perforation was recorded.

The data was entered into and analyzed using SPSS-23. The outcome variable i. e. presence of appendicular perforation was stratified by age and gender. Post-stratification Chi square test was applied and significance level was set at ≤0.05. All the data was presented in tables.

RESULTS

Table No.1: Age groups wise stratification of perforated appendix (n=91)

Age (years)	Perforated Appendix		P value
	Yes	No	
<30	5 (12.5%)	35 (87.5%)	
30-40	4 (17.4%)	19 (82.5%)	<0.001
>40	15 (53.6%)	13 (46.4%)	

The mean age of study participants was 32.6±9.3 years. Male patients (60.4%) outnumbered the females (39.6%) in this study. 59 patients (64.8%) were admitted from emergency unit and during surgery, perforated appendix was recorded in 24 (26.4%) patients. The subsequent tables elaborate age, gender, and source of admission wise stratification of perforated appendix (Tables 1-3).

Table No.2: Gender wise stratification of perforated appendix (n=91)

Gender	Perforated Appendix		P value
	Yes	No	
Male	15 (27.3%)	40 (72.7%)	0.8
Female	9 (25%)	27 (75%)	

Table No.3: Source of admission wise stratification of perforated appendix (n=91)

Source of admission	Perforated Appendix		P value
	Yes	No	
OPD	6 (18.8%)	26 (81.2%)	0.2
Emergency	18 (30.5%)	41 (69.5%)	

DISCUSSION

Acute appendicitis is one of the commonest reasons leading to emergency abdominal operations in everyday life.[17] The pathophysiology of appendicitis suggests that the likelihood of appendicular perforation increases with elapsed time from the start of symptoms to the treatment received. Various patients and disease factors as well as access to and quality of the health care can result delay in treatment increasing the risk of perforation. Researchers have observed that the risk of perforation increases with delay in diagnosis and treatment.[18] Similarly, studies have also linked appendicular perforation with diminished access to health care.[19]

Several studies demonstrated that progression of appendicitis from its onset to perforation occurs in timely manners and that several patients may recover without any surgery[20], hence the gold standard treatment of acute appendicitis set off early appendectomy to prevent this progression.

Due to this wide variation in occurrence of perforated and non-perforated appendicitis, many authors disagree in their opinion that time to appendectomy is the main driving factor leading to perforation.[21,22] Some studies suggest that perforation is not time dependent and that it may have already occurred before the development of symptoms because of distinctive host microbiological or inflammatory responses.[23]

In this study we found the frequency of perforated appendix to be 26.4% which was encountered more often in male patients. Perforated appendicitis was significantly higher in older age but insignificant in gender, as has also been reported by others.[24] Invasive procedure like diagnostic laparoscopy would not help to reduce the risk of perforation in doubtful cases, as several patient related factors are involved.

CONCLUSION

The frequency of appendiceal perforation is relatively high in our population who are subjected to appendectomy. It was found significantly higher in

older age groups >40 year (p value <0.001), although perforation was seen more often in male patients but association with gender was insignificant (p value 0.8).

Author's Contribution:

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Conflict of Interest: The study has no conflict of interest to declare by any author.

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Original Article

The Frequency of Unilateral and Bilateral Distribution of Cusp of Carabelli in Maxillary Permanent First Molars in Patients Visiting Peshawar Dental Hospital, Peshawar

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ABSTRACT

Objective: To determine the gender wise frequency of unilateral and bilateral distribution of cusp of Carabelli in maxillary permanent first molars in patients visiting OPD of Peshawar Dental Hospital.

Study Design: Cross sectional study.

Place and Duration of Study: This study was conducted at the OPD of Peshawar Dental Hospital, Peshawar from July 2020 to December 2020.

Materials and Methods: A total of 300 patients (125 males and 175 females) were selected through consecutive sampling technique. Age group selected was from 13 to 30 years. Both genders having fully erupted maxillary permanent first molars on both sides of the jaw were included in the study and teeth were examined using mouth mirror under proper illumination and standard protocols. The data were analysed through SPSS version 20 and statistical analysis was done using Chi Square test. P value of ≤0.05 was considered significant.

Results: 118 patients (39.3%) presented the cusp of Carabelli on maxillary permanent first molars. 24.7% of the patients had cusp present on both right and left molars while 10.3% of patients presented cusp only on right maxillary molars while in 4.3% of patients, it was located on left molars. Gender differentiation of the cusp did not show a statistically significant difference (p-value 0.140).

Conclusion: Common distribution of the cusp was bilateral on palatal surface of mesiolingual cusp of permanent maxillary first molars with the finding more evident in females (68.9%) as compared to males (31%). However unilateral distribution is commonly found on the right side.

Key Words: Cusp of Carabelli, Unilateral and bilateral distribution, Maxillary permanent first molars

INTRODUCTION

Accessory cusps and variations in root morphology frequently occur in human teeth[1,2]. Three types of accessory cusps are clinically seen in teeth i.e. cusp of Carabelli in molars (52- 68%), Talon Cusp in incisors (1-7.7%) and Leong's Tubercle in premolars (8%)[2]. The Cusp of Carabelli is commonly studied trait which is characterized by a small cuspule or tubercle found on the palatal surface of mesiopalatal cusp of maxillary permanent first molars near the mesiolingual line angle[3,4,5].

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This cusp was discovered by Austrian Dentist George Von Carabelli[4,6,7].

The exact etiology of cusp of Carabelli is not known but evidence shows involvement of both genetic and exogenous factors[8,9,10]. The presentation of cusp of Carabelli is mostly bilateral and its frequency is reported to be higher in Europeans (70-90%) than in Asians (35-45%)[11-14]. A study conducted in Peshawar, showed that bilateral distribution of cusp of Carabelli was more common than its unilateral distribution[3].

The purpose of the present study was to descriptively determine the frequency of unilateral and bilateral distribution of cusp of Carabelli in maxillary permanent first molars in patients visiting the OPD of Peshawar Dental Hospital and to evaluate gender wise distribution of the cusp.

MATERIALS AND METHODS

This study was approved by the ethical review committee of Peshawar Medical & Dental College. Written informed consent was taken from all participants who were included in the study.

A descriptive cross-sectional study was conducted on patients visiting the Oral Diagnosis Department of Peshawar Dental Hospital. Sampling technique used in the study was Consecutive Sampling. A total of 300 patients were included in the study in which 125 were males and 175 were females. Two teeth per patient were examined, thus the total number of teeth was 600.. Age group specified for the patients was 13 to 30 years. Both genders having fully erupted permanent maxillary first molars bilaterally were included in the study.

The exclusion criteria were:

1. Presence of any congenital dental disease which affects the morphology of maxillary permanent first molars.

2. Carious or restored maxillary permanent first molars.

A specially designed proforma was made to record the data of the patients. Each patient was seated in a dental chair and thorough clinical examination of both maxillary permanent first molars was carried out under proper illumination using mouth mirror.

The collected data was scrutinized using computer programme SPSS version 21. Pearson's Chi-Square test was used to see significance of variation from the mean. For p-value to be considered significant, its value ≤ 0.05 was set.

RESULTS

Of total 300 patients recruited in the current study, there were 175 females (58.3%) and 125 males (41.7%) (Fig 1). Two teeth per patient were scrutinized so the total number of teeth was $2\times300 = 600$. The age group chosen for the included subjects was 13-30 years with a mean age of 22.46 ± 5.1 years.

Table No.1: Gender-wise distribution of Cusp of Carabelli in the sample population

Gender	CC **Absent** in patients N (%)	CC **Present** in patients			Total N (%)
		Right N (%)	Left N (%)	Both N (%)	
Male	83(45.6)	12 (38.7)	7 (53.8)	23 (31)	125 (41.6)
Female	99 (54.3)	19 (61.2)	6 (46.1)	51 (68.9)	175 (58.3)
Total	182 (100)	31(100)	13 (100)	74(100)	300 (100)

P value = 0.140 as calculated by Pearson's chi square test. df = 3. Total number of patients having CC: Males = 42 (35.5%), Females = 76 (64.4%)

Table No.2: Gender-wise distribution of cusp of Carabelli in MPFM teeth

Gender	CC absent in MPFM teeth n (%)	CC present in MPFM teeth		Total n (%)
		Right n (%)	Left n (%)	
Males	185 (45.3)	35(33.3)	30 (34.4)	250 (41.6)
Females	223 (54.6)	70(66.6)	57 (65.5)	350 (58.3)
Total	408 (100)	105(100)	87 (100)	600 (100)

Total number of MPFM having CC = 192 (32%); Number of MPFM in males having CC = 65 (33.8%), in females number of MPFM having CC = 127 (66.1%).

Out of the total 300 patients, 118 (39.3%) showed cusp of Carabelli on MPFM (Maxillary permanent first molars) (Fig 2). Among the subjects who displayed the cusp 24.7% of them had cusp present on both right and left MPFM while 10.3% of patients had CC present only on right maxillary molars and in 4.3% of patients, it was located on left molars (Fig 2). Gender differentiation of the cusp did not show statistically significant difference which is depicted by p-value of 0.140. Of the total 31 patients having cusp of Carabelli on right MPFM, there were 12 males (38.7%) and 19 females (61.2%). In case of left maxillary molars, the total number of patients having cusp was 13 out of which 7 (53.8%) were males and 6 (46.1%) were females. 23 (31%) males and 51 (68.9%) females had CC present bilaterally (Table 1).
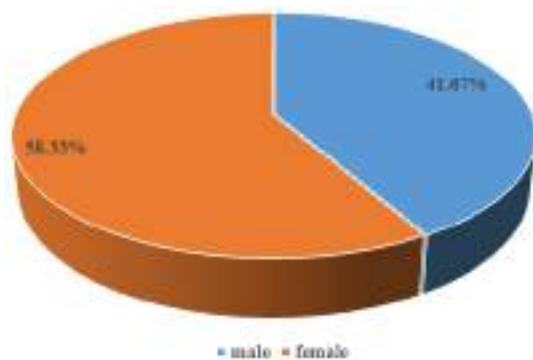

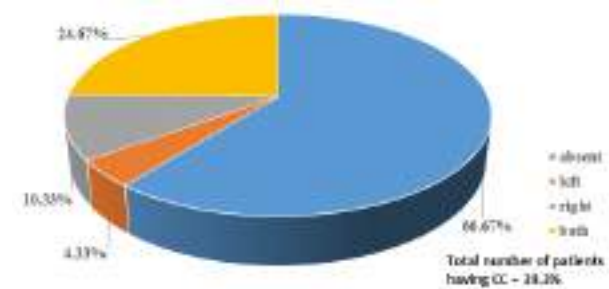**Figure No.1: Gender distribution of patients**

Figure No.2: Frequency of cusp of Carabelli on maxillary first permanent molars

DISCUSSION

The overall frequency of CC on maxillary permanent first molars in the contemporary group was found to be 39.3% (Fig 2) which is concurrent with the findings of Khan et al (29.7%)[3], Saadatullah et al (41.7%)[20], Dissayanke et al (38%)[15] and Kirthiga et al (40.5%)[17]. Contrary to these findings, Nepalese population and Kerala population showed 68.3% and 17.78% frequencies respectively[16,18].

The contemporary group revealed no difference between genders for the distribution of cusp of Carabelli as shown by p-value of 0.140. However bilateral occurrence of cusp was more evident in females (68.9%) as compared to males (31%) (Table 1). These findings are in accordance with Ramin Mosharraf (2013) who reported a female dominance for bilateral distribution of the cusp[12]. In contrast to the present study, frequency of cusp in another research done in Peshawar reported that more males (31.9%) had the trait than females (25.9%) but bilateral distribution was more in females (81.1%) as compared to males (73.2%) which is in agreement to findings of the current study[3]. The bilateral distribution of CC was seen in another study conducted on Libyan population[19]. A study conducted on a local population in Mardan documented a frequency of 32% for the presence of CC with unilateral expression of cusp to be more common and number of males having cusp of Carabelli (69%) was more than females (31%)[5]. King et al (2010) also proposed a higher frequency of the trait in males (53.9%) than in females (47.1%) in a randomly selected group of 12-years old children from Hong Kong[8]. According to Sadatullah et al, bilateralism was seen in 82.2% subjects with no gender predilection while the contemporary group had frequency of 24.7% for bilateral distribution of cusp with no significant difference between males and females[20].

The limitations of this study include: small sample size; hospital-based single-centered study; results were based only on intra oral examination of the participants; no radiographs or dental casts were obtained due to ethical issues; various forms/expressions of cusp of Carabelli were not noted.

Further studies should be made upon the extension of pulp to cusp of Carabelli, thickness of enamel and dentin of the tooth exhibiting this cusp and measuring the thickness of crowns of teeth exhibiting accessory cusps as molars with larger crown size may have a greater chance of exhibiting CC. Studies on a larger representative sample of KP population and various forms of the cusp in our local population are needed. Furthermore, importance of accessory cusps should not be neglected in clinical dentistry.

CONCLUSION

There is no significant difference between males and females for the distribution of cusp and is commonly found bilaterally. In case of unilateral distribution of the trait, more patients had cusp on right side (10.3%) as compared to left molars (4.3%).

Author's Contribution:

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Original Article

Comparison of Reliability and Validity of Different Discrepancy Indicators of Anteroposterior Axis of the Skull of Patients of Varying Age Groups that Visit a Tertiary Care Hospital in Karachi

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ABSTRACT

Objective: To find out the reliability and validity of commonly used antero-posterior skeletal discrepancy indicators including WITS, ANB, Beta Angle and MMAB Class I malocclusion in different age groups.

Study Design: Cross-sectional retrospective study

Place and Duration of Study: This study was conducted at the Orthodontics department of Liaquat College of Medicine and Dentistry, Karachi from January 2018 to June 2020.

Materials and Methods: Cephalometric analysis of 100 patients who went under treatment was done. This study was conducted on patient`s cephalometric records. Data of patients from ages 12 to 26 years who attended OPD during this period was included in the study excluding known cases of syndromes and Cleft Lip and Palate. The value of SNA, SNB, WITS analysis and Beta angle were calculated on pre-treatment lateral cephalograms.

Results: Our sample is majorly composed of females predominantly belonging to the adolescent group. Independent t-test was applied for rater 1 and rater 2 readings of ANB, Beta Angle, WITS, and MMAB finding out that the most valid predictor was the Beta angle and ANB. Intraclass Correlation was almost in perfect agreement in all the parameters.

Conclusion: Our study concluded that WITS and Beta angle are valid and reliable predictors of sagittal deficiency in class I malocclusion.

Key Words: Occlusion, Sagittal Discrepancy, Cephalometric Analysis, Malocclusion, Skull Base

INTRODUCTION

The science of Diagnosis and Treatment Planning in orthodontics mainly revolves around anteroposterior dimension discrepancy. Cephalometric analysis is very important as it is the only option for calculating this discrepancy.

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Several sagittal discrepancy parameters have been used over the years, but none fully defined the nature of the malocclusion. Hence, the race to find a reliable and valid parameter for this purpose.[1] Previously, both the jaws that is maxilla and mandible were used as point of reference in the base of the skull. Down's work laid the foundation for this by defining points A and B and evaluating anteroposterior apical base relationship.[2] He also found that ANB is affected by changes in the nasion`s rotation and both jaws.[1] Riedel suggested using Sella-Nasion Point A (SNA) and Sella Nasion Point B (SNB) angles and their correlation with ANB for dental relationships.[3]

Steiner suggested that various parts of the skull including skull bones, dentition and the covering soft tissues should be included in the analysis of the malocclusion. Jacobson suggested "WITS" appraisal which correlated the points A and B with the plane of occlusion.[4] The maxillary and mandibular relationship is calculated by the distance between the lines intersecting at the Functional Occlusal plane drawn from Point A and B.[5] Hence, any changes in the occlusal plane angle will affect the location of A and B

points and result in the change in WITS appraisal reading.[6] Development of the teeth and their eruption can also be affected by the occlusal cantt. This required a new and more reliable plane, proposed by Scott JH, that is maxillo-mandibular plane angle bisector (MM bisector plane).[7] This plane is inferior to occlusal cantt, but it is very reliable since it is highly replicable every time, as it does not alter with growth. This will not affect the actual point A and B relationship.[7]

Further, a new parameter was suggested for assessing sagittal insufficiency: "Beta Angle".[8] Measurement between points A and B and the axis of the condyle was used to measure the Beta angle which depicted the types and severity of the skeletal problem. The authors found that if the Beta angle is 27°-35° then the patient will have Skeletal Class I but if it is < 27° then it points towards Class II and a value > 35° indicates a Class III.[9] Another study held on Sudanese population showed that in pre-treatment patients the more reliable method was W angle for Class I, although for Class II and III ANB angle and APP-BPP distance was required by Pearson correlation analysis in 107 patients.[10] A local study in Pakistan supported the ANB angle to be more reliable and valid and was backed by samples collected from multiple centers for analyzing the anteroposterior relationship in all sagittal groups in Class I. Down's angle of convexity, WITS appraisal, and Beta angle are more valid for Class III.[11]

A study conducted by Rana Tiwari concluded that MM-AB is a better predictor than other parameters in all age groups.[1] While SN-AB and β-angle are relatively less predictable, shown by CkC = 0.357 and 0.235 respectively, ANB and WITS readings had slight agreement while ANB showed low validity. For anteroposterior discrepancy multiple indicators are used to assess the lacking in Class I malocclusion. To fill this gap we wanted to find out the reliability and the validity of commonly used antero-posterior skeletal discrepancy in Class I malocclusion in different age groups.

MATERIALS AND METHODS

It is a retrospective study on cephalometric records of patients who have had their treatment at the Department of Orthodontics of Liaquat College of Medicine and Dentistry. Permission from the local institutional review board was taken as part of the protocol. This study was conducted on patients' cephalometric records. 100 patients visited the department during the time of January 2018- June 2020. Sample size was calculated through Open Epi at confidence interval of 99.99% keeping total population of 100 as 94. Random sampling was done. Patient included in the study had Class 1 malocclusion relationship and complete permanent dentition. Excluding all with craniofacial deformity/ asymmetry, Cleft Palate, and history of orthodontic treatment / maxillofacial surgical intervention. Around 64 Females and 30 males were

included. Cephalometric tracings were performed by 2 researchers (Dr. Sadaf and Dr. Attiya Sheikh) and interrater reliability was calculated through Intra Class Correlation (ICC) test. STROBE checklist is used in the preparation of this manuscript.

After seeking permission from the IRB, the primary researchers performed cephalometric tracings and calculated the value of SNA, SNB, WITS analysis, and Beta angle. Measurements were calculated on pre-treatment lateral cephalograms. Anatomic tracings and the location of dento-skeletal landmarks were marked manually as per the following:

- **S-N plane:** Line joining points Center of Sella Tursica and anterior point of the fronto-nasal suture.[12]
- **SNA angle:** It is the angle between the Sella and Nasion plane and line which join N and A points.[12]
- **SNB angle:** It is the angle between the Sella and Nasion plane and line which joins N and B points.[12]
- **ANB:** Angle formed by line joining points A(anterior nasal spine), Nasion, and B.[12]
- **Wits:** It is the distance of the A and B`s perpendicular projections on the plane of occlusion.[12]
- **Beta angle:** The angle formed by the perpendicular line from point A to C- B line and the A-B line.[12]
- **MM-AB bisector:** The angle between Maxillo-Mandibular plane angle bisector to Point A and Point B distance .[12]
- **Cant of Occlusal Plane:** The angle is formed between occlusal plane and Frankfurt Horizontal plane.[12]
- **Class I Malocclusion** fulfilling the following conditions:
  - Angle`s Class I molar relationship
  - ANB angle= 1° to 3°
  - WITS= 0 to -3

RESULTS

Analysis was done through SPSS ver. 20 and bar charts depicting data of patients treated according to gender and age groups were made. Around 53% of patients were females and mostly were 13 and 22 years of age. The female-to-male ratio was 2.1:1 (figure 1 and 2).

Table No.1: Mean, Standard Deviation, Std. Error Mean of the cephalometric analysis.

	N	Mean	Std. Deviation	Std. Error Mean
WITS1	100	-.970	3.6312	.3631
WITS2	100	-.905	3.9643	.3964
MMAB1	100	-2.075	3.5635	.3564
MMAB2	100	-1.8000	3.36875	.33688
ANB1	100	4.665	2.6667	.2667
Beta1	100	31.935	4.8219	.4822
ANB2	100	4.800	2.6083	.2608
Beta2	100	31.700	4.7065	.4707

Table 1 shows the mean, standard deviation, and standard error mean for the cephalometric analysis for both rater 1 and rater 2 readings. Rater 1 analysis has "1" added to the parameter while rater 2 has "2" added to the parameter. Both raters have high variations in values for WITS analysis, MMAB, and Beta angle. The variations are due to the variety of malocclusions.
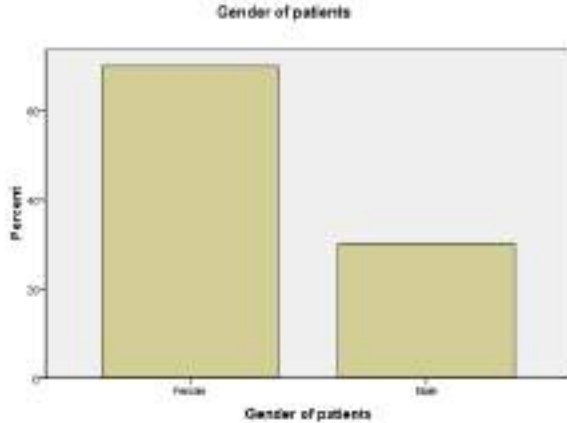

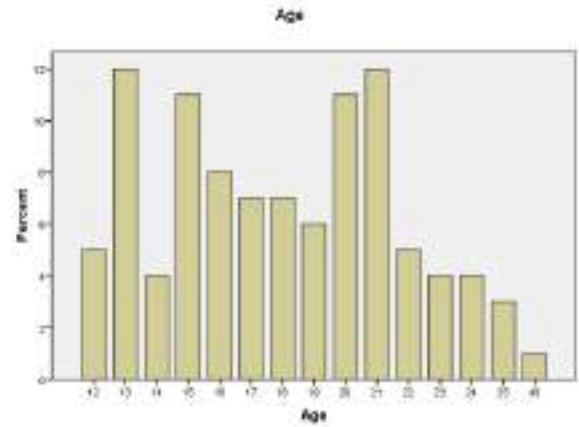**Figure No.1: Bar chart showing the percentage of female and male patients.**

Figure No.2: Bar chart showing the number of patients according to years

Table 2 shows the independent t-test results for rater 1 readings according to their significance to the age groups that are adolescent and adult. It shows WITS appraisal (p-value =0.631), and Beta angle (p-value =0.910) readings are significant according to the age groups while ANB and MMAB have a non-significant relationship to the age of the patient.

Table No.2: Independent T-Test results of Rater 1 cephalometric readings

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig.(2-tailed)	Mean Difference	St.Error Difference	Lower	Upper
WITS1	Equal variances assumed	.232	.631	-.493	98	.623	-.3667	.7441	-1.8433	1.1099
	Equal variances not assumed			-.501	88.136	.618	-.3667	.7324	-1.8221	1.0887
ANB1	Equal variances assumed	.515	.475	-.450	98	.654	-.2458	.5465	-1.3304	.8388
	Equal variances not assumed			-.466	92.994	.642	-.2458	.5273	-1.2929	.8012
Beta1	Equal variances assumed	.013	.910	-.110	98	.913	-.1083	.9892	-2.0714	1.8547
	Equal variances not assumed			-.109	82.046	.914	-.1083	.9950	-2.0877	1.8710
MMAB1	Equal variances assumed	.479	.491	-.371	98	.712	.2708	.7306	-1.7207	1.1790
	Equal variances not assumed			-.380	90.134	.705	-.2708	.7135	-1.684	1.1467

Table No.3: Independent T-Test results of Rater 2 cephalometric readings

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig.(2-tailed)	Mean Difference	St.Error Difference	Lower	Upper
WITS2	Equal variances assumed	.474	.493	-.061	98	.951	-.0500	.8133	-1.6640	1.5640
	Equal variances not assumed			-.059	72.775	.953	-.0500	.8445	-1,7332	2,2484
Beta2	Equal variances assumed	.219	.641	.345	98	.731	.3333	.9650	-1.5817	2.2484
	Equal variances not assumed			.337	76.804	.737	.3333	.9882	-1.6345	2.3012
ANB2	Equal variances assumed	.097	.756	.039	98	.969	.0208	.5351	-1.0411	1.0828
	Equal variances not assumed			.039	83.388	.969	.0208	.5358	-1.0447	1.0864
MMAB 2	Equal variances assumed	.349	.556	-.362	98	.718	-.25000	.69068	-1.62063	1.12063
	Equal variances not assumed			-.367	87.812	.714	-.25000	.68064	-1.60267	1.10267

Table No.4: Intraclass Correlation Coefficient to find the variation in values of Rater 1 and 2 analyses

Rater 1 and 2 Readings	Intraclass Correlation average	95% Confidence Interval	
		Lower bound	Upper bound
MMAB	0.969[*]	0.953	0.979
Beta Angle	0.929[*]	0.895	0.952
ANB	0.951[*]	0.927	0.967
WITS	0.962[*]	0.944	0.975

The two-way mixed-effects model where people's effects are random and measures effects are fixed.
*This estimate is computed assuming the interaction effect is absent because it is not estimable otherwise.

In table 3 the analysis for rater 2 readings is done showing a significant relationship between ANB (p-value =0.756) and Beta angle (p-value =0.641) with the age groups. While the intra-rater variation is depicted in table 4 which shows there is no significant variation between the analysis done by the two raters. They have similar values (Intra-class coefficient higher than 0.9)

DISCUSSION

The last century set the base for our current knowledge on malocclusion and associated parameters. For over 60 years, the ANB angle and WITS analysis has stood the test of time since their discovery in analyzing anteroposterior discrepancy. ANB is affected by readings of other parameters and by growth spurts. It should be used along with other indicators. The WITS appraisal is stable that is it does not alter by landmarks or jaw rotation, but it fails to identify the occlusal plane. Using it to correct malocclusion will reflect on the occlusal plane and not on the changes in the sagittal plane. Due to these problems Beta Angle was developed to support. Which is rather dependent on the

point A, B and C. Hence the changes lie within the jaws rotational plane giving it the edge over ANB and making it more accurate indicator of sagittal changes. Manipulating it, a clinician can easily camouflage the skeletal pattern discrepancy in the sagittal relationship. We can use it over the duration of treatment period to evaluate the changes due to growth and orthodontic intervention. Though the marking of point C on condyle is rather a skilled work but still it is if located within a radius of 2 mm then it is affected less than 1° making it acceptable than other parameters.

The current study sample was based on Class I malocclusion as supported by literature being the most dominant type in the population.[12,13] Building on the previous work by Qamar Uddin and Oktay, which showed a weak relationship between ANB and WITS appraisal, we tried to find a valid and reliable parameter in both adult and adolescent groups.[14, 15] Qamar Uddin compared ANB, Beta angle, WITS, Yen and W angle and found all of them to be valid and reliable in finding out the skeletal class I, II and III and can be alternatively utilized if one parameter is deemed to be difficult.[15] Oktay priorly had compared ANB, Wits,

AF-BF, and APDI and found that Wits, AF-BF, and APDI assessment criteria are less accurate in diagnosing sagittal discrepancy in contrast to ANB.[16]

Previously, only a handful of studies have correlated all the angular and linear indicators for sagittal discrepancy across various age groups reporting for orthodontic evaluation.[1, 16] Since it is part of the diagnosis and treatment planning process hence, this evaluation and correlation with the correct amount of sagittal discrepancy to be compensated by orthodontic treatment supported with or without orthodontic surgery are of immense importance. In our study predominant population belonged to the female gender and adolescent age group (adolescent 54, adults 40 out of a sample of 94) .[1] The highest reporting age was 13 and 21 years. The mean standard deviation for all the readings was above 3.5 showing high variation among the data of patients who reported with Class 1 Malocclusion.

We applied an independent t-test by making two groups: adolescent and adult and finding the significance in their relationship with the different parameters. Both of our raters had an agreement on all the readings shown by a high intra-class correlation which was above 0.9. Therefore, there are very low chances of variation in readings between the raters. Our findings support that Beta angle and WITS are the most valid and reliable parameters of the anteroposterior deficiency in adolescents and adults.

CONCLUSION

Our study concluded that WITS and Beta angle are valid and reliable predictors of sagittal deficiency in class I malocclusion.

Author's Contribution:

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