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Case Report

Editorial

How to Deal with High Blood Pressure and Stress

Mohsin Masud Jan

Editor

Every third Pakistani adult is suffering from hypertension, often touted as the silent killer. Its high prevalence makes all these people vulnerable to coronavirus (Covid-19 now again spreading in various parts of Pakistan), which may affect them more severely and as a result increases the death rate than those who are non-hypertensive.

It is becoming increasingly common among the younger population due to factors such as smoking, junk food intake, lack of physical activity, stress and resultant anxiety. Data indicates that more than half of the Pakistanis between 17 and 49 years of age with hypertension are not aware of their health condition while only 10 per cent have their hypertension under control in Pakistan. Therefore, awareness is needed on the healthy lifestyle changes. The risk of untreated hypertension also increases the risk of heart attack, stroke, kidney failure, and blindness significantly.

People need to take extra care to protect their hearts. Precautions are on high priority especially for older adults and individuals with high blood pressure, obesity or a history of heart disease and stroke. In the hot season, the body tries to cool itself by transferring blood from major organs to under the skin. This change makes the heart pump more blood, putting it under extreme stress.

High blood pressure is one of the leading causes of premature deaths in the world. According to the World Health Organization, it is estimated globally that about 1.28 billion adults aged between 30 and 79 have hypertension, and it is responsible for 7.6 million deaths per annum worldwide (13.5 per cent of the total), more than any other risk factors. Around 54 per cent of stroke and 47 per cent of coronary heart disease are attributable to high blood pressure.

High blood pressure, which has no initial symptoms, can cause irregularities of the heartbeat while some patients also suffer from nosebleeds. In others, fatigue or confusion can be caused by pulmonary artery hypertension, in which the vessels responsible for carrying blood from the heart to the lungs undergo excessive pressure, causing fatigue. Such a condition also causes shortness of breath, chest pain, and light-headedness. Headaches of all kinds are often the only symptom of hypertension in a majority of patients and are often overlooked.

Disturbed vision is another sign of hypertension and is caused by damaged blood vessels. Pressure exerted on the optic nerve limits the functioning of the retina, causing vision problems, and then you have blood in the urine, which is common in high blood pressure.

People aged 30-40 years should check their blood pressure at least once a year, and those above 40, every six months. For those who are diagnosed with hypertension, regular monitoring is the key. One should regularly monitor blood pressure at home as well as maintain a record of readings.

Pakistani food is heavily laden with salt and spices. Not only do they add flavour and taste to food, but they also contribute to maintaining balance in the human body. But we know that anything consumed in excess is almost always bad for the human body. Too much sodium in the diet not only leads to high blood pressure, heart disease, and strokes but also gives the feeling of being bloated. Consuming too much salt can also bring on swelling in different parts of the body caused by excessive fluids in the body's tissues which are known as edema.

Excess salt in the body also leaves one feeling thirsty most of the time. This happens because foods with high sodium content cause an imbalance in your body's fluids, and only high-water consumption makes up for this. Excessive intake of salt results in sweating and further leads to dehydration. Hence to keep the body calm and control water loss, one should avoid excessive salt intake, especially during hot summers in Pakistan. It is for this reason that the US Food and Drug Administration (FDA) has stated that the average human adult should consume less than 2,300 milligrams of sodium per day, which is equal to about a teaspoon of salt.

Some heart medications like angiotensin receptor blockers, angiotensin-converting enzyme inhibitors, beta blockers, calcium channel blockers and diuretics, which disturb blood pressure responses or lower sodium in body, can exaggerate the body's response to heat and causes you to feel ill. Dehydration causes strain on your heart, putting it at risk. Hydration helps the heart more easily pump blood through the blood vessels to the muscles. And it helps the muscles work effectively. During normal weather drinking approximately 2-3 liters of fluid every day, fresh fruits, vegetables, whole grains, legumes, seeds and daily regular exercise and walk with empty stomach are suggested which can help and prevent stress and high blood pressure.

Original Article

Outcome of Peritoneal Dialysis in Children with Acute Kidney Injury

Farjam Ahmed Zakai[1], Mashal Khan[1], Bilquis Naeem[2], Muhammad Ashfaq[1], Mehmood Shaikh[2] and Shabeeta Bai[2]

ABSTRACT

Objective: To analyze the outcomes of PD in AKI cases among the pediatric population at a public sector tertiary care institute in Karachi, Pakistan.

Study Design: Longitudinal study

Place and Duration of Study: This study was conducted at the National Institute of Child Health, Karachi from May 2021 to March 2022.

Materials and Methods: Acute kidney injury was considered when creatinine clearance was decreased by 50% based on the modified pediatric RIFLE. During the study period, patients were observed for the development of catheter-related complications and mortality.

Results: A total of 160 patients with AKI underwent PD during the study. The mean age of patients was 14 (7 - 48) months and the majority of the patients were males (56.3%) at baseline mean serum creatinine, phosphate, calcium and sodium levels were 5.2 ± 0.23 mg/dL, 5.7 ± 1.9 mg/dL, 7.5 ± 1.8 mg/dL and 130 ± 18.5 respectively. The most frequent cause of AKI was sepsis (26.9%). During the hospital stay, 97(60.6%) patients developed complications. The most frequent complication was peritonitis (23.8%) followed by catheter displacement (13.1%), catheter obstruction (10%), bleeding (8.1%), catheter leakage (4.4%), and exit site cellulitis (1.3%). In-hospital mortality was seen in 68(42.5%) patients. Frequency of PCKD (p=0.020), shock sign (p<0.001), febrile patients (p=0.021), sepsis (p=0.002), development of complications (p=0.004), peritonitis (p<0.001) and inotrope support (p<0.001) was significantly different among survivors and non-survivors. Serum creatinine (p=0.021) and phosphate (p=0.016) were significantly raised among non-survivors.

Conclusion: The present study demonstrated that the modality of peritoneal dialysis can be adopted in resource-limited settings. However, a multidisciplinary care model should be adopted for the prevention of complications associated with peritoneal dialysis catheters.

Key Words: Outcome, peritoneal dialysis, children, acute kidney injury, risk factors, complications

INTRODUCTION

Acute kidney injury (AKI) is a sudden decrease in kidney excretory function which is indicated as a transformable rise in the blood concentration of creatinine and nitrogenous waste products, frequently with reduced urine output and kidney incapability for regulating fluid and electrolyte homeostasis [1].

Nearly 5% of all hospitalized patients and one-third of intensive care admissions develop AKIwhich frequently requires renal replacement therapy (RRT) [2]. Estimates suggest that 6% to 9% of AKI patients in the pediatric group need to undergo dialysis procedures [3].

The mortality rate is unacceptably higher in AKI episodes. It is estimated that 13.8% of pediatric patients with AKI suffer from mortality [4]. Moreover, the mortality rate of children is higher in regions where there is a crucial need for dialysis but not available [5]. Death in AKI episodes is also associated with underlying causes including cardiac issues, multiple organ failures and sepsis which worsen the prognosis but cases of isolated AKI strive for better survival [6]. Further risk factors such as hypotension, the necessity of mechanical ventilation and younger age have been found to be closely linked with poor outcomes regardless of the modality of dialysis [7].

Modalities that are frequently used for RRT include intermittent hemodialysis (IHD), continuous RRT (CRRT) and peritoneal dialysis (PD). There are multiple factors that influence the choice of modalities such as hemodynamic stability, past history of abdominal surgeries, size of the patient, presence of

1. Department of Pediatric Medicine / Pediatric Nephrology[2], National Institute Child Health, Karachi.

Correspondence: Dr. Farjam Ahmed Zakai, Pediatric Medicine, Training completed, National Institute of Child Health, Karachi.
Contact No: 03322230124
Email: hafizdrfarjam@gmail.com

peritoneal defects and vascular accessibility [6]. Recently there is a rise in the preference for the utilization of continuous renal replacement therapy (CCRT) over PD for the pediatric population in the majority of the centers in developed countries [8]. However, in developing countries, PD is the choice of treatment owing to the fact of lower-cost burden and ease of initiation and the approach is appropriate for pediatric patients since they have greater peritoneal surface area [9].

Previously available literature reports the successful use of PD for management of AKI among all age ranges including neonates as well following open-heart surgeries, in cases of critical illness with multiple organ failure and successful PD use has been particularly observed in remote and poor infrastructure settings. The associated financial burden is three-five folds less than HD or CRRT due to which it remains the frequent modality for RRT in AKI cases in low-middle-income countries [10]. It is also a beneficial mode of management for newborns and babies with a bodyweight of less than a thousand grams and for infants in whom the achievement of vascular access is a challenging task for purpose of extracorporeal therapy [11].

There are a few limitations of PD such as the requirement of the intact peritoneal cavity and as a consequence, it is not indicated in children with a recent surgical history of abdominal surgery, cellulitis, hernia, paralytic ileus and peritonitis. The associated mechanical complication may be catheter displacement, leakage and obstruction. Some medical and surgical conditions such as bowel or bladder perforation are reported to be rarely occurring but frequently seen with the usage of rigid catheters [12].

Locally data on the appropriate treatment modality in AKI cases are inadequate and further, no modality of treatment has been proven to be superior to the other in AKI situations [9].

MATERIALS AND METHODS

This longitudinal study was conducted at the National Institute of Child Health, Karachi, Pakistan in the Pediatric Nephrology Department and Pediatric Intensive Care Unit from May 2021 to March 2022 after acquiring the ethical approval from the Institutional Review Board of the hospital. Patients of age 1 month to 12 years of any gender, diagnosed as AKI and requiring PD were included in the study following the gaining parental consent in writing. Patients presenting with urolithiasis and chronic ambulatory PD were excluded from the study.

Acute kidney injury was considered after observing a 50% decrease in creatinine clearance based on the modified pediatric RIFLE criteria [13]. A standard hospital protocol was followed for the management of AKI patients and the underlying conditions. Feeding

was provided through a nasogastric tube in unconscious patients until they gained consciousness.

PD was performed in the pediatric nephrology department and pediatric intensive care unit through the insertion of a rigid catheter (Amecath) of appropriate size. Aseptic protocols were strictly followed and Infiltrated the abdominal cavity with 10-15 ml/kg of PD fluid to prevent visceral injury. A small incision was given and the catheter was inserted perpendicularly to the abdominal wall under local anesthesia or IV sedation in younger children at an infraumbilical position of 2cm just lateral and below the umbilicus. The stiletto was carefully taken off and the catheter was pushed towards the iliac fossa. A retaining knob is pushed to the abdominal wall. Dry gauze was placed. A fluid level of 5 - 10 mL/Kg was taken for initial cycles to assure smooth fluid drainage without any leakage. Afterward, fluid volume was given an increase of 10-20 mL/kg and 40-50 mL/kg for younger and older children respectively. For minimizing the risk of fluid leakage, a purse-string suture was subcutaneously applied at the entry site of the catheter into the peritoneal cavity. Catheters were immediately exchanged in case of leakage. The time duration of a single cycle was 45-60 minutes. The PD solution which was used, comprised 1.5%.

Peritonitis was considered when the patient had a fever (>100∘F) and abdomen pain as well as vomiting and cloudy purulent effusion along with WBC >100/ul in which neutrophils >50% or positive PD culture. Gut perforation was labeled when there was fecolith present in the PD fluid. Bowel perforation was labeled when there was glucose in urine DR.

The collected data was entered into SPSS version 21 for performing analysis of data. Categorical variables were summarized by means of frequencies and percentages. Numerical variables were first tested for the assumption of normality distribution with the Shapiro-Wilk test. Mean ± standard deviation was reported for Gaussian distributed variables whereas variables following non-Gaussian distribution were summarized as median with interquartile range (IQR). Chi-square or Fisher exact test was to make a comparison for categorical characteristics among survivors and non-survivors. An Independent t-test was applied for comparison of quantitative variables among alive and dead patients whereas the Mann-Whitney U test was applied for comparing non-normally distributed variables among the two groups. A two-tailed p-value ≤ 0.05 was taken as statistically significant.

RESULTS

A total of 160 patients with AKI underwent PD during the study period with a mean age of 14 (7 - 48) months. The majority of the study participants were males (n=90, 56.3%) and belonging to rural areas (n=111, 69.4%). 108 (67.5%), 44 (27.5%) and 8(5%) patients

were hypotensive, normal and hypertensive at baseline respectively. Patients presented with complaint of motion and vomiting (n=68, 42.5%) and dehydration (n=31, 19.4%). Almost all of the children were febrile at the time of presentation (n=152, 95%). Shock sign was present in more than half of the study participants (n=114, 71.3%). At baseline, mean serum creatinine, phosphate, calcium and sodium levels were 5.2 ± 0.23 mg/dL, 5.7 ± 1.9 mg/dL, 7.5 ± 1.8 mg/dL and 130 ± 18.5 respectively.

Table No.1: Comparison of patients' socio-demographic and clinical features among survivors and non-survivors

Variables	Survivors	Non-survivors	p-value
Age (in years), median (IQR)	18(7 - 48)	12(5 - 48)	0.363
Hospital stay, median (IQR)	9.5 (7-13)	7(4 - 10)	**<0.001
PD duration, median (IQR)	4(3 - 5)	5(3 - 6)	0.093
Gender, male, n(%)	55(59.8)	35(51.5)	0.295
Motion and vomiting, n(%)	44(64.7)	24(35.3)	0.113
Dehydration, n(%)	16(51.6)	15(48.4)	0.460
Shock sign, n(%)	47(41.2)	67(58.8)	**<0.001
Febrile, n(%)	84(55.3)	68(44.7)	†*0.021
Inotrope support	40(40)	60(60)	**<0.001
Serum creatinine, mean ± SD	5.5±0.9	7.8±1.1	*0.021
Serum phosphate, mean ± SD	4.1±0.85	6.4±1.1	*0.016
Serum calcium, mean ± SD	5.1±2.1	8.2±0.95	0.053
Serum sodium, mean ± SD	133±17.5	128±15.5	0.144
Causes of AKI			
Sepsis, n(%)	16(37.2)	27(62.8)	**0.002
Renal calculi, n(%)	27(69.2)	12(30.8)	0.088
AGE, n(%)	11(73.3)	4(26.7)	0.193
PCKD, n(%)	12(85.7)	2(14.3)	*0.025
Hypoplastic, n(%)	8(66.7)	4(33.3)	0.560
Dysplastic, n(%)	4(40)	6(60)	†0.326
PUV, n(%)	4(40)	6(60)	†0.326
DKA, n(%)	3(60)	2(40)	†1.000
HUS, n(%)	3(75)	1(25)	†0.637
Drug induced, n(%)	2(66.7)	1(33.3)	†1.000
Dengue, n(%)	2(100)	0(0)	†0.508
Diphtheria, n(%)	1(50)	1(50)	†1.000
Complications, n(%)	47(48.5)	50(51.5)	*0.004
Peritonitis, n(%)	11(27.5)	29(72.5)	**<0.001
Catheter displacement, n(%)	12(57.1)	9(42.9)	0.972
Catheter obstruction, n(%)	11(68.8)	5(31.3)	0.337
Bleeding, n(%)	8(61.5)	5(38.5)	0.743
Catheter leakage, n(%)	5(71.4)	2(28.6)	†0.700
Exit site cellulitis, n(%)	0(0)	2(100)	†0.179

AKI: acute kidney injury, AGE: acute gastroenteritis, DKA: diabetic ketoacidosis, HUS: hemolytic uremic syndrome, PCKD: polycystic kidney disease
*Significant at p<0.05, **Significant at p<0.001

100(62.5%) patients were kept on inotrope support during their stay. A median hospital stays and PD duration was 8 (6 - 11) days and 4 (3 - 6) days

respectively. Figure 1 presents the etiology of AKI injury. During the hospital stay, 97(60.6%) patients developed complications. The most frequent complication was peritonitis (n=40, 25%) followed by catheter displacement (n=21, 13.1%), catheter obstruction (n=16, 10%), bleeding (n=13, 8.1%) and catheter leakage (n=7, 4.4%).
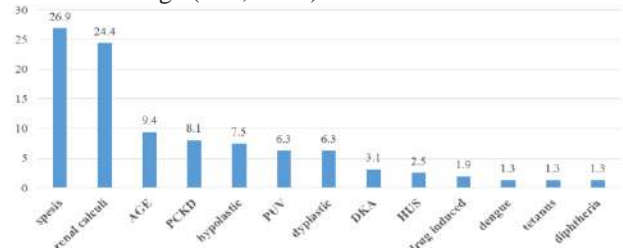
Figure No.1: Frequency of etiology of acute kidney injury

In-hospital mortality was seen in 68(42.5%) patients. Table 1 presents the comparison of patients' socio-demographic and clinical features among survivors and non-survivors. Hospital stay was significantly lower among non-survivors (p<0.001). Frequency of shock sign (p<0.001), febrile patients (p=0.021), sepsis (p=0.002), development of complications (p=0.004), peritonitis (p<0.001) and inotrope support (p<0.001) was significantly higher among non-survivors. Frequency of PCKD was significantly lower among non-survivors (p=0.020). Serum creatinine (p=0.021) and phosphate (p=0.016) was significantly raised among non-survivors.

DISCUSSION

There is evidence that the incidence of AKI is rising. Incidence varies from 30-to 50% particularly among infants and children undergoing cardiac surgical procedures [14]. Even the rate is higher in intubated children and among those on inotropes [15]. Inward settings, children receiving nephrotoxins and aminoglycosides are frequently affected with AKI during their hospital stay [16]. The modality for management should be based on patients' features, available resources, and capabilities [17]. PD usage is not encouraged in the Western world because of progress in CRRT. Gaiao et al [18] revealed in their survey that there was a difference of opinion among nephrologists regarding the usage of PD in developed and developing countries. The utilization of acute PD is restricted to low and middle-income countries primarily due to a lack of skillful technical manpower and fragile infrastructure for CRRT.

In this study median age of the patients was 14 (7 - 48) months. Relatively a higher mean age has been reported in the literature from other countries. Mean age of 45.6 ± 0.8months, 51.3 ± 44.3 months, 48.4 ± 50.4 months and 63.4 ± 6.3 months was reported from Africa [19], India [2] China [20], and Iran [21] respectively. It is quite

alarming to see that age at AKI diagnosis in our settings was quite smaller as compared to the age reported in other countries.

Causes leading to AKI differ based on the geographical settings. Mainly in the developed world, AKI settings shifted from primary glomerular disorders and hospital-acquired with frequent causes of critical illness, malignancy, post transplantation, nephrotoxins, and post-surgeries [22]. Whereas in developing countries causative factors remain sepsis, hemolytic uremic syndrome (HUS), and dehydration [23]. In the present study, the most frequent cause of AKI was sepsis and renal calculi. However, HUS was rare in our study. The findings are consistent with Mishra et al [2] who also reported that septicemia and HUS as the chief causes of AKI in their study. Esezobor et al [19] reported that sepsis was the cause of AKI in their study in more than one-third of the patients (40%). A Chinese study reported that more than half of the patients in their study had AKI due to renal causes (57.5%) and nearly a quarter had post-renal causes (25.7%) whereas prerenal causes were least (15%) [20]. Sepsis as the most frequent cause of AKI was also reported by Aroor et al [24].

Despite of series of advantages such as lesser hospital visits and enhanced preservation of remaining kidney function, PD has some disadvantages too. Patients are exposed to multiple complications because of the existence of prolonged catheters inside the peritoneal cavity and these complications may be of either infectious or non-infectious nature. peritonitis is an infectious complication whereas catheter obstruction, leakage, malfunctioning, scrotal swelling, and ultrafiltration failure are complications non-infectious nature [25]. These complications impact the performance of PD and often require immediate catheter revision. In the present study more than half of the study, participants were seen to acquire complications during their hospital stay with peritonitis being the most frequent complication followed by catheter displacement, catheter obstruction, and bleeding and catheter leakage. Duzalka et al [26] demonstrated catheter dysfunction as the most frequent complication of PD while peritonitis was the second most complication. Coccia et al [27] conducted a study to determine the clinical outcomes in children with AKI secondary to STEC-HUS treated with acute PD and reported that catheter malfunction (24%), peritonitis (19%), fluid leaks (11.5%), bleeding events (6%), and hyperglycemia (2%) were complication seen during the study.

The death rate of children in AKI cases is uneven and assumed to be mainly based on the severity of underlying diseases instead of kidney dysfunction only. Pediatric patients of AKI in whom AKI cause is limited kidney conditions like post-infectious glomerulonephritis reported to have a mortality rate of <1% while the death rate is higher in AKI cases as a consequence of multi-organ failure [28]. The in-hospital mortality rate in our study was 42.5% which is a consistent finding as previously available literature reports mortality rate ranges from 22.2-63.9% in AKI patients managed with PD [29, 30]. In the present study, the rate of mortality was significantly higher among patients developing peritonitis. Further baseline serum creatinine and phosphorous concentration were also significantly higher among expired patients, consistent with the findings reported in available literature [2].

The present study documents the experience of a single-center public sector institution in Karachi. Therefore, it is not wise to generalize these findings to the larger population. It is suggested to conduct a multi-center study to contribute to the literature in terms of generalizable findings from Pakistan with addressing all the shortcomings from clinical aspects of the current study.

CONCLUSION

The present study demonstrated that the modality of peritoneal dialysis can be adopted in resource-limited settings. However, a multidisciplinary care model should be adopted to prevent the complications associated with peritoneal dialysis.

Author's Contribution:

Concept & Design of Study:	Farjam Ahmed Zakai
Drafting:	Mashal Khan, Bilquis Naeem
Data Analysis:	Muhammad Ashfaq, Mehmood Shaikh, Shabeeta Bai
Revisiting Critically:	Farjam Ahmed Zakai, Mashal Khan
Final Approval of version:	Farjam Ahmed Zakai

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

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Magnetic Resonances Imaging Findings in Delayed Milestones Pediatric Patients

Ghazala Shahzad, Asma Jatoi and Humeera Sajjad Memon

ABSTRACT

Objective: The main objective of this study is delayed in the process of achieving milestones is rare but still devastating effect with vast amount of etiologies resides in it. At least 89% of patient with development delay showed additional clinical features.

Study Design: cross Sectional study

Place and Duration of Study: This study was conducted at the Liaquat University Hospital Jamshoro and Hyderabad, over a period of six months from Jan 2019 to June 2019.

Materials and Methods: To include total of 22 patients presenting with additional clinical feature associate to development delay. History and clinical examination with MRI was done on GE 1.5 Tesla with appropriate sequence after sedation. Various anatomical structures like ventricles, corpus collasumetc were systematically examined.

Results: Total numbers of 22 patients were enrolled with 11 male and 11 female. Most of the presentation i.e. 45.5% around the age of 2-5 years. Mostly affected structures are white matter except Corpus Collasum (63.6 %), Ventricles (50%), abnormalities of cerebellum (40.9 %), abnormalities of Grey matter (31.8%) and Corpus collasum changes (22.7 %).

Conclusion: MRI findings in delayed milestones patient's shows mostly affected structures is white matter except Corpus Collasum (63.6 %) and Ventricles (50%), that can be the inductive factor for clinical manifestation that warrant patient to be admitted in hospital. Further Cross-sectional studies are required to develop the findings with clinical features.

Key Words: Magnetic Resonances Imaging, Delayed Milestones, Pediatric Patients

INTRODUCTION

From the conception to maturity, the human brain itself grows through a continuous process of development and it can be amended by genetic, environmental, nutritional and chronic diseases. This can result it into significant delayed achievement of Milestones, which can be evaluate by motor i.e. gross & fine, social and language skills and can be labeled as development delay if one or more than one skill are delayed.[1, 10] The estimation of 5-10% children with 1-3% younger than 5 years and 40,000-120,000 children born each year out of four million annual births in United States and Canada reported to have development delay but still the exact prevalence is not known.[2, 9]

Department of Radiology, Liaquat University of Health Sciences Hospital Hyderabad/Jamshoro. Sindh.

Correspondence: Dr. Ghazala Shahzad, Assistant Professor of Radiology, Liaquat University of Health Sciences Hospital Hyderabad/Jamshoro. Sindh.
Contact No: 0331-2509564
Email: drgsc_80@yahoo.com

Evident revelation of development delay can occur during infancy, early childhood and early school years and it doesn't represent the diagnosis but it is actually the manifestation of various etiologies like genetic, metabolic, vascular, malformation syndrome, traumatic, infections, toxins and environmental, besides careful evaluation can reveal cause in 55-85% individuals.[1,3]

Regarding investigations Brain MRI is one of major and important investigation in these individuals and about 60-84% had abnormal Scan with most findings are found in ventricles and corpus callosum.[1,4] Abnormal findings on MRI is somewhat blur in development delay patients. By pointing out some kind of relationship, we can simply develop either the consequence or inductive factors that can be associative with development delay.

MATERIALS AND METHODS

A cross Sectional study designed to include total of 22 patients presenting with additional clinical feature associate to development delay in Liaquat University Hospital Jamshoro and Hyderabad; over a period of six months (Jan 2019 to June 2019). The patients that were referred from Pediatric and Neurosurgery ward to radiology department for Magnetic Resonance

Imaging.The patient that were included in the study through convenient sampling by excluding patients who have ongoing protein energy malnutrition, infection and other co morbidities. The patients were included who came with any clinical symptoms like epilepsy, neurological findings, speech deformities. The history and clinical examination is done and patient's files were studied with multi-disciplinary approach. The designed questionnaire was filled that included already set variables, which were adopted from previous study.[5] Patients went under MRI scans of brain on machine name GE 1.5 Tesla with sequenced used T1W, T2W, FLAIR, and Diffusion weighted DWI and ADC sequences. Strict sedation protocol was followed, for infants "feed and scan" technique was used, for older children oral or IV drugs i.e. Syrup Chloral Hydrate 5 to 10 mg/kg were used with consent and under the supervision of anesthetics and pediatrician. All children were monitored with pulse oximetry and continuous respiration was advocated during the entire scan and strict vigilance for two hours after scan. The patients were placed in supine position and immobilization of head was achieved by surrounding the head with air-evacuated bag of polystyrene balls. Systematically scans were taken by starting with Ventricles, Corpus Callosum, Grey and white matter, Basal Ganglia, Brain stem and cerebellum. The discreet data was spread on SPSS software version 23 and results were taken out.

RESULTS

Total numbers of 22 patients were enrolled with 11 male and 11 female. Most of the presentation i.e. 45.5% around the age of 2-5 years, 95.5% delivered in term gestational age, 86.4% normal obstetric history and 54.5% have no history of consanguinity. Complete demographic data was shown. (Table 1).

Table No.1: Demographic Data of Patients

Age	Number	Percentage
3 months-1 year	7	31.8
2-5 years	10	45.5
6-8 years	4	18.2
9-12 years	1	4.5
Gender		
Male	11	50
Female	11	50
Gestational Age		
Preterm	1	4.5
Term	21	95.5
Obstetric history		
Normal	19	86.4
Bad	3	13.6
Consanguinity		
Present	10	45.5
Absent	12	54.5

Regarding the Magnetic Resonance Scan findings of patients that are present either singular or mix and

mostly affected structures is white matter except Corpus Collasum (63.6 %), Ventricles (50%), abnormalities of cerebellum (40.9 %), abnormalities of Grey matter (31.8%) and Corpus collasum changes (22.7 %). Corpus collasum changes include agenesis, colpocephaly, abnormal splenium and Genu and thinning. The complete findings are shown. (Table 2).

Table No.2: Findings of Magnetic Resonance Scan (Table 2)

Structure	Number	Percentage
Abnormalities of Ventricles	11	50
White matter changes except Corpus collasum	14	63.6
Corpus Collasum changes	5	22.7
Abnormalities of Grey matter	7	31.8
Abnormalities of cerebellum	9	40.9
Abnormalities of brain stem	3	13.6
Abnormalities of basal Ganglia	1	4.5
Abnormal sulci	3	13.6
Dilation of ventricle with bat wing shape	4	18.2
Molar tooth appearance	1	4.5
Absence of cerebellar Vermis	3	13.6
Deep & wide interpedunclar Cisterns	1	4.5

DISCUSSION

A continuous process of development can be amended by genetic, environmental, nutritional and chronic diseases. This can result it into significant delayed achievement of Milestones, which can be evaluate by motor i.e. gross & fine, social and language skills and can be labeled as development delay if one or more than one skill are delayed.[1,6,12]

Evaluation of 22 patients that was present with development delay or delay milestone achievement. The patients were referred from pediatrics and neurosurgery ward to radiology department for Magnetic resonance scan. All the patients with developmental delay, as cited by previous study ''development delay plus'' showed some kind of MRI scan abnormality in relation to previous study, which showed only 89% had finding on MRI.[1,5] It may be due to difference in inclusion criteria.

As all of the patients that were included in our study, shows some kind of abnormal findings on MRI scan with most of the presentation around the age of 2-5 years (45.5%), (95.5%) delivered in term gestational with no gender prediction, which is in contrast to previous finding that shows peak age 3 to 12 months with male preponderance.[5, 6,11]

This study shows that MRI scans showed variety of changes either in singular or mix and mostly affected

structures is white matter except Corpus Collasum (63.6 %), Ventricles (50%), abnormalities of cerebellum (40.9 %), abnormalities of Grey matter (31.8%) and Corpus collasum changes (22.7 %). Corpus collasum changes include agenesis, colpocephaly, abnormal splenium and Genu and thinning. These findings are in contrast to those previous findings that shows most of the changes in Ventricles and Corpus Collasum and it can be highlighted factor that lead to clinical pictures associated with development delay.[5,7]

It is highly important to note that most changes occur in white matter except corpus collasum, as compared to previous studies that shows most of the changes in corpus collasum, Corpus collasum its self a component of white matter but highlighting other white matter components is also important to rule out other pathological process.[1,5,7]

MRI plays an important part in detection of specific etiological and pathophysiological processes easily but with association of clinical feature and residing etiology. The major drawback of the study that it doesn't discuss clinical features with radiological findings. Which leads to the necessity to be discussed in further Cross- Sectional studies?

CONCLUSION

MRI findings in delayed milestones patient's shows mostly affected structures is grey matter except corpus collasum (63.6 %) and ventricles (50%), that can be the inductive factor for clinical manifestation that warrant patient to be admitted in hospital. Further Cross-sectional studies are required to develop the findings with clinical features.

Author's Contribution:
Concept & Design of Study: Ghazala Shahzad
Drafting: Asma Jotai, Humera
Data Analysis: Humera, Asma
Revisiting Critically: Ghazla Shahzad, Humera
Final Approval of version: Ghazala Shahzad

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

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Original Article

Effect of Exercises on Masticatory Efficiency during Functional Rehabilitation Period for Complete Denture Patients

Irum Sikandar[1], Muhammad Waseem Ullah Khan[2], Momina Akram[1], Hamna Khawaja[3], Hafiz Nasir Mahmood[4] and Khalid Yaqub[4]

ABSTRACT

Objective: To compare masticatory efficiency in terms of mean sieve value among complete denture patients with read aloud exercise versus without read aloud exercise at 2nd week & 4th week post insertion of complete denture.

Study Design: randomized control trial, non- probability study

Place and Duration of Study: This study was conducted at the Prosthodontics Department, Punjab dental hospital, Lahore between April 2020 to September 2020.

Materials and Methods: Sixty edentulous patients with age range 45 to 54 years, received conventional complete denture treatment for the first time, they were randomly divided into two equal groups. After insertion of the dentures, patients in group I were asked to read a newspaper three times per day for 4 weeks, while those in group II did not read. The reading duration increased by 5 minutes per week, from 5 minutes in the first week to 20 minutes in the fourth week. Two and four weeks after insertion of the dentures, masticatory performance was assessed using the sieve method.

Results: The results of independent sample t test revealed the significant difference in terms of masticatory performance between group I with read aloud exercises and group II without read aloud exercises at 2-weeks follow up ($p<0.05$) and 4weeks follow up sessions ($p<0.05$). The mean and std. deviation for 2-weeks follow up session was 30.40 ± 3.99 for group I and for group II, it was $24.83\pm 2.15(p<0.05)$. The mean and std. deviation for 4-weeks follow up session was 37.13 ± 1.47 for group I and for group II, it was $29.60\pm4.29(p<0.05)$

Conclusion: The results suggest that reading aloud exercises, after complete denture insertion significantly improved masticatory performance. Planned activity of masticatory muscles and tongue muscles assists denture wearers in adaptation to their dentures.

Key Words: Read aloud exercises, masticatory efficiency, complete dentures.

INTRODUCTION

The use of removable dentures is still a major section in dentistry and is an important reality for many edentulous patients[1]. Complete dentures are one of the most popular and conventional prosthesis to rehabilitate edentulous patients[4]. The most common problem regarding complete denture is loss of retention and stability which in turn effects masticatory efficiency [2,9.] Apart from appropriate tooth setup with bilateral balanced occlusion, quality of coordination among masticatory muscles play a pivotal role in the stability and chewing efficiency of complete dentures[5]. Masseter, temporalis and tongue musculature have tactile sensations which send sensory feedback and helps in adaptation with new prosthesis during rehabilitation period[3]. Mastication is performed by rhythmic separation and apposition of jaws, it involves Muscles of cheek and tongue which keeps bolus of food on occlusal surface of tooth [12]. Poor mastication makes old patients malnourished thus, prone to systemic illness. Management of edentulous jaws with implant supported prosthesis improves masticatory performance significantly, but is not affordable for every patient [6]. However, planned read aloud exercises that includes continuous movement of the lips, tongue and cheeks muscles may help in training the patients to adapt with

1. Department of Prosthodontics, de'Montmorency College of Dentistry, Lahore.
2. Department of Prosthodontics, Dental Institute, Punjab Medical College, Faisalabad Medical University, Faisalabad.
3. Department of Prosthodontics, Sharif Medical and Dental College, Lahore.
4. Department of Maxillofacial Surgery, Institute of Dentistry, CMH Medical College, Lahore.

Correspondence: Dr. Muhammad Waseem Ullah Khan, Associate Professor of Prosthodontics, Dental Institute, Punjab Medical College, Faisalabad Medical University, Faisalabad
Contact No: 03334844939
Email: veritarian@yahoo.com

removable dentures and improves their quality of life [7]. Controlled movement of tongue and buccinator muscles is considered to improve denture stability which can ultimately improve masticatory performance[12]. Zmudzki et al, reported that controlled and forceful tongue position improves masticatory performance by supporting mandibular denture[5]. Study by Yamada. A found that repeated chewing gum exercises improved masticatory efficiency upto 20 % [4]. Tetsuka et al did study on cadavars, and found that there is strong relation between occlusal support and masseter muscle fibers and muscle coordination [16]. The purpose of this study was to investigate if read aloud exercise also has same impact on masticatory efficiency.

MATERIALS AND METHODS

Study Design: The randomized control trial, non-probability (consecutive) study was conducted in prosthodontics department, Punjab dental hospital, Lahore between April 2020 to September 2020. Patients with Temporomandibular disorders, Xerostomia, Orofacial motor disorder, Psychological disturbances and patients who were unable to cooperate were excluded from study.

Study Intervention: Patients who presented in Outdoor of prosthodontics department at Punjab dental hospital, Lahore, among them, 60 edentulous patients with age range 45 to 54 years were selected, using lottery method. 2 groups each of thirty patients were made randomly. After approval from ethical committee of hospital, patients signed informed consent. Conventional complete dentures with (Bilateral balanced occlusion) were fabricated by post graduate students. Patients were called after 24 and 72 hours for follow up to remove any post insertion complaints. Patients of group 1 were given (urdu) newspaper ad insertion appointment and instructed to read it in a loud note 3 times a day for four weeks, reading time will be increased incremently by 5 minutes per week till 20 minutes in the fourth week. While subjects in group 2 did not perform exercises. However, they were also under observation and recalled for follow up for any post insertion problems. Masticatory performance was analyzed in a chewing test that used a fractional sieving technique at 2 month and 4 month follow up appointments. In clinical settings, at each follow up after assessing denture stability, patients were directed to sit in comfortable manner. 2 patients did not appear for follow up in group A. Patients were instructed to chew peanuts 3g with 20 strokes in a usual manner with no swallowing, peanuts were expelled in glass container. In laboratory of prosthodontics department of Punjab dental hospital\de' Montmorency college of dentistry, Chewed pieces were passed over a standard sieve mesh of number 10 under running water, particles were gathered, all debris removed and dried at 65 degrees C for 30 minutes in an oven. They were separately weighed afterwards on a digital / electrical balance with a precision of 0.01 g. Calculation of masticatory performance was done by dividing the volume of test food that passed through the sieve by the total volume of food that was recovered.

Statistical Analysis: For statistical analysis, SPSS version 25 was used. Demographic variables of this study were age, gender and edentulous period of each patient, which were calculated as Mean ± Std deviation and percentages. Data was stratified for age, gender, edentulous period and for masticatory efficiency (after 2 weeks and then after 4 weeks of follow ups). Independent Sample T test was applied and p value<0.05 was considered significant.

RESULTS

The mean age in group I was 52.33±6.89 and for group II, it was 50±7.87. The mean score difference was found to be non-significant (p0.214) which was calculated by independent sample t test (figure 1). In group I, males were 47.1% whereas females were 52.9% of the total sample whereas in group II, males were 52.9%, whereas females were 47.1% with non-significant difference (p0.602) calculated by Chi-square test (figure 2). In group I participants, mean of months of being fully edentulous was 5.03±2.65 and for group II, it was 5.13±2.55 which was also non-significantly different (p0.882). This showed that both groups were similar in characteristics required for the study (figure 3).
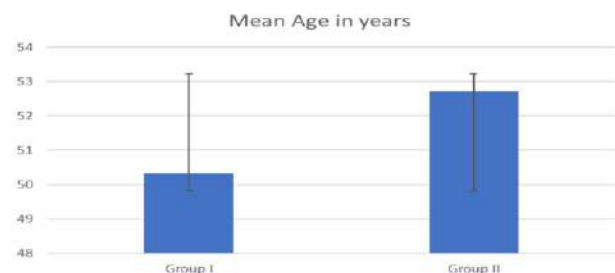
Figure No.1: Mean Age
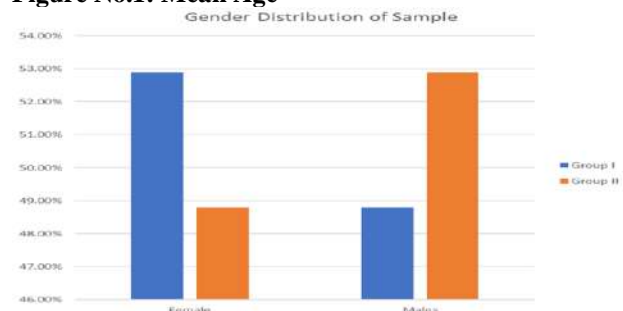
Figure No.2: Gender Distribution

The outcomes of independent sample t-test disclosed significant variations in terms of masticatory performance between group I with read aloud exercises and group II without read aloud exercises at 2-weeks

follow up and 4weeks follow up sessions. The mean and std. deviation for 2-weeks follow up session was 30.40±3.99 for group I and for group II, it was 24.83± 2.15(p<0.001). The mean and std. deviation for 4-weeks follow up session was 37.13±1.47 for group I and for group II, it was 29.60±4.29 (p<0.001) (Table 1).
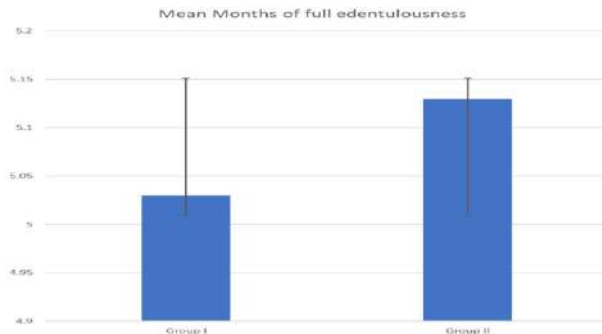
Figure No.3: Edentulous Period

Table No.1: Masticatory Performance

Mean and standard deviation of masticatory performance %inter and intra group comparison.		
	Follow up (2 weeks)	Follow up (4 weeks)	P-value
Group 1	30.40(3.99)	37.13(1.47)	<0.001
Group 2	24.83(2.15)	29.60(4.29)	<0.001
P value	<0.001	<0.001	

DISCUSSION

Complete denture has been a traditional prosthesis for edentulous patients [1]. Success of complete denture depends upon technical, biological and psychological interplay between clinician and patient[13]. Masticatory performance is evaluated by subjective methods and objective methods, among objective methods sieve method has been considered as gold standard.[9] In this study, masticatory performance between 2 groups was evaluated on basis of sieve method because no expensive instruments were required for it. Group 1 who performed read aloud exercises, which were gradually increased in timing, showed a significant improvement in masticatory efficiency on follow up intervals. Results of study gave a strong outcome in favor of oral muscular exercises as they bring neuro muscular coordination. Literature review told us that masticatory muscles have their own implication in masticatory performance of patients [14]. Study conducted by Toru Yamazaki, described possible mechanism associated with diabetes and masticatory performance. Decreased consumption of nutrients like dietary fiber and magnesium in participants who were not able to masticate properly due to edentualism or poorly fitting dentures[3] were at risk. Inadequate fiber intake and magnesium or calcium deficiency were found to put these individuals at risk of acquiring type 2 diabetes[13,3.] Particularly, dietary fiber consumption lowers glucose levels by influencing insulin activity, as soluble fiber has a retarding effect on gastric digestion

and absorption [3]. Few studies recommend that success of complete denture lies on patient factors and not on dentist factors, insertion of complete denture may alter position of tooth or can affect palatal contours, thus normal phenomena of speech can be disrupted[15]. Yu fen chen, found that with adequate or inadequate mandibular denture stability there was lesser level of tongue support i-e 32 percent and 49 percent respectively. Electromyography of signals received by masseter muscle and temporalis showed no significant difference in group who wore denture for first time and who were already denture wearers[6]. Study by Yamada et al, revealed that the variance in performance of masticatory apparatus ranged from 10 to 17 percent when simple regression analysis was done and a variance of 30 percent in crushing ability when multiple regression analysis was done; concluding that the tongue and lip functions do not support a significant coefficient of ascertainment[4.] This can be due to multiple factors such as occlusal contacts, forces of occlusion, mandibular movements and other demographic factors like age and gender, that are linked to masticatory efficiency, besides tongue and lip activity, which may also unfold the variation in masticatory performance seen in the literature[16,17]. Strong literature demonstrated that oral tactile sensation can only be back with implant supports devices, and patient may get similar sensation like natural dentition and improved masticatory performance [11].

CONCLUSION

The results of this study conclude that the masticatory performance can be enhanced after insertion of complete dentures by practicing read aloud exercises. Planned activity of masticatory muscles and tongue muscles assists denture users in adaptation to their prosthesis.

Author's Contribution:

Concept & Design of Study:	Irum Sikandar
Drafting:	Muhammad Waseem Ullah Khan, Momina Akram
Data Analysis:	Hamna Khawaja, Hafiz Nasir Mahmood, Khalid Yaqub
Revisiting Critically:	Irum Sikandar, Muhammad Waseem Ullah Khan
Final Approval of version:	Irum Sikandar

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Frequency of Thrombocytopenia in Admitted Patients with Sepsis

Haidar Zaman[1], Mohsin Khan[1], Abdul Rauf[1], Nasar Khan[1], Masroor Anwar[2] and Muhammad Usman Nazir[1]

ABSTRACT

Objective: Low platelet level is commonly seen in patients who are admitted with sepsis. It is one of the sequential hematological events that can lead to organ dysfunction and organ failure. The objective of the study was to look into frequency of thrombocytopenia in septic patients and its association with Diabetes, Hypertension and Obesity.

Study Design: Prospective cross-sectional study

Place and Duration of Study: This study was conducted at the Department of medicine, Ayub Teaching Hospital Abbottabad. The study was carried out from 10th February 2021 to 09th January 2022.

Materials and Methods: Total of 94 patients who were admitted into Ayub Teaching Hospital with sepsis were included in the study applying the inclusion and exclusion criteria.

Results: Of these 94 cases, 49 (52.1 %) were male while 45 (47.8 %) were female patients. The mean age was 51.48 ± 10.25 years (with the minimum age of being 32 years while the maximum 76 years). 41 (64.0%) belonged to rural areas and 53 (56.3%) to urban areas. economically, 44 (46.8%) poor, and 50 (53.1%) belonged to the middle-income category. Diabetes was present in 33 (35.1 %) and hypertension 55 (58.5 %). The mean body mass index was 26.11 ± 1.75 kg/m^2 and obesity was present in 20 (21.2 %). The mean platelet count was 153576.23 ± 87752.57 / microliter and thrombocytopenia were noted in 49(52.1%) cases.

Conclusion: Low platelet count was seen in significant number of patients in our study with sepsis. It was also seen in this study that patients with Diabetes Mellitus, Hypertension and obesity were mainly associated with low platelets. It is recommended to correct timely blood glucose and Blood pressure. Similarly avoiding obesity can improve the outcome.

Key Words: Sepsis, Thrombocytopenia, platelet count

INTRODUCTION

Sepsis and its complications are common in admitted patient especially those with comorbid conditions and old age. The incidence of sepsis has increased in the last few decades with longer hospital stay[1].

Bad clinical outcome and death is common in admitted patient with sepsis. The patients without sepsis do well. The sepsis affects the mind and body after the patient who had survived the sepsis.[2] By Definition sepsis is the presence of organ dysfunction and abnormal response to an infection[2].

1. Department of Medicine, Ayub Teaching Hospital Abbottabad.
2. Department of Medicine, Khyber Teaching Hospital, Peshawar.

Correspondence: Dr. Abdul Rauf, Associate Professor and Head, Department of Medicine Unit D, Ayub Teaching Hospital, Abbottabad.
Contact No: 03335036847
Email: abdulraufa646@gmail.com

The activated platelets secrete different chemicals, as cytokines, chemokines. It leads to inflammation. Endothelial cells and WBCs are the target cells of platelets. Endothelial when the WBCs are activated it produce cell adhesion and tissue factor, Von Willebrand factor, cytokines, proteases and nitric oxide[3]. Decreased production of platelets is due suppression of the bone marrow by toxins, medicines, or inflammatory mediators.[3]

In patients with sepsis the low platelet count is evident by complete blood picture and blood peripheral smear.[4] The low platelet count responds to treatment of the underlying cause.[5] Different studies show different underlying etiologies of low platelets in patients with sepsis. A study done patients with sepsis in USA, the most of the patients (93.7%) had septic shock, with underlying cause as pneumonia (38.8%) and Thrombocytopenia developed in 47.6% patients with sepsis[6]. In Pakistan one study showed 59.9% patients with sepsis were with low platelet count study performed in Pakistan showed a high percentage of thrombocytopenia in patients with sepsis which was 59.9% and more deaths in septic patients with low platelets count as compared to normal platelet count.[7,8].

MATERIALS AND METHODS

This study was done in the department of Medicine, Ayub Teaching Hospital from 10th February 2021 to 09th January 2022. The patients with sepsis and ages 16 to 85 years of both genders were included in the study. The exclusion criteria were patient with anemia, leukemia, ITP, TTP, and HUS. A total of 94 patients were included in the study as per inclusion criteria.

After getting approval from hospital ethic committee, data was collected on prescribed proforma. Data was collected from the patients only after consent. Relevant history and examination were completed as per requirement. A 3 ml blood in CP bottle was collected from the patient. The blood was tested for platelet count in main lab of the hospital under the supervision of pathologist. To control confounding factors the exclusion criteria was followed.

SPSS 21.0 was used for analysis of data. Age and platelet count were described as mean $\pm$ standard deviation. The significances level kept less than 0.005.

RESULTS

Of 94 study cases, 49 (52.1 %) were male while 45 (47.8 %) were female patients. The mean age was 51.48 $\pm$ 10.25 years (with the minimum age of being 32 years while the maximum 76 years). The mean age of the male patients was 53.16 $\pm$ 7.89 years and female patients were 60.12 $\pm$ 12.75 years (p=0.029).

Forty-one (64.0%) belonged to rural areas and 53 (56.3%) to urban areas. Economically, 44 (46.8%) poor, and 50 (53.1%) belonged to the middle-income category. Diabetes was present in 33 (35.1 %) and hypertension 55 (58.5 %). The mean body mass index was 26.11 $\pm$ 1.75 kg/m^2 and obesity was present in 20 (21.2 %). The mean platelet count was 153576.23 $\pm$ 87752.57 / microliter and thrombocytopenia were noted in 49(52.1%) cases. The different variables are depicted in the tables.

Table No. 1: Thrombocytopenia with regard to gender (n = 94)

Gender	Thrombocytopenia		P–value
	Yes (n=49)	**No** (n=45)	
Male (n=49)	33	16	0.072
Female (n=45)	21	24	

Table No. 2: Thrombocytopenia and age (n = 94).

Age	Thrombocytopenia		P – value
	Yes (n=49)	**No** (n=45)	
Up to 50 Years (n=39)	19	20	0.596
More than 50 Years (n=55)	30	20	
Total	**94**		

Out of 49 patients who were in sepsis with low platelets 23 died, with overall mortality was 46.9% and among the patient without low platelets mortality was 10(22.2%).

DISCUSSION

Low platelet count (platelet count < 150,000/μl) is common in seriously ill patients. It is in 20%–40% in admitted patient with sepsis[9]. It is a risk factor for mortality[10]. The low platelet count and decreasing platelet count in admitted patient is a poor prognostic factor [11]. Similarly, if the platelet count remains low for longer time and there is no rise then again it is with bad prognosis. Many studies are done to find out the risk factors for thrombocytopenia.[12,13,14]. Sepsis was common risk factor in development of thrombocytopenia. Beside sepsis there are other causes which act as risk factors for development of low platelets in admitted patients. They are increased severity of illness, some antibiotics like vancomycin, beta lactum and Heparin; however, these findings are not supported as not consistent in different studies[15].

The low platelet count is studied in many studies as its incidence and association with risk factors. With clinical outcomes[16,17]. The data is limited about thrombocytopenia and sepsis. Severity of illness and sepsis play is major determining factor in low platelet count[18,19]. It is shown in our study that males are more affected than female. This finding is consistent with other studies, the occurrence of male gender in one study was 56.2% while in others it was 74% and 51%. The mean age was 51.48 $\pm$ 10.25 years (with the minimum age of being 32 years while the maximum 76 years) it is shown by Venkata et al as 68.8 $\pm$ 15.8 years mean.

Out of 94 patients 41 (64.0%) were from rural areas and 53 (56.3%) urban areas. economically, 44 (46.8%) poor, and 50 (53.1%) belonged to the middle-income category. So here significant numbers were poor.

Diabetes was present in 33 (35.1 %) and hypertension in 55 (58.5 %) patients. Venkata et al has reported 36 % diabetes and 75% hypertension. Similar result was shown by Burunsuzoğlu et al[8] as 25. 4 % diabetes and 37. 3 % hypertension. These studies have shown that the patients with co morbid conditions like old age, hypertension, obesity and diabetes are more prone to develop low platelet count when they got sepsis. It can lead to more complications as compared to those without co morbid conditions.

The average BMI was 26.11 $\pm$ 1.75 kg/m^2 and twenty patients were found obese (21.2 %). It is comparable with other studies done.

The mean platelet count was 153576.23 $\pm$ 87752.57 / microliter and low platelet count was noted in 49 (52.1%) cases. It is comparable with other studies done like 47.6 % by Venkata et al and 57.1% by Burunsuzoglu et al.[8]

The death rate of patients with sepsis was higher with low platelets than without thrombocytopenia. It is consistent with other studies done. Thus, it shows the importance of early recognition of low platelet count and subsequent prompt measures to decrease the mortality[20].

CONCLUSION

It was clear in this study that sepsis patients were with low platelet count. Thrombocytopenia was common in patients who were obese and poorly controlled blood pressure and glucose.it is therefore recommended that patients with diabetes, hypertension and increase body weight sepsis should be treated promptly to avoid all its complications.

Author's Contribution:

Concept & Design of Study:	Haidar Zaman
Drafting:	Mohsin Khan, Abdul Rauf
Data Analysis:	Nasar Khan, Masroor Anwar, Muhammad Usman Nazir
Revisiting Critically:	Haidar Zaman, Mohsin Khan
Final Approval of version:	Haidar Zaman

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

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Comparative Effect of Pursed-Lip Breathing and Stacked Breathing on Pulmonary Function and Wellbeing in Bronchiectasis Patients

Salman[1], Quarat-ul-Ain[2], Syed Mazhar Ali Naqvi[3], Amirah Zafar[2], Rabia Bukhari[2] and Anam Ahmed[2]

ABSTRACT

Objective: To compare the effects of pursed-lip breathing and stacked breathing on pulmonary function and wellbeing in bronchiectasis patients.

Study Design: Randomized Controlled study

Place and Duration of Study: This study was conducted at the services hospital and Riphah University from June 2021 to February 2022.

Materials and Methods: Twenty bronchiectasis patients were randomly and equally allocated into two groups, group 1 and group 2, through random number generator by Non-probability convenient random sampling technique. Subjects in Group A received Stalked breathing exercise and conventional treatment. Group B received Pursed lips breathing and conventional treatment and the intervention was conducted for 3-4 times daily with 8-10 repetition and 4-5 days per week. The intervention was repeated after 4 weeks of 1st intervention. The data was analysed by SPSS, version 25. Statistical significance was P= 0.05. Inter group difference evaluated with non- parametric tests.

Results: With respect to changes in the pulmonary functions of both groups, group 1 and group 2, before and after the intervention, there was significant differences in PEFR/min after treatment between groups, (U= 16.5, z = 2.539, p = 0.01), while for rest of the variables, results were insignificant (p>0.05). Mann-Whitney test was used to evaluate the difference between the groups.

Conclusion: It is concluded that both treatment techniques are equally effective in pulmonary function and wellbeing in patient with bronchiectasis.

Key Words: Bronchiectasis, pursed lips breathing, Stacked Breathing

INTRODUCTION

This is an unusual disease that occurs after an infection, which damages any single or more than one conducting bronchi, permanently. The actual definition of bronchiectasis is the lifelong dilation of the bronchi, along with cough, constant sputum buildup, as well as repeated infections of the respiratory system.

1. Department of Physiotherapy, Superior University, Lahore.
2. Department of Physiotherapy, MICU Services Hospital, Lahore.
3. Department of Physiotherapy, CMH Medical College, Lahore.

Correspondence: Amirah Zafar, Assistant Professor CMH Medical College, Lahore.
Contact No: 0331-4327237
Email: amirahzafar89@gmail.com

It is also commonly known as chronic respiratory syndrome[1]. Chronic Obstructive Pulmonary Disease is very alike this in that both have similar symptoms such as cough, sputum, shortness of breath, and wheezing. Whereas, bronchiectasis includes the walls of the bronchi to get inflamed. Bronchi are "pipes" that take air from the mouth/nose to the lungs. These are the central affected areas when a patient has bronchiectasis. From the mouth, the trachea comes down and divides into two bronchi, that is the left and right that are even more divided down to secondary bronchi; each of which supplies a lobe of the lung. Further division is called tertiary bronchi that take air into one bronchopulmonary segment each. In this disease, lining cilia get damaged as well and hence cannot move the mucus out of the airway [2,11]. At present, a CT scan of a high resolution is considered to be the top gold standard in order to diagnose bronchiectasis[3].

Education and comprehensive treatment are the keys to bronchiectasis management.[4] Physical therapy can be quite helpful in alleviating bronchiectasis symptoms. Patients tend to cough more because muco-ciliary clearance is lowered to roughly 15% of usual.

Treatments for secretory clearance, weariness caused by poor clearance, and increased coughing are all targets of physiotherapy[5,6,13]. A pulmonary rehabilitation program usually comprises 45 to 60 minutes of steady aerobic exercise. It aids in the strengthening of muscles throughout the body as well as the reconditioning of the heart and lungs.[7,8]. Physiotherapists help patients with Bronchiectasis by practicing lung exercises such as pursed-lip breathing (PLB) and stacked breathing to help ease symptoms and physical restrictions. However, the results of breathing exercises published previously were seen to be mixed, making effectiveness of this sort of breathing uncertain.[9,10,14]. In 2021 Bilge conducted a prospective, randomized, comparative study in patients with bronchiectasis to examine the efficacy of an oscillating positive expiratory device (OPED) and active cycle breathing methods (ACBT). The Flutter® gadget and ACBT are two home-based physiotherapeutic approaches that are beneficial. In terms of sputum production, the Flutter® device looks to be more efficient [15].

MATERIALS AND METHODS

Study Design and Settings: It was a Randomized clinical trial and conducted in services hospital and Riphah University.

Sample Size and Selection Criteria:
The sample size was collected via EPITOOL. 20 patients were recruited by assuming a 10% attrition rate with the following details. Data was entered and analyzed by SPSS version 25. Mean 1= 164.8
Variance 1 = 20.9
Mean 2 = 174.5
Variance 2 = 25.2
Confidence =
0.95 Ratio of
sample = 1
Tails = 2

Inclusion Criteria: Both genders, Aged between 40 to 60 years, acute bronchiectasis (diagnosed by a doctor), Shortness of breath, Fever and chills, Cough with blood or mucus.

Exclusion Criteria: Patients with cardiac, metabolic, or endocrine disorders, acute chest infection, having cardiac or other surgeries, Patients with a diagnosis of cancer or active gastrointestinal problems, those requiring supplemental oxygen [12].

RESULTS

A total of 20 patients were enrolled in this study and divided into two groups i.e., Stacked Breathing (Group 1) and Pursed Lip Breathing (Group 2). The baseline demographic characteristics of participants are summarized in Table 1.

Table No.1: Baseline Demographic Features of Study Participants

Characteristics	Group 1 (n=10)	Group 2 (n=10)
Age	50.3±5.9	50.4±6.5
Gender		
Male	6	5
Female	4	5
Smoking		
No	5	6
Yes	5	4
PEFR/min	388±39.1	353±48.7
FEV_1%	59.3±6.0	58.6±7.6
FEV_1Predicted	59.3±6.0	58.6±7.6
Symptom Score	13.6±0.6	13.9±0.8
Activity Score	10.8±0.7	10.8±0.6
Impact Score	2.4±0.6	2.3±0.8
Total Score	6.6±0.5	6.2±0.7

Table No.2: Tests of Normality (Shapiro-Wilk)

	Statistics	Df	Sig.
PEFR/min (pre-treatment)	.969	20	.740
FEV1 % (pre-treatment)	.877	20	.16**
FEV1 % predicted (pre-treatment)	.877	20	.16**
Symptom score (pre- treatment)	.784	20	.001**
Activity score (pre- treatment)	.800	20	.001**
Impact Score (pre-treatment)	.765	20	.000**
Total score (pre-treatment)	.760	20	.000**
PEFR / min (pre-treatment)	.958	20	.500
FEV_1 % (pre- treatment)	.895	20	.033**
FEV1 % predicted (pre-treatment)	.895	20	.033**
Symptom score (pre- treatment)	.788	20	.001*
Activity score (pre- treatment)	.873	20	.013**
Impact Score (pre-treatment)	.800	20	.001*
Total score (pre-treatment)	.780	20	.000*

*p<0.001, **p<0.05

Table No.3: Mann-Whitney U test (Between Group)

Variables	Mean Rank	Z-score	P-value
PEFR/min (pre- post treatment)	16.50	-2.539	.011
FEV1 % (per-post treatment)	26.0	-1.825	.068
Symptom	33.5	-1.424	.154

score (pre-post treatment)			
Activity score (pre-post treatment)	30.5	-1.575	.115
Impact score (pre-post treatment)	42.5	-0.622	.534
Total score	39.0	-0.935	.350

DISCUSSION

This study examined the effects of a stacked breathing exercise and pursed- lip breathing exercise on bronchiectasis patients after four weeks of training on pulmonary function and wellbeing. Both treatment techniques are equally effective in pulmonary function and the well-being of inpatients with bronchiectasis.

When the results of the study compared with the previous literature, it is highlighted the fact that physiotherapists help patients with Bronchiectasis by practicing lung exercises such as pursed- lip breathing (PLB) and stacked breathing to help ease symptoms and physical restrictions. However, the results of breathing exercises published previously were seen to be mixed, making the effectiveness of this sort of breathing uncertain. In this study, there was a significant difference in PEFR/min after treatment between Group 1 and Group 2, (U= 16.5, z = -2.539, p = 0.01), while for the rest of the variables, results were insignificant (p>0.05) which supports the idea of stalked breathing in management of bronchiectasis. Results from the parent article, when compared, summarized the topic as Diaphragmatic breathing makes the most of your diaphragm muscle while also helping you take in more oxygen. Pursed lip breathing keeps the airways open longer and allows trapped air in the lungs to escape. Both of the exercises taught by our specialists help you maintain your airways open, control shortness of breath and relax your body. These strategies allow you to participate in your daily activities with ease.[15]

CONCLUSION

It is concluded that both treatment techniques are equally effective in pulmonary function and well-being in patient with bronchiectasis.

Recommendations: There is a lot to explore about therapeutic interventions in order to treat respiratory diseases along with pharmaceutical management.

Author's Contribution:
Concept & Design of Study: Salman, Quarat-ul-ain
Drafting: Syed Mazhar Ali Naqvi, Amirah Zafar
Data Analysis: Rabia Bukhari, Anam Ahmed
Revisiting Critically: Quarat-ul-ain, Syed Mazhar Ali Naqvi
Final Approval of version: Salman, Quarat-ul-ain

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

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Central Venous Catheter Tip Culture with Blood Cultures versus Blood Cultures Alone in Identification of Organisms in Patient with Sepsis in ICU

CVC tip cultures with CVC blood cultures versus CVC Blood Cultures Alone in ICU

Muhammad Sohaib Arif[1], Amber Sabeen Ahmed[1] and Samina Shamim[2]

ABSTRACT

Objective: To compare CVC tip cultures with CVC blood cultures versus CVC blood cultures alone in identification of organisms in patients with sepsis admitted in Intensive Care Unit.
Study Design: Retrospective Cohort study
Place and Duration of Study: This study was conducted at the Medical Intensive Care Unit of Aga Khan University Hospital, Karachi from Jan, 2021 to Dec, 2021.
Materials and Methods: Severe septic patients >18 years of age admitted in ICU with CVC inserted and atleast one CVC blood culture sent, were included and patients with previously known culture/organism on ICU arrival were excluded. SPSS v25.0 was used for data analysis. Frequency and percentages were reported for qualitative data while mean and standard deviation was reported for quantitative data.
Results: Total 139 patients were included in the study with mean age of 53.45 ± 16.17 years with mean duration of CVC was 5.76 ± 2.89 days. Most common source of sepsis was respiratory system with 57(41%) of cases.%). 73(52.5%) patients had improved and the mortality was around 66(47.5%). 49(35.3%) patients CVC tip cultures were sent along with CVC blood cultures from which 49 CVC tip 27(55%) were positive for organism growth while 22 (45%) were negative and 11(22%) patients had CVC blood cultures positive. In 90 patients only CVC blood cultures were sent, 28(31%) were positive for any organism growth. Most common organism in our study was Acinetobacter.
Conclusion: CVC tip cultures were effective predictors for identification of organisms in septic patients when combined with CVC blood cultures rather than using CVC blood cultures alone
Key Words: Central Venous Catheter, Sepsis, Intensive care unit

INTRODUCTION

Sepsis is a life-threatening organ dysfunction caused by a dysregulated host response to infection[1]. Eventually it leads to a complex syndrome characterized by progressive circulatory collapse, resulting in renal and respiratory failure and abnormalities in coagulation, plus profound and unresponsive hypotension.

[1.] Department of Medicine, Aga Khan University Hospital, Karachi.
[2.] Department of Nephrology, Ziauddin University Hospital, Karachi.

Correspondence: Muhammad Sohaib Arif, Critical Care Fellow, Intensive Care Unit, Department of Medicine, Aga Khan University Hospital, Karachi.
Contact No: 0333-3344992
Email: sohaibarif1234@gmail.com

Sepsis is a major cause of morbidity and mortality in modern intensive care units (ICUs)[2, 3]. It is one of the leading cause of mortality in the third world countries due to limited resources of medications and intensive care equipment available to people. Antimicrobial resistance has become one of the major concerns due to use of multiple antibiotics judiciously and new multi-drug resistant strains are emerging being difficult to treat [4]. Only limited numbers of antibiotics are now available making treating resistant organisms difficult especially in the third world countries. Bilal et al showed the increasing prevalence of highly resistant organism that has increased in the past decade in Pakistan [5]. Central venous catheter (CVC) is used in care of critically ill patients to receive fluids and medicines. These intravascular devices act as vehicle for entry of microorganisms that colonize the skin adjacent to the site of entry or they may serve as foreign bodies, leading to catheter related blood stream infections. Central line associated blood stream infections are a major risk factor for blood streamed infections. Several factors, such as those related to the patient (i.e. immunodeficiency, renal replacement

therapy), central-venous catheter (CVC) use (prolongedcatheterization, type of catheter material, and anatomical site of catheter insertion), and healthcare practice (poor barrier methods during catheter insertion and handling) have been shown to increase the risk of CVC infection [6].

Catheter related blood stream infection (CR-BSI) or Central line associated blood stream infection (CLABI) have been termed as a leading cause of preventable health care associated infections (HAIs) as well as catheter related infections which have led to longer days of hospitalizations, substantial mortality and raising the hospital economic costs of health-care provision [7]. CVC tip culture had been used in the past for the demonstration of CR-BSI/CLABI but its use has become limited due to low positive predictive value diminishing the ability to adequately attribute catheter as a source of infection [8]. A study showed the dwindling utilization of CVC tip catheter over the last decade for the purpose of management of CR-BSI [9]. Patient who are in sepsis often not demonstrate any organism in their blood cultures and culture negative sepsis is an important and relatively under studied condition. Phua et al demonstrated culture negative sepsis to be 41.5% in a study done in intensive care unit[10]. Due to the emergence of multi drug resistant organism CVC tip culture might be a useful tool in identification of organism in case of culture negative sepsis as well as positive cases so that earlier detection of organisms and timely appropriate antibiotics can be initiated. The aim of this study is to check the usefulness of CVC tip culture sent along with CVC blood cultures for identification of organism in patients with sepsis admitted in the intensive care unit so that treatment can be initiated early as per cultures.

MATERIALS AND METHODS

This single-centered retrospective cohort study was conducted at the Medical Intensive Care Unit of Agha Khan University Hospital. The duration of study was one year (from January 2021 to December 2021). Patients above the age of 18 years, of either gender, admitted in the ICU of the hospital during the study period, diagnosed with severe sepsis having CVC inserted and at least one CVC blood culture sent were included in the study, while patients with previously known organisms before being admitted into ICU were excluded from the study. Since this research was an observational study with reviewing of retrospective data using non-probability sampling technique, and since no intervention was carried out, therefore the study did not require direct patient consent and exemption was given from ethical department.

Data Collection Procedure: Approval was taken from the hospital ethical research committee. According to the inclusion criterion, medical records of all fulfilling patients were retrieved from the Medical ICU including

case log entries from hospital's database. The patient's data included their demographic data, diagnosis, frequency of blood cultures obtained via CVC and CVC tip cultures and the organism isolated, all were collected retrospectively from the hospital data system and documented. The healthcare provider, patient and staff's identification all were kept confidential and anonymous.

Data Analysis: Data analysis was done using SPSS version 25.0. For qualitative data frequency and percentage were reported while mean and standard deviation were reported for quantitative variables. The differences in-between organism reported on CVC tip culture in comparison to CVC blood culture was tested by applying chi-square test keeping p-value of <0.05 as statistically significant.

RESULTS

Total of 139 patients were included in the study as per inclusion criteria [Figure I]. Mean age of the patients was 53.45 ± 16.17 years. 88 (63 %) of patients were males while 51 (36.7 %) were females. The overall mean duration of CVC was 5.76 ± 2.89 days. The primary source of sepsis most commonly was the respiratory system comprising to 57(41%) of the total cases. Other sources included gastrointestinal 17(12.2%), renal / urological 15 (10.8%), central nervous system 12(8.6%), musculoskeletal and skin 11(7.9%), hematological 10(7.2%), cardiovascular 9(6.5%), viral with superimposed sepsis 6 (4.3) and others 2(1.4%)[Figure 2]. Out of the total 139 patients 73(52.5%) patients had improved and the mortality was around 66(47.5%) [Table I].
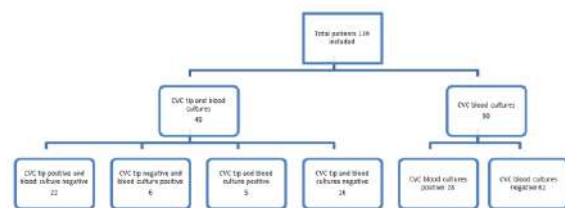
Figure No.1: Flow diagram showing the number of patients and their positivity rate

Table No.1: Baseline demographics of patients included in the study (n=139)

Variable		Mean	Standard deviation
Age (years)		53.45	16.17
Duration of Central Venous Catheter (days)		5.76	2.89
		Freq-uency	Age (%)
Gender	Male	88	63.3
	Female	51	36.7
Diagnosis	Respiratory	57	41

	Musculoskeletal + Skin	11	7.9
	GIT	17	12.2
	Renal/Urology	15	10.8
	CNS	12	8.6
	CVS	09	6.5
	Hematological	10	7.2
	Viral infection	06	4.3
	Other	02	1.4
Patient Outcome	Improved	73	52.5
	Expired	66	47.5

Table No.2: Frequency of organisms cultured in-between CVC tip culture and CVC Blood Culture (combined and separately) (n=139)

Variables		On CVC Tip Culture + CVC Blood Culture	Only CVC Blood Culture
Cultures done		49 (35.3 %)	90 (64.7 %)
Organism cultured only on CVC Tip Culture		27 (55 %)	-
Organism cultured only on CVC Blood Culture		-	28 (31 %)
Outcomes	Improved	24 (49 %)	49 (54.4 %)
	Expired	25 (51 %)	41 (45.6 %)

In 49(35.3%) patients CVC tip cultures were sent along with CVC blood cultures and in 90(64.7%) patients only CVC blood cultures were sent. Out of the 49 CVC tip 27(55%) were positive for organism growth while 22 (45%) were negative. Out of the 49 patients 22(44.89%) patients had only CVC tip culture positive, 6(12.24%) patients had CVC tip culture negative but CVC blood culture positive, 5(10.20%) patients had both positive and 16(32.65%) patients had both negative. In the 90 patients in whom only CVC blood cultures were sent 28(31%) were positive for any organism growth [Table 2, 3]. In the combined group the mortality was around 51% while 49% patients improved while in the CVC blood culture only group mortality was 45.6% while 54.4% patients had improved [Figure 3].

The most common organism growth on the CVC tip culture was Acinetobacter (5) followed by Klebsiella (3), Pseudomonas, Proteus, Roultella, Cornybacterium and Staphylococcus not Aureus growing 2 times. 22(45%) of the CVC tip cultures were negative. In comparison to CVC tip most common organism growth on CVC blood cultures was Acinetobacter (7) followed by Candida (5), while Pseudomonas, Vancomycin resistant Enterococcus and E.coli growing 3 times. Roultella and Staphylococcus grew 2 times, Salmonella, Bacteroides and Penicillium grew only

once. 111 CVC blood cultures were negative (p value 0.7) [Figure 4].

Table No.3: Frequency of positivity in the combined CVC tip with CVC Blood Culture group (n=49)

Variables	Result
CVC tip positive and blood culture negative	22 (44%)
CVC tip negative and blood culture positive	6 (12.2%)
CVC tip and blood culture positive	5 (10.0%)
CVC tip and blood culture negative	16 (32.6%)
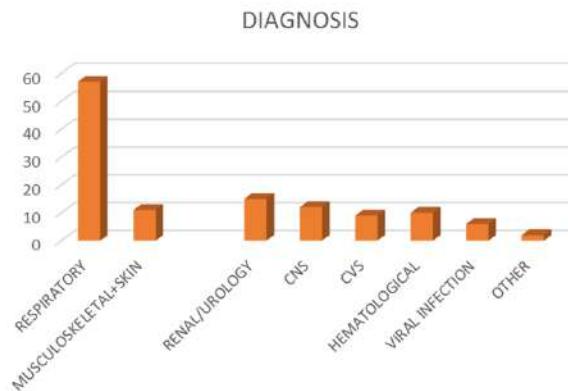
Figure No.2: Graphical representation of Primary source of Sepsis
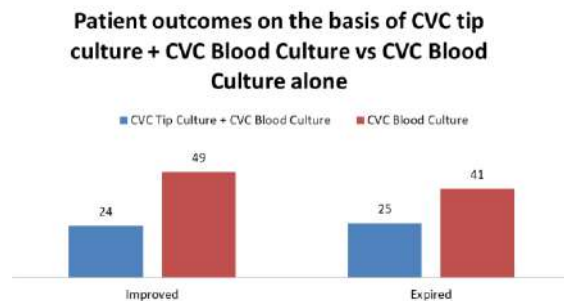
Figure No.3: Graphical representation of patient outcomes on the basis of CVC tip culture + blood cultures and CVC blood culture alone (n=139)
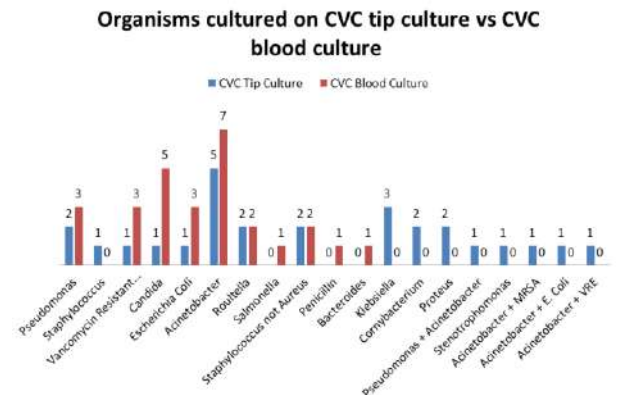
Figure No.4: Graphical representation of the Organism growth on CVC tip and Blood cultures

DISCUSSION

Central venous catheters are the most frequently used indwelling catheters used for resuscitation and have become necessary tools for the successful treatment of patients who are critically ill [11]. The results of our study showed significant variation in both culture positivity, frequency of cultures done and organism cultured in-between CVC tip cultures and CVC blood cultures. The mean age of patients in our study was 53.45±16.17 with 88(63.3%) patients being male and 51(36.7%) females. From total cultures observed were 49 CVC tip cultures along with CVC blood cultures and 90CVC blood cultures only, showing that higher frequency of organisms were cultured with CVC tip cultures (55%) as compared to CVC blood cultures (22%) when sent together while 31% of the time CVC blood cultures were helpful when sent alone. CVC tip cultures were effective predictors for early identification of organisms in septic patients and their outcomes especially when sent together with CVC blood culture rather than blood cultures alone as 44% of the time only CVC tip culture came positive in the combination group when compared to only 12.2% patients in whom CVC blood culture came positive.

Since culture negative sepsis has become one of an important factor when managing patient with sepsis or septic shock, antibiotics optimization and timely administration is very important. Gupta et al demonstrated culture negative sepsis to be 47.1% while in our study culture negative sepsis was 39.56% [12].

A study done regarding the intravascular catheter related infections the most common organisms observed were Staphylococcus aureus followed by Pseudomonas as compared to Acinetobacter followed by Klebsiella in our study [13].Another observational study done showed the most frequent organism causing catheter related blood stream infection to be Staphylococcus and least infection by Acinetobacter contrary to our study [14].

Although it is recommended that central lines have a pivotal role in resuscitating and both acute and long term caring of patients that are severely ill [15]. Nonetheless, CVCs can also become route by which micro-organisms gain access to already compromised immune system as in sepsis and burns patients. This can result in substantial mortality and morbidity. Sihler et al reported that for central line infection, CVC tip culture should be sent for proper evaluation of catheter related blood stream infection. The most common source of bacteremia in their study was respiratory system followed by the gastrointestinal tract, similar to our study [16].

The mortality of patients in intensive care units is generally increased as the number of days of central venous catheter increased. In a retrospective study done to evaluate the frequency and indications of central venous catheter insertions and their rate of infection and mortality, the mortality of patients was higher among those patients who required CVC for longer duration [17]. Similarly another study done on 103 patients admitted in ICU with CVC in place, mortality rate increased in patients requiring CVC for more than 7 days [18]. Similar findings were observed in our study.

This research was not free from limitations. Results derived from this study were drawn from a single tertiary care center, which might not be reflective of wider population of patients with sepsis. Furthermore, limited sample size was available for analysis, owing to the small percentage of sepsis patients that were administered CVCs. Further researches are required for ensuring the CVC tips cultures are routinely send for culture along with CVC blood cultures. This study only observed and analyzed CVC tip cultures with CVC blood cultures and CVC blood cultures alone in identifying the organisms so that they could be treated early and did not intervene treatment of sepsis on the basis of organism cultured as it was a retrospective review of data.

Despite these issues, nonetheless, our research has provided a vital preliminary analysis of the factors associated with CVC tip cultures and CVC blood cultures. This can aid as a stepping stone for further research.

CONCLUSION

According to the finding reported in our study, CVC tip cultures are effective predictors for early identification of organisms in patients with sepsis when combined with CVC blood cultures rather than using only CVC blood cultures. Further research is required to validate the findings of our study.

Author's Contribution:
Concept & Design of Study: Muhammad Sohaib Arif
Drafting: Amber Sabeen Ahmed
Data Analysis: Samina Shamim, Amber Sabeen Ahmed
Revisiting Critically: Muhammad Sohaib Arif, Amber Sabeen Ahmed
Final Approval of version: Muhammad Sohaib Arif

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Morphometric Analysis of Sub-Axial Cervical Spine Pedicle Based on Computed Tomography Scan in Pakistani Population

Qamber Haider Kazmi[1], Kevin Joseph Jerome Borges[1], Mohsin Qadeer[2], Mehak Hafiz[2], Naveed Ahmed[3] and Marium Adeel Roghay[1]

ABSTRACT

Objective: To analyze morphometric parameters of the pedicle of sub-axial cervical vertebrae using a Computerized Tomographic scan of the Pakistani population to help spine surgeons import appropriate size screws and prevent perioperative complications.

Study Design: Cross-Sectional study.

Place and Duration of Study: This study was conducted at the Ziauddin University and National Medical Center, Karachi from October 2021 to April 2022.

Materials and Methods: A total of 100 patients including 50 males and 50 females presenting to the neurosurgical setting were included in the study. The pedicle width, height, length, and axis length were measured on all sub-axial vertebrae on both sides.

Results: All parameters were found to be greater in men compared to women at each spinal level. A slight difference was found in the pedicle parameters measurements on both sides. The pedicle width and axis length were found to be increasing craniocaudally in contrast with pedicle length which was decreasing craniocaudally in both male and female patients. However, the pedicle height remains almost the same at all levels in both genders.

Conclusion: This study provides references for common screw sizes to be used in our population. It also suggests a larger screw size in males. We also recommend the use of the same screw size on both sides of the same individual where required.

Key Words: Cervical spine, morphometric analysis, pedicle screw fixation, surgical anatomy.

INTRODUCTION

Cervical Pedicle Screw (CPS) fixation is by far the most superior treatment modality to treat cervical instability secondary to degenerative, traumatic, neoplastic, and inflammatory causes[1]. While performing three-column fixation of the cervical spine, CPS has proved to offer increased stability as compared to other conventional cervical fixation strategies[2]. However, the perioperative complications are commonly associated with the said procedure due to damage to surrounding neuro-vasculature[3,4,5]. Due to its challenging nature, lateral mass screws are usually preferred in place of CPS. However, to find out the feasibility of performing CPS, it is vital to understand the surgical anatomy and instrument to plan the procedure pre-operatively resulting in decreased incidence of the aforementioned complications, especially in the low-budget settings in Pakistan where CT scan and intraoperative imaging is not readily available. With the advent of computer and robot-assisted surgeries, the use of CPS is likely to increase.

Several studies have highlighted the pedicle morphometric parameters of sub-axial cervical vertebrae on cadavers and based on different radiological modalities[6-8]. It has been observed that there is a significant difference between the said parameters measured on cadavers compared to those measured based on CT scans because of the tendency of the preservative to cause postmortem changes[9].

Currently, there is a lack of data on morphometric parameters of the pedicle of cervical vertebrae of the

1. Department of Anatomy, Ziauddin Medical College, Ziauddin University, Karachi.
2. Department of Neurosurgery, National Medical Center, Karachi.
3. Department of Radiology, National Medical Center, Karachi.

Correspondence: Qamber Haider Kazmi, MPhil Candidate, Department of Anatomy, Ziauddin Medical College, Ziauddin University, Karachi.
Contact No: 0345-8848266
Email: qamber.kazmi@zu.edu.pk

Pakistani population. Therefore, this study was undertaken to analyze such parameters including Pedicle Height (PH), Pedicle Width (PW), Pedicle Length (PL), and Pedicle Axis Length (PAL). Such data will provide a better understanding of cervical pedicle anatomy allowing spine surgeons to pre-plan a safer approach. It will also help the implant companies to arrange and stock more common sizes.

MATERIALS AND METHODS

This was a cross-sectional study carried out collaboratively at National Medical Center (NMC) and Ziauddin University (ZU). The study was approved by the Ethics Review Committee, ZU.

In total, 500 sub-axial cervical vertebrae were observed in 100 patients (50 males and 50 females) presenting to the neurosurgical setting at NMC. Individuals with a history of congenital spine deformity, trauma, infection, neoplasm, and surgery of the cervical spine were excluded.

A CT scan of the cervical spine was performed. All parameters were measured individually from C3 to C7. The parameters measured on the transverse section included PW and PAL (Figure 1) while PH and PL were measured on the sagittal plane (Figure 2).

Statistical Analysis: SPSS v20 was used for data entry and analysis. All quantitative measures were expressed as mean and standard deviation. One sample t-test was applied to analyze the parameters of the general population. For comparison between the male and female groups individual sample t-test was applied. P-value <0.05 was considered statistically significant.

RESULTS

The mean age of male subjects was 41.86 ± 11 years while that of women was 43.94 ± 13 years. PW, PL, and PAL were significantly dependent upon gender except for PH. All parameters were found to be greater in men compared to women at each spinal level. There was a slight difference found in the measurements of pedicle parameters when compared with both sides.

The PW and PAL were found to be increasing craniocaudally in contrast with PL which are decreasing craniocaudally in both male and female patients. However, PH remains almost the same at all levels in both genders.

The mean PW in male patients on the right side was found to be 5.78 ± 0.89 mm at C3 and 7.22 ± 1.02 mm at C7. When compared to the left side, PW at C3 was found to be 5.37 ± 1.14 mm and 7.05 mm at C7. In female patients, PW on the right and left sides were found to be 5.23 ± 0.87 mm and 4.87 ± 0.83 mm at C3 respectively whereas at the C7 level was observed to be 6.66 ± 1.01 mm on the right side and 7.86 ± 9.7 mm on the left. None of the PW in both genders were found to be less than 4 mm.

Table No.1: Pedicle Width, Pedicle Height, Pedicle Length, and Pedicle Axis Length, comparing both sides in both genders

Vertebral Level	Pedicle Width (mm)			Pedicle Height (mm)			Pedicle Length (mm)			Pedicle Axis Length (mm)		
	Male (Mean ± SD)	Female (Mean ± SD)	p-Value	Male (Mean ± SD)	Female (Mean ± SD)	p-Value	Male (Mean ± SD)	Female (Mean ± SD)	p-Value	Male (Mean ± SD)	Female (Mean ± SD)	p-Value
C3 Right Left	5.78 ± 0.89 5.37 ± 1.14	5.23 ± 0.87 4.87 ± 0.83	0.002 0.014	7.32 ± 0.96 7.16 ± 1.31	6.21 ± 0.84 6.08 ± 0.81	0.001 0.001	7.08 ± 1.87 6.75 ± 1.63	6.76 ± 1.31 6.73 ± 1.36	0.322 0.951	31.68 ± 2.11 31.42 ± 2.13	29.89 ± 1.64 29.21 ± 4.25	0.001 0.001
C4 Right Left	5.80 ± 0.94 5.72 ± 0.91	5.17 ± 1.03 5.31 ± 1.18	0.003 0.054	7.80 ± 0.73 7.57 ± 1.02	6.42 ± 0.75 6.22 ± 0.67	0.001 0.001	6.62 ± 1.62 6.55 ± 1.42	6.78 ± 1.29 6.86 ± 1.34	0.001 0.268	31.51 ± 1.56 31.45 ± 2.00	29.90 ± 1.64 29.43 ± 1.77	0.001 0.001
C5 Right Left	6.21 ± 0.95 6.09 ± 0.77	5.61 ± 0.86 5.67 ± 0.79	0.001 0.009	6.96 ± 0.93 7.16 ± 0.97	6.13 ± 0.95 5.98 ± 0.71	0.001 0.001	6.68 ± 1.42 6.50 ± 1.46	6.59 ± 1.23 6.77 ± 1.23	0.724 0.327	32.70 ± 2.16 32.42 ± 1.97	30.98 ± 1.67 29.72 ± 4.23	0.001 0.001
C6 Right Left	6.37 ± 0.95 6.21 ± 0.91	5.67 ± 0.80 5.53 ± 0.73	0.001 0.001	7.21 ± 0.98 6.24 ± 1.81	6.23 ± 1.20 6.47 ± 1.13	0.001 0.001	6.87 ± 1.46 6.24 ± 1.81	6.60 ± 0.86 6.47 ± 1.13	0.268 0.446	32.72 ± 7.13 33.94 ± 2.09	31.98 ± 1.87 31.46 ± 2.29	0.481 0.001
C7 Right Left	7.22 ± 1.20 7.05 ± 1.09	6.66 ± 1.01 7.86 ± 9.7	0.013 0.56	7.87 ± 1.03 7.92 ± 1.08	6.68 ± 1.05 8.18 ± 9.3	0.001 0.84	6.55 ± 1.33 6.50 ± 1.34	6.44 ± 1.40 7.95 ± 12.01	0.697 0.396	34.72 ± 2.76 34.45 ± 3.03	32.04 ± 1.96 31.38 ± 2.09	0.001 0.001

The PH in male patients on both sides was found to be more or less the same ranging from 6.96±0.93 mm to 7.92±1.08 mm. A similar pattern was seen in PH in female patients on both sides ranging from 5.98±0.71 mm to 8.18±9.3 mm. The PL was not found to be significantly different between genders. In men, maximum PL was found to be 7.08±1.87 mm on the right and 6.75±1.63 mm on the left at C3 while 6.55±1.33 mm on the right and 6.5±1.34 mm on the left

were the minimum values noted at C7. In the female group, the highest measurement was found to be 7.95±12.01 mm on the left at C7 compared to 6.78±1.29 mm on the right at C5. The PAL on the other hand was found to be slightly increasing craniocaudally in both genders ranging from 31.42±2.13 mm to 34.72±2.76 mm in males and 29.21±4.25 mm to 32.04±1.96 mm in females (Table 1).
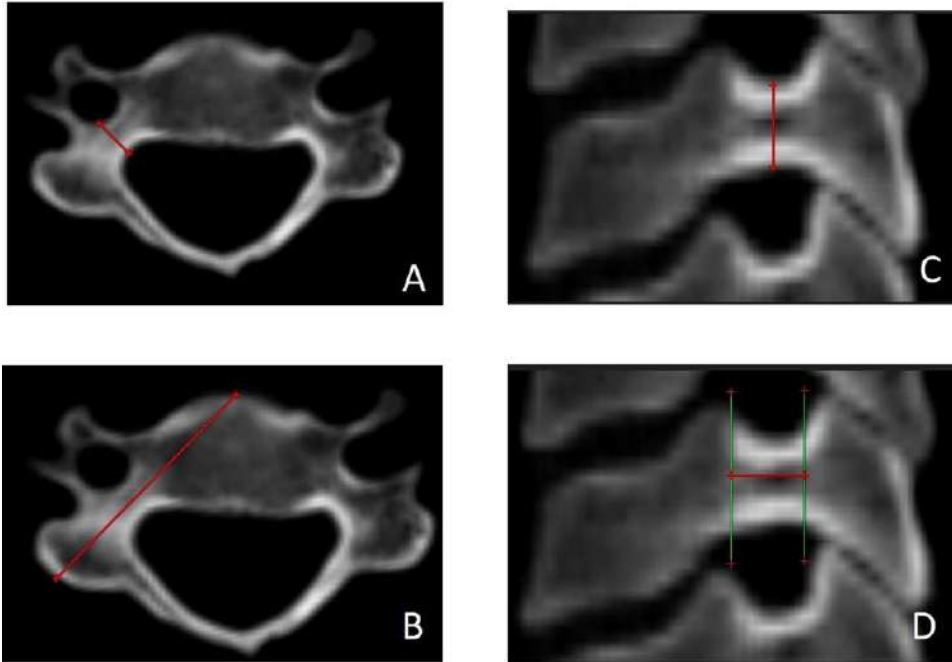
Figure 1: A – Transverse section of cervical vertebrae showing **Pedicle Width (PW)** which is defined as the mediolateral outer diameter of the pedicle at its isthmus, **B -** Transverse section of cervical vertebrae showing **Pedicle Axis Length (PAL)** which is defined as the length of the pedicle axis from its projection on the dorsal surface of the lateral mass to the anterior vertebral body surface, **C –** Sagittal view of cervical vertebrae showing **Pedicle Height (PH)** which is defined as the superoinferior outer diameter of the pedicle at its isthmus, and **D –** Sagittal view of cervical vertebrae showing **Pedicle Length (PL)** which is defined as the distance between the pedicle lateral mass junction and pedicle vertebral body junction [13].

DISCUSSION

Several studies have been done on both cadavers[10,11] and the basis of computed tomography[13-19] to analyze the morphometry of the sub-axial cervical vertebrae in different population. In 1991, Panjabi et al were the first to study the geometry of sub-axial cervical vertebrae on cadavers [10]. Later several studies were done based on CT-scan which showed significant differences between the values studied on cadavers. This is because long-time use of preservatives brings about changes in the morphology of the cervical spine in the cadaveric specimen.

In our study, all parameters of cervical pedicle measured on CT scan were greater in males than females which is consistent with studies on Indian, Japanese and American populations[13,14,17]. Furthermore, we noted a difference in measurements between pedicle

parameters on both sides. This is consistent with a study on the Thai population.

PW and PH in our population were found to be greater than that of Brazilian, Kuwaiti, Turkish, American, and Thai populations.

The PH in our study was found in both genders and on both sides to be larger than that found in the Brazilian, Kuwaiti, Turkish, and Thai populations [15), (16), (11), (19]. Furthermore, the PW measurement found in our population increases as the vertebral level goes down which is consistent with other mentioned populations. The mean PW in our study was found to be smaller in both males and females and on both sides than that in the Japanese population and American males. However, the PW in the American female population was slightly larger than in our population[10,17]. Whereas the PW mentioned in studies done on populations in Kuwait, Thailand and Turkey were found to be smaller[16,19,11].

PW of more than 4.5 mm is considered optimum for pedicle screw insertion with greater resistance to pull-out forces[21-22]. As mentioned in our study most of the population has PW more than optimal (4.5mm), therefore it is feasible to insert a pedicle screw in the Pakistani population without risking the complication. However, a study done on the Indian population states that the PW at the C3 level in females is less than 4.5 mm, therefore it is feasible to perform CPS fixation at any level in both males and females except C3 in females [(13)]. In contrast with other populations, there is a significant difference between the PH and PW on both sides which is a unique finding in our population.

There are many ways recommended to decide the point of entry for the pedicle screw in vertebrae from C3-C7. Knowledge about PL and PAL is essential to selecting the appropriate screw size. The PL and PAL in our population are found to be decreasing craniocaudally in both genders except for C7 for PL. In our study, the PAL in the male population is found to be similar to that in Americans, Kuwaitis, Thai, and Indians[16,17,13,19]. However, in the Brazilian population PAL is found to be lesser than the other populations[15].

CONCLUSION

Through this study, we have extracted the data on morphometry of the cervical vertebrae in a subset of the normative or disease-free Pakistani population. This data can be used as a reference for the selection of common screw sizes to be used in our population. Furthermore, this study suggests that usage of larger-sized screws in males will provide better surgical outcomes. We also suggest the surgeons to use similar-sized screws on both sides of the same individual where required. Furthermore, we recommend that the spine surgeon should do the preoperative measurement based on a CT scan to take individual variations into account for better understanding.

Author's Contribution:

Concept & Design of Study:	Qamber Haider Kazmi
Drafting:	Kevin Joseph Jerome Borges, Mohsin Qadeer
Data Analysis:	Mehak Hafiz, Naveed Ahmed, Marium Adeel Roghay
Revisiting Critically:	Qamber Haider Kazmi, Kevin Joseph Jerome Borges
Final Approval of version:	Qamber Haider Kazmi

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Original Article

Assessment of COVID-19 in the Province Baluchistan, A Study on the Demographics of the Patients

Mir Arsalan[1] and Farah Ahmed[2]

ABSTRACT

Objective: COVID-19 cases are exponentially surging around the globe. At the time of conducting this study, Pakistan had 7,993 cases and 159 deaths. Out of these positive cases, 432 cases were from Baluchistan. Baluchistan is the basin of the first contact of the virus in Pakistan, as the neighboring region to Iran from where the virus was initially imported.

Study Design: cross sectional study

Place and Duration of Study: This study was conducted at the province-wide in Baluchistan till 10 March to 19th April 2020.

Materials and Methods: A total data of 432 patients were acquired. It was analyzed for demographical characteristics using SPSS version 20.

Results: The most significant proportion of the COVID-19 cases were males 308 (71.3%), and the majority of them belong to the middle age group 21-30 years (23.4%, n=101). Contrary to popular belief, 60.6% (n=262) of these cases had been infected by local spread, while only 28.9% (n=125) were pilgrims (Zaireen) returning from Iran. Data indicates a gradual transition of positive cases from travel history initially to local spread in recent days. Moreover, 146 (33.8%) cases have been reported in just the last five days of acquired data. Quetta and Loralai have displayed the highest COVID-19 attack rate of 14 among all the other districts. Furthermore, the mortality rate was 1.15% and all cases were of age above 40 years.

Conclusion: Our study depicts a fair picture of the COVID-19 demographic trend, the study has clear indications for the provincial, local spread that have been realized by this data along with a spike in cases in the last few days, which is maybe due to non-compliance to physical distancing rules.

Key Words: Coronavirus, COVID-19, Pakistan, Baluchistan

INTRODUCTION

After the emergence of a cluster of pneumonia cases of unknown etiology in Wuhan, China, the '2019 novel coronavirus'[1] was declared as the causative agent for this outbreak in December 2019 by the World Health Organization. This new member of the coronavirus family, now officially termed as COVID-19, is responsible for causing Severe Acute Respiratory Syndrome (SARS-CoV-2)[2,3]. Subsequent reports of exponential hike in cases in China and multiple other countries came forward in the following two months leading to COVID-19 being declared a pandemic on 11 March 2020 [4].

1. PEI-WHO, Panjgur Balochistan.
2. College of Physicians and Surgeons, Karachi

Correspondence: Dr. Mir Arsalan, Disease Surveillance Officer, PEI-WHO, Panjgur Balochistan
Contact No: 03213067458
Email: arsalandurrazai51@gmail.com

The earlier cases of COVID-19 traced back to viral exposure from a seafood Market in Wuhan. However, the subsequent cases verified a secondary source of infection, i.e., human-to-human transmission through close contact with an infected person (droplet infection)[5]. COVID-19 is reported to have a higher transmission rate compared to other members of the coronavirus family. It presents with symptoms ranging from mild to severe and sometimes even asymptomatic. The presentation of fever, cough, myalgia, complicated dyspnea, and pneumonia are among the most commonly reported symptoms [3, 5].

At the time of writing this manuscript (19th April 2020), the total number of confirmed cases of coronavirus globally is 2,241,778, with a death toll of 152,551 cases even after rigorous containment and quarantine efforts[6]. Meanwhile, in Pakistan, the current statistics reported are 7,993 cases and 159 deaths from coronavirus [7].

Amid the initial cases in Pakistan, the numbers had hugely surged in two of its neighboring countries; China and Iran[8], with which Pakistan shares busy borders. Baluchistan is the South western province of Pakistan and it borders with Iran, the religious travelers

(Zaireen) entering from Iran have introduced the COVID-19 in Pakistan on a bigger scale[9,10]. Therefore, Baluchistan has significant regional importance in the outbreak in Pakistan.

MATERIALS AND METHODS

This study was a cross-sectional, descriptive analysis of all cases of COVID-19 diagnosed province-wide in Baluchistan from 10 March to 19th April 2020. A total of 432 cases have been analyzed in this study. All of the cases in this study were tested by Real-Time Polymerase Chain Reaction (RT-PCR).

The data was analyzed on SPSS version 20. Demographic characteristics were summarized using descriptive statistics. Categorical variables were measured as frequencies and percentages. Data were grouped into age intervals, and cross-tabulations were made for desired characteristics.

RESULTS

A total of 5315 tests were conducted; among them, 432 were positive, and 4883 were negative, as shown in (Table 1). Among infected cases, 154 recovered, and five deaths occurred, while 273 are still active cases, as depicted in the pie chart (Figure 1). The demographic characteristics of patients infected with COVID-19 in Baluchistan are shown in (Table 2). Maximum patients reported were males 308 (71.3%), while 124 (28.7%) were female. The majority of patients 101 (23.4%) belonged to the age group 21-30. Considering the testing facility, the majority of tests 427(98.8%) were conducted in Fatima Jinnah Chest and General Hospital Quetta (FJCGH).

The route of the spread of the virus in Baluchistan (Table 3). It shows that the majority of people 262 (60.6%) were infected through the local spread, among which 165 (38.2%) were affected by contact with positive cases. Furthermore, 128 (29.6%) infected cases had a history of International travel, among which 125(28.9%) were pilgrims returning from Iran at the Taftan quarantine center located at the Pak-Iran border. In comparison, only 8(1.9%) were infected by domestic travel. The prevalence of COVID-19 and its attack rate in each district of the province are described in (Table 4). Most of the cases 328 (75.9%) were from the Quetta district, while the attack rate of the virus in Quetta is observed at 14.

There was a rise observed in the COVID-19 cases with each day in Baluchistan from the first reported case (Table 5). In the initial five days (10th to 15th March), the cases were 17 (3.9%), while in the latest five days' duration (15th to 19th April), the cases were 146 (33.8%) (Figure 2). The route of viral spread with each day is shown in the (Table 6). Initially, the majority of the reported cases had a history of international travel, but as days passed, local spread took the lead in further spread of the virus among the population.

The characteristics of mortality are shown in the (Table 7). 3 out of 5 (0.6%) deceased were males. Among them, 2 (0.4%) were in the age group of 41 – 50 years, and another 2 (0.4%) were among the age group 61 – 70 years. All the deceased cases belonged to the Quetta district. While 3 (0.6%) of the deaths reported had a history of infection through the local spread.

Table No.1: Frequency of the test results.

Total Test Conducted	Positive Cases	Negative Cases
5315	432	4883
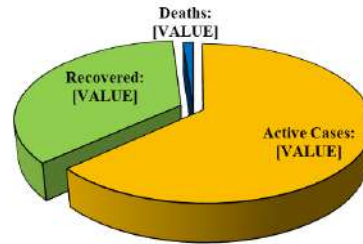
Figure No.1: The status of the COVID-19 positive cases

Table No.2: Demographic Table

Demographics	Frequency (N)	Age (%)
Gender		
Male	308	71.3%
Female	124	28.7%
Age Group		
< 1-year-old	1	0.2%
1 - 10 years	16	3.7%
11 - 20 years	53	12.3%
21 - 30 years	101	23.4%
31 - 40 years	95	22.0%
41 - 50 years	81	18.8%
51 - 60 years	44	10.2%
61 - 70 years	25	5.8%
71 - 80 years	4	0.9%
81 - 90 years	1	0.2%
Lab reporting site		
FJCGH	427	98.8%
Taftan Mobile Lab	3	0.7%
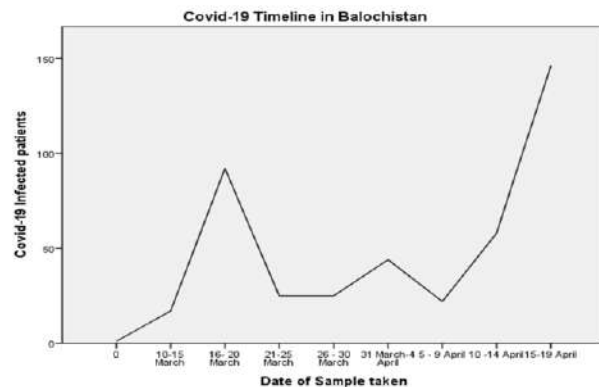
Figure No.2: Timeline of positive cases in Baluchistan

Table No.3: C0VID-19 Spread Route

Route of spread	(N)	(%)	Point of Entry	(N)	(%)
International Travel	128	29.6%	Taftan (Pilgrims returning from Iran)	125	28.9%
			Travel from Saudi	2	0.5%
			Travel from UK	1	0.2%
Domestic Travel	8	1.9%	Travel from KPK	2	0.5%
			Raiwand Tablighi	2	0.5%
			Travel from Punjab	3	0.7%
			Travel from Karachi	1	0.2%
Local Spread	262	60.6%	Contact with +ive case	165	38.2%
			Self-Referral	88	20.4%
			Refer from BINUQ	7	1.6%
			SKBZ	2	0.5%

Table No.4: Attack Rate of COVID-19 in districts of Baluchistan

District	Frequency (N)	age (%)	Popu-lation	Attack rate
Quetta	328	75.9%	2275699	14
Jafferabad	18	4.2%	513813	3.5
Mastung	13	3.0%	266461	4.8
Loralai	8	1.9%	54758	14
Pishin	7	1.6%	306177	2.2
Chaman	4	0.9%	433768	9.2
Nushki	4	0.9%	178796	2.2
Killa Abdullah	3	0.7%	146915	2.04
Chaghi	3	0.7%	58386	5.1
Kharan	2	0.5	73981	2.7
Harnai	1	0.2%	75329	1.3
Kechhi	1	0.2%	909116	1
Khuzdar	1	0.2%	802207	1.2
Musakhaiil	1	0.2%	98265	1
Sibi	1	0.2%	125320	7.9
Sohbatpur	1	0.2%	200538	4.9
Taftan	1	0.2%	18510	5.4
Zhob	1	0.2%	253632	3.9

Table No.5: Timeline of the Positive cases

Date	Frequency (N)	Age (%)
10-15 March 2020	17	3.9%
`16- 20 March 2020	92	21.3%
21-25 March 2020	25	5.8%
26 - 30 March 2020	25	5.8%
31 March-4 April 2020	44	10.2%
5 - 9 April 2020	22	5.1%
10 -14 April 2020	58	13.4%
15-19 April 2020	146	33.8%

Table No.6: Virus Spread Timeline with its Route of entry

Date	Route of virus spread		
	International Travel	Domestic Travel	Local Spread
10-15 March 2020	11	0	1
16- 20 March 2020	89	0	0
21-25 March 2020	11	0	3
26-30 March 2020	6	2	11
31 March- 4 April 2020	8	3	33
5 - 9 April 2020	1	1	20
10 -14 April 2020	0	1	57
15-19 April 2020	1	1	137
Total	127	8	262

Table No.7: Characteristics of mortality

Demographics	Deaths/Mortality
Sex	
Male	3
Female	2
Age Group	
41 - 50-year-old	2
51 - 60-year-old	1
61 - 70-year-old	2
District	
Quetta	5
Route of virus spread	
International Travel	2
Domestic Travel	0
Local Spread	3

DISCUSSION

Ever since the first patient infected with COVID-19 was admitted to the hospital on 12 December 2019[11]_ENREF_2, the world has seen a dramatic and catastrophic increase in the spread of this virus across every continent and almost every country of the world. The rapid control and containment strategies adopted by China showed a reduction of in new cases, but countries like Italy[12], Spain, UK, Iran and most of Europe and the USA are still struggling to contain the spread and alleviate the burden over their health system[13]

The total number of confirmed cases in Italy as of 19th April 2020 have revealed the concerning number of over 175 thousand with Spain surpassing it with 191726 total cases being reported with a collective mortality rate of over 43 thousand. The current epicenter of the virus, USA is showing a very grim picture of the reach of this virus with over 30 thousand deaths being reported[6], it has become apparent that the world is facing this pandemic on relatively novel measures with an unprepared air[14-16].

In light of this rapid, we offer a first description of the confirmed cases in the province of Baluchistan, which is realized as the basin of the first contact of the virus in Pakistan. A total of 432 confirmed cases of COVID-19 have been reported from Baluchistan till 19th April.

Among these cases, the majority belong to the age groups of 21-40 years old.

Comparatively, the number of confirmed cases in the province of Punjab is the highest reported of a total of 3,721, followed closely by Sindh with 2,537, and KPK with 1,237 cases reported by 19th April 2020. However, Gilgit Baltistan and Azad Jammu Kashmir and Islamabad show a relatively low number of 263, 51, and 181 confirmed cases. The highest mortality rate recorded was from the province of KPK, with 67 patients deceased, followed closely by Sindh with 56 deaths [4].

The mortality rate of Baluchistan is recorded at 1.15% as of the day of this article being reported, i.e., 19th April, representing five deaths in the region. Most of the deaths were recorded in patients over 40 years of age. All of the deaths were reported from the district Quetta, and the majority of the deceased had contracted the virus through the local spread, with only two patients succumbing to the disease who had a travel history in the last few months.

The spread route of the virus was divided over the three main sources, with the primary source recognized as international travel. The religious pilgrimage of multiple communities in the months before Iran showed an alarming number of cases confirmed in Pakistan, on their return.

The positive cases increased nine times in the space of a mere 40 days, highlighting another crucial point of the course of the entry of virus in the patients. The route of entry through the local spread of the virus was seen to increase by a drastic number of 137 by 19th April from a single case reported in March 2020. The attack rate was measured with respect to the disease burden of each district, showing district Quetta and Loralai in a most precarious position with an attack rate of almost 14. This concern of high attack rate is also observed in the district of Mastung and Jaffarabad with a relatively high percentage of 4.8 and 3.5, respectively.

A significant contribution of this study is that it provides the first account of the COVID-19 epidemic curves of Pakistan. We observed that the mortality rate is comparatively low at this time; a few probable reasons might be that the age group of patients positive with COVID-19. It may be due to the age factor that has led to a significantly low mortality rate. The geographical and socioeconomic barriers that are making access to timely diagnosis and treatment a big problem, which may also be leading to under-reported cases in Baluchistan. However, this is the first report from Baluchistan, and it may be difficult to predict the course of this virus and its impact in the coming future. All of the cases in this study were confirmed by RT-PCR, which is the only reliable screening test recommended by WHO to assure a COVID-19 patient. However, among the limitations of this study lies the fact that Baluchistan is the least population-dense

province of Pakistan and lacks health-care centers. Therefore, limited testing facilities meant a limited number of people could be screened for the virus. Moreover, the data presented in this study does not include the comorbidities of any patients listed.

CONCLUSION

In light of this study, a clear picture of the current scenario of the spread of COVID-19 in Baluchistan is portrayed, with it being the first account of demographics being reported into the literature from the region. The study points out 60.6% of COVID-19 patients contracting the virus via the local spread with the highest attack rate coming forward from district Quetta and Loralai. Since Baluchistan has a scattered population with an underdeveloped healthcare system in rural areas, only limited testing has been performed so forth, which must not be considered a score point for fewer cases in the region. As suggested by the study, the recovery rate is quite significant in the region, but proper follow up of the recovered cases is still highly recommended to ensure timely notifications to the authorities in case of any reinfections.

Author's Contribution:

Concept & Design of Study:	Mir Arsalan
Drafting:	Farah Ahmed
Data Analysis:	Farah Ahmed, Mir Arsalan
Revisiting Critically:	Mir Arsalan, Farah Ahmed
Final Approval of version:	Mir Arsalan

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

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Effects of Different Mediums on the Surface Topography and Corrosion of Dental Implant Abutment

Ayesha Tariq Niaz[1], Ali Dad Chandio[2], Amynah Charania[3], Shafaq Saeed Roghay[4], Khusbu Lohana[4] and Zaeem Arif Abbasi[1]

ABSTRACT

Objective: To compare the effect of artificial saliva, carbonic drink and gutka extracts on the surface topography, corrosion kinetics and hardness of dental implant abutment.

Study Design: In-vitro experimental study

Place and Duration of Study: This study was conducted at the NED University of Engineering & Technology and Karachi University from January 2019 to October 2019.

Materials and Methods: Abutments were tested for chemical composition, hardness, surface topography, characterization of microstructural constituents and weight loss/gain at 6 and 12-weeks by atomic absorption spectroscopy and electron dispersive spectroscopy.

Results: Electron dispersive spectroscopy showed significant Aluminum (Al) loss in the carbonic sample at 6 weeks' period ($p<0.05$). However, at 12 weeks, significant loss of Al ion ($p<0.05$) in carbonic drink and loss of Titanium (Ti) and Vanadium (V) ($p<0.05$) in gutka extract was observed. In atomic absorption spectroscopy after 6-weeks, gutka extracts showed significant rise in Ti ($p<0.05$) and Al ($p<0.001$) levels, whereas, in artificial saliva and carbonic drink, only the levels of V were found to be statistically significant.

Conclusion: Changes in surface topography and level of corrosion in dental implant abutments were found significant. Gutka extracts showed highest level of degradation and dissolution among all the mediums.

Key Words: Titanium alloy, artificial saliva, carbonic drink, gutka, corrosion, dental implant, abutments.

INTRODUCTION

Loss of tooth due to dental caries, periodontal diseases or trauma is quite common. According to survey directed by National Health and Nutrition Examination Survey (NHANES) (1999-2004), between ages 20-34 years, the mean number of permanent teeth present were 26.90, whereas between 35-49 years it was 25.05 and between 50-64 years it was 22.30 [1].

1. Department of Oral Biology, Baqai Dental College, Baqai University, Karachi.
2. Department of Metallurgical Engineering, NED University of Engineering & Technology, Karachi.
3. Department of Oral Biology, Dr. Ishrat ul Ebad Khan Institute of Oral Health Sciences, Dow University of Health Sciences, Karachi.
4. Ziauddin Dental College, Ziauddin University, Karachi.

Correspondence: Zaeem Arif Abbasi, Baqai Dental College, Baqai University, Karachi
Contact No: 0321-3522414
Email: zaeemarif@hotmail.com

Dentures, dental bridges and implants are the options offered for replacement of missing teeth. Dental implants are natural looking, biocompatible and stable compared to other dental prosthesis. Although implant is a costly procedure, but it stimulates and does not resorb the bone, as well as they tend to last longer, even a lifetime, which makes them very cost effective in general [2].

Implant failure can be attributed to corrosion, stress and presence of bacteria. Existence of corrosion products over the period may lead to the fracture of abutment, at the alloy-abutment interface or the body of the implant. Corrosion is also responsible for elements liberating from the material, toxic reactions, weak restoration, and surface roughing. The element liberation may discolor the surrounding tissues as well as contribute to allergic reactions ranging from oral edema, gingivitis, peri-oral stomatitis to extraoral manifestations such as eczematous rashes [3]. It has been established that metal ions released due to corrosion leads to the pathomechanism of impaired wound healing [4].

In a study conducted on the Pakistani population, 90% of the young age population were consuming some kind of carbonic drinks with 51% consuming it daily[5]. Due to increased consumption of this acidic beverage, it can be assumed that this may result in variations in implant

or the abutment surfaces, which are susceptible to corrosion [6].

According to 2014 Global Adult Tobacco (GAT) survey done in Pakistan, gutka was found to be one of the most commonly used smokeless tobacco product (STP). It's a mixture of areca nut, powdered tobacco, slaked lime and artificial fragrances (such as menthol)[7].

In light of scientific evidence, it is being reported that the corrosive nature of Titanium (Ti) and its by-products, may have deleterious effects on the body. Importantly, medical and dental professionals should understand the implications, complexities, and potential pathways of exposure to these metals. There has been an in-depth research and study of this issue in orthopedics. On the other hand, there is lack of literature related to corrosion of dental implant abutments and its clinical implications, in the field of dentistry.

MATERIALS AND METHODS

Study Setting: Micro Vickers hardness testing and weight analysis of the samples were performed at the NED University. Atomic absorption spectroscopy (AAS), scanning electron microscopy-energy dispersive X-ray spectroscopy (SEM-EDS), pH measurement and gutka extract preparation were performed at the Central Lab of Karachi University. Approval for the study was taken by the Institutional review board of Dow University (IRB-1056/DUHS/Approval/2018/144).

Inclusion and Exclusion Criteria: Screw retained abutment with gingival height 3 mm and abutment diameter & height of 4 and 5.5 mm, respectively, were included. Used, corroded or abutment with damaged surface were excluded.

Sample Size: Open Epi was employed to calculate the sample size (8) at 95% confidence level and 80% power. 21 dental abutments were taken, 3 abutments were assessed at the baseline and 3 abutments in each of the three experimental mediums.

Data Collection Procedure: Dental abutments were placed in artificial saliva (Biotene), carbonic drink (Pepsi) and gutka (JM) extracts over a period of 6 and 12 weeks. These abutments were covered with varnish except for the gingival margin (3mm) in order to expose the part of abutment actually in contact with the oral environment.

Sample Preparation: All the samples were weighed using weighing balance before and after immersion. 21 dental abutments (Neobiotech IS II active) and three mediums were used. 3ml of each medium was placed in a capped glass test tube and the dental abutments were immersed.

Gutka was first finely powdered using a mortar & pestle to obtain the extract. 20 g of powder was then dissolved in 50 ml of PBS (phosphate-buffered saline) and incubated at 37˚ C for 30 min after thorough shaking. The dissolved contents were filtered and quickly frozen at - 80℃ before undergoing lyophilization. Lyophilized extract was then reconstituted in 10 ml of distilled water and then utilized as one of the mediums [9].

Testing and Characterization: Before and after the corrosion study, each abutment underwent 10 indents to get a representative hardness using Microvicker hardness testing machine. pH was measured using a pH conductivity meter.

Qualitative and quantitative characterization of microstructural constituents of all the abutments were studied using SEM-EDS. Samples were loaded on the SEM for determination of the microstructures using different magnifications and fixed voltage of 15kV and for elemental analysis EDS detector was used.

Elemental analysis of the mediums was performed before and after the corrosion study by AAS. To calibrate the equipment, three standards of 2, 4 and 6 ppm were prepared from 1000 ppm standard of Fisher Scientific (UK) by serial dilution method using 1% HNO_3 as blank. After the calibration, the samples were injected into the equipment for analysis.

Statistical Analysis: Data was analyzed using SPSS v. 21. Paired t-test was used to assess the results of AAS, EDS, weight, pH, and hardness before and after the corrosion study for each element (Ti, Al and V) carried out in all three mediums. P-value of <0.05 was considered as statistically significant.

RESULTS

SEM images showed that the surface of dental abutment was mostly unaffected after 6-weeks in artificial saliva, whereas, there was slight surface oxidation at 12-weeks (Figure 1B & C). After immersion in carbonic drink, there was formation of oxide layer of various thicknesses and at certain locations had a network pattern (Figure 1D).
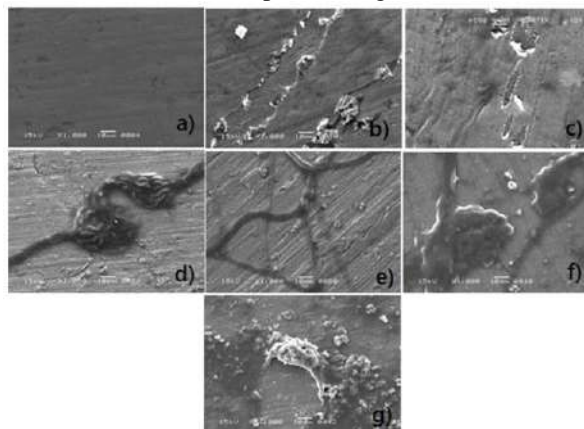
Figure No.1: Electron micrographs of dental abutment at high (1,000x) magnification; a) before immersion (control); After immersion in b) Artificial saliva (6-weeks); c) Artificial saliva (12-weeks); d) Carbonic drink (6-weeks); e) Carbonic drink (12-weeks); f) Gutka extract (6-weeks); g) Gutka extract (12-weeks)

As compared to results of immersion in artificial saliva and carbonic drink, dental abutment in gutka extract showed oxidation after 6-weeks and a thickened oxide layer formed after immersion for 12-weeks and subsequently giving banded appearance in some areas due to damaged/delaminated oxide layer (Figure 1F & G).

Though Ti is the main constituent of Ti-6Al-4V alloy, current study shows release of Al and V particles as well, after immersion in various medium. In a study, CP-Ti (commercially pure-titanium) showed better cell viability as compared to Ti, due to the presence of Al and V, with decreased cytotoxicity over a period of time due to the formation of TiO_2 (10).

Elution of ions from the Ti alloy caused the alteration in pH levels (Table 3) of all the study medium after the immersion process, another study reported similar results [11].

Table No.1: Mean weights before and after immersion in different mediums as seen with Electron dispersive spectroscopy (EDS).

		Mean (Weight %) at 6 - weeks		P-value	Mean (Weight %) at 12 – weeks		P-value
		Before	After		Before	After	
Artificial saliva	Ti	88.34	80.53	0.145	87.85	72.74	0.169
	Al	6.24	5.60	0.093	6.09	5.31	0.189
	V	3.37	2.27	0.502	3.37	1.67	0.263
Carbonic drink	Ti	88.34	86.31	0.109	87.85	86.31	0.542
	Al	6.24	5.06	0.012*	6.09	5.06	0.029*
	V	3.37	3.18	0.529	3.37	3.15	0.415
Gutka extract	Ti	88.34	61.50	0.082	87.85	31.10	0.049*
	Al	6.24	4.49	0.411	6.09	1.98	0.066
	V	3.37	1.96	0.529	3.37	1.05	0.017*

*Significant P value of < 0.05

Table No.2: Mean concentration of ion before and after immersion in different mediums as analyzed with Atomic absorption spectroscopy (AAS)

		Mean (µg/ml) at 6-weeks		P-value	Mean (µg/ml) at 12-weeks		P-value
		Before	After		Before	After	
Artificial saliva	Ti	0.759	6.313	0.226	0.759	15.76	0.005*
	Al	0.02	0.12	0.253	0.02	0.14	0.05*
	V	0.026	1.200	0.043*	0.026	3.812	0.026*
Carbonic drink	Ti	0.021	3.612	0.309	0.021	13.130	0.05*
	Al	0.14	0.23	0.255	0.14	0.007	0.044*
	V	0.048	7.546	0.021*	0.048	12.27	0.018*
Gutka extract	Ti	0.13	84.37	0.006*	0.123	144.02	0.069
	Al	0.07	1.01	0.001*	0.07	6.00	0.000*
	V	0.746	2.236	0.072	0.746	0.940	0.011*

* Significant P value of < 0.05

Table No.3: Effects of artificial saliva, carbonic drink and gutka extract on the hardness, pH and weight of the dental abutment at 6 and 12-weeks

		Mean (6-weeks)		P-value	Mean (12-weeks)		P-value
		Before	After		Before	After	
pH	Artificial saliva	6.06	4.77	0.007*	6.06	4.14	0.001*
	Carbonic drink	3.43	4.07	0.01*	3.43	4.44	0.029*
	Gutka extract	6.11	7.07	0.042*	6.11	6.46	0.163
Hardness (HV)	Artificial saliva	367.33	330.00	0.062	356.00	344.33	0.459
	Carbonic drink	367.33	337.00	0.017*	360.33	334.00	0.019*
	Gutka extract	355.67	338.67	0.075	358.00	352.00	0.027*
Weight (gm)	Artificial saliva	0.5658	0.5656	0.199	0.54	0.54	0.635
	Carbonic drink	0.5422	0.5420	0.603	0.54	0.54	0.803
	Gutka extract	0.5297	0.5276	0.029*	0.55	0.53	0.108

*Significant P value of < 0.05

DISCUSSION

SEM was used to analyze the surface of the experimented material. Faverani et al, reported that there was no significant corrosion in Ti-6Al-4V alloy when immersed in artificial saliva; in comparison, CP-Ti showed more corrosion [12]. pH of artificial saliva (6.06) is near to neutral; hence no significant damage is caused to the metal surface. Barão et al., reported that low pH caused significant corrosion of the dental implants, with severe effect in 2-3 pH solution [13].

Carbonic drinks have an acidic pH (2.5-3.5), that can easily cause corrosion of dental filling materials [14]. Despite the low initial pH of the carbonic drinks, the CO_2 gas was released after the bottle was opened, and H^+ ions were quickly lost. The pH could be elevated as a result, which possibly disables the capability of this liquid to attack the oxide layer on the surface. Encrustations that were formed on the surface of these groups observed by SEM were likely due to carbohydrates on the exterior of the Ti [15].

Increased concentrations of Ti ions engulfed by the osteoblasts near implant site, significantly reduces the osteoblast viability that would have detrimental effect on the implant stability[16]. Ti ions could influence osteoclasts differentiation by affecting the expression of Receptor activator of nuclear factor kappa-B ligand (RANKL) and osteoprotegerin (OPG) in osteoblastic cells [17].

In addition to the above-mentioned effects on hard tissues, Ti particles also have deleterious effects on the soft tissues. Combination of fibroblast from peri-implant granulation tissue in vitro with TiO_2 particles had a strong effect on gene expression of tumor necrosis factor- alpha (TNF-α), and production of TNF-α, interleukin (IL)-6 and IL-8, resulting in exacerbation of inflammation [18].

Al was found to affect cell proliferation and osteoblast metabolism to a lesser extent than Ti, as reported by an in-vitro study [19]. Though at higher concentrations afore-mentioned effects were enhanced. The current study reports that though Al ions were present in the mediums, released from the dental abutments, the concentration was very less to be able to exert any effect biologically as also suggested by another study [20]. An in-vitro study reported toxic potential of V on fibroblasts and osteoblasts growth when concentration of V was increased from 0.2 to 0.5 ppm [21].

Any change in the surface topography has an effect on other properties, such as loss of weight and decrease in the hardness of the alloy. Abutments and implants are manufactured to withstand fracture, fatigue, and wear to prevent failure of the prosthesis. Presence of a corrosive environment results in disintegration, leading to fatigue of the material and ultimately causing it to fracture [22].

Surface changes and corrosion promoted by the carbonic drink and gutka extracts used herein could induce the release of metal ions in the oral tissues around the implant affecting bone stability and implant prognosis. There is a minute release of alloying ions even under the ideal conditions that may cause damage to the abutment and/or implant.

Further longitudinal studies are required to determine the mechanical and chemical properties of the metal alloys used in manufacturing of dental implants and their abutments.

This being an in-vitro study, it had a limitation that experiment did not account of the physiologic environment of the oral cavity with its protective mechanisms and host response characteristics.

CONCLUSION

Though implants are becoming a common dental prosthetic alternative, dentists need to make sure that they inform their patients of the things that may cause harm to implant/abutment integrity so to prolong its life.

Author's Contribution:

Concept & Design of Study:	Ayesha Tariq Niaz
Drafting:	Ali Dad Chandio, Amynah Charania
Data Analysis:	Shafaq Saeed Roghay, Khusbu Lohana, Zaeem Arif Abbasi
Revisiting Critically:	Ayesha Tariq Niaz, Ali Dad Chandio
Final Approval of version:	Ayesha Tariq Niaz

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Impact of Covid-19 on Diagnosis and Treatment of Colorectal Carcinoma, A Retrospective Study in Shaikh Zayed Hospital Lahore

Muhammad Aamir Jameel[1], Rida Usman[1], Muhammad Imran Anwar[1], Haroon Javaid Majid[1] and Hafsa Jameel[2]

ABSTRACT

Objective: To determine the impact of Covid-19 on colorectal cancer patient's diagnosis and treatment.
Study Design: Cross sectional case study
Place and Duration of Study: This study was conducted at the Department of General Surgery Unit-II, Shaikh Zayed Hospital, Lahore from January 2020 to January 2021.
Materials and Methods: Thirty patients presented for the treatment of colorectal cancer were enrolled.
Results: Middle aged population is most affected by this type of cancer with majority of patients being in the age bracket of 30-45 years. 19 of these patients were males while 11 were females with male to female ratio 1.7:1 of them passed away with 3 out of 4 patients dying who has contracted Covid during their treatment here. Covid-19 was a contributing factor in 46% cases of late diagnosis which leads to a higher rate of mortality, and it proved to be 75% fatal in patients who contracted it. The delay in diagnosis and treatment was almost primarily due to patients presenting themselves late for the treatment.
Conclusion: Covid-19 made people hesitant to seek early treatment which led to progression of the colorectal cancer resulting in a higher mortality rate. However no significant difference has been seen overall mortality in both groups those contracted Covidand those did not.
Key Words: Colorectal Cancer, Covid-19, Chemoradiotherapy

INTRODUCTION

The Coronavirus (COVID-19) pandemic had a huge impact on all sectors around the world. As of February 2022, the virus has infected over 395,000,000 people and has claimed over 5,755,000 lives globally.[1] In particular, the healthcare system has been subject to an enormous pressure that has surpassed its ability in many instances. It has affected the means and modes of certain treatments as well such as the treatment of colorectal cancer by the means of chemoradiotherapy. Colorectal Cancer (CRC) is considered to one of the most common forms of cancer worldwide.

[1.] Department of General Surgery, Shaikh Zayed Hospital, Lahore.
[2.] Department of Public Health, University of Health Sciences, Lahore.

Correspondence: Dr. Muhammad Aamir Jameel, Senior Registrar, General Surgery, Shaikh Zayed Hospital, Lahore.
Contact No: 0333-7474899/0343-2145100
Email: dr.amirjamil8@gmail.com

In Men it's in the third most common type on cancer while in the women it's the second.[2] In a study done in 2020, the CRC accounted for 10% of global cancer cases and resulted in 9.8% of cancer related deaths. The estimated projection of CRC patients by 2040 is 3.2 million globally.[3]

As of 2020 an approximate 147,950 patients have been diagnosed with CRC and it resulted in about 53,200 deaths. Of these cases and mortalities 17,930 diagnosed patients were under the age of 50 and out of them there were 3,640 deaths.[4]

In the recent years ithas been a rapid increase in the cases of CRC, especially in the developing countries. Dietary habits and genetic disposition are cited as the main factors behind it.[5] While the median age for onset of CRC is 50 years globally, in Pakistan half of cases of CRC are among young patients.[6]

The advent of the pandemic is believed to have impacted the degree of diagnosis and treatment of CRC by the means of chemotherapy, chemoradiotherapy and surgery. According to study done in Iran where data from 43 databases from around the world was analyzed and it was found that delay percentage in the diagnosis of CRC increased from 5.4% to 26% and the treatments were interrupted, delayed or stopped significantly[7].

MATERIALS AND METHODS

This cross-sectional study is aimed towards determining the possible effects of Covid 19 on the treatment of the patients receiving the chemo radio therapy. For this study a total of 30 patients were considered who presented themselves to the General Surgical and Surgical Oncology II Ward, Shaikh Zayed Hospital Lahore from Jan 2020 to Jan 2021. No certain age bracket was applied. These are the total number of patients of this particular malignancy during these two years. The study was aimed towards determining that how the Covid 19 effected the patients requiring chemo radio therapy. The study population consisted of both Neoadjuvant and adjuvant cases. It was determined that whether that pandemic led to delay in diagnosis and treatment. Possible delay both on the behalf of the patients and the ward were considered. The connection of Covid 19 to that of mortality in malignant patients was also considered. A hypothesis was made that there is a significant difference between both groups those who contracted covid and those who did not.

RESULTS

The case study consisted of 30 patients of whom 19 (63.3%) were males while 11 (36.7%) were females. The subjects were divided into age brackets 21-30, 31-40, 41-50, 51-60, and < 61. The most affected age group was 31-40 years old that comprised of 9 (30%) cases followed by 51-60 years old having 7(23.3%) of the cases. There were 5(16.7%) cases in the age bracket 41-50 years, 6(20%) in age group 21-30, 2(6.7%) in age group 61-70 and 1(3.3%) patient in the age group 71-80.

Of 30, 13(43.3%) expired during these two years. Of the 30 patients 4(13.3%) contracted covid during the course of treatment of them 3 died while one is still alive and under treatment. So, of 13, 323%) mortalities were linked to Covid-19 related complications of those who did contract Covid, the mortality rate was 75%. Patients who contracted covid 19 had mortality rate of 75% close and comparable to overall mortality of 77%. No significant difference has been seen in both groups.

Table No. 1: Age distribution of patients

Age (years)	No.	%
21-30	6	20
31-40	9	30
41-50	5	16.7
51-60	7	23.3
> 61	3	10

Table No.2: Sex distribution of patients

Sex	No.	%
Male	19	63.3
Female	11	36.7

Table No.3: Covid Related Mortality

	No.
Total Patients contracted covid 19	4
Patients died due to covid 19	3
Mortality Percentage	75%

Table No.4: Mortality in Covid Patients

Mortalities	No.	%
Deaths in Covid -ve patients	10	77
Deaths in Covid +ve patients	3	23

DISCUSSION

From the values provided in the tables it is apparent that during this period the greatest number of patients were below 50 (66.7%). This adds to the studies that CRC is more prevalent in the ages below the global median age of 50 in the developing countries and Pakistan is no exception.[8] Covid 19 can be cited as a contributing factor in acceleration in CRC related mortalities since early diagnosis is an important mean to treat the patient as an advanced stage almost always results in a fatality. Unprecedented circumstances prevailed during the time span of the cases under consideration as the world was in grip of a pandemic. Every sector of the society was affected considerably. Due to obvious reasons, the medical sector also faced a lot of pressure and its capacity was hindered globally. Diagnostics of all types were delayed which inevitably impacted the treatment efficiency and capability. For an instance, as per a study during a span of year, the diagnosis was delayed by as much as 88% in Netherlands.[9]

Considering CRC in particular, in a study done in Iran, which evaluated the stats from 25 databases around the world since the beginning of the pandemic, it was established that in different nations during different points on the pandemic saw a decrease of 28% to 100% in the screening of Colorectal Cancer.[10]

During this period, from the particular 25 regions, only 2 to 2.5% hospitals and screening centers continued to operate to their full capacity while as much a 77% were forced to limit down their activities to 10% of their capacity.[11]

When considering the case under study, a degree of impact by the Covid on diagnosis was observed. Though can be taken as the contributing factor rather than the main factor. During the course of study, many patients and attendants stated that he onset of Covid might be the cause behind them presenting themselves late for the treatment as they were afraid of contracting the virus. Of the 13 patients who passed away, attendants of 6 stated that they were not able to get an early diagnosis since they were hesitant of visiting a medical facility.so it can be assumed that Covid 19 was a contributing factor in 46.1% of the fatalities reported during the span of two years since it delayed the diagnosis. According to the American Society of Cancer, if diagnosed early, 5-year relative survival rate

is 90%.[12]But only 4 out of 10 colorectal cancers are found at an early stage, a ratio that has fallen further during the last year to decrease in the number of screenings conducted.[12]

In some studies, cancer patients were found to be more prone to contracting the virus and they often developed severe symptoms. Their probability of contracting the virus and them requiring intensive care due to rapidly declining condition was many folds greater than the general population. In cancer patients who contracted the virus, complications such as renal insufficiency, liver lesions, sepsis, myocardial injuries etc. were also observed.[13]

It was established in the case study that since the patients delayed their presence in the medical faculty, the cancer had progressed to advance stages that render chemo radio therapy ineffective and even rules out surgical intervention. Also, since there was a 75% mortality rate among patients who were Covid positive, it stipulates that lowered immunity levels resulting from chemo radio therapy and chemo therapy diminishes the immune response, making them more venerable to the virus.

As per the records of the Surgical II ward, there was no apparent decrease in the capacity of the treatment since it was in the list of prioritized treatments. While some low priority diagnosis and treatment facilities were temporary halted at the Sheikh Zaid Hospital, Cancer related facilities were offered as per usual. As for the surgical procedures, there was no change on the behalf of the hospital. No surgery was delayed or postponed due to covid and they proceeded as normal. It was made mandatory to produce a Covid test result prior to the procedure but even Covid positive patients weren't denied the treatment and the surgeries were done while taking extra precautions as per the Covid 19 protocol.

But that wasn't the general trend overall. For example, even in UK, the screening and treatment capacity was severely hindered by the pandemic. Like in the NHS foundation trust Hospital London, there was a treatment delay of as much as 53.3% in the CRC patients reviewed for the study.[14]But this study fortifies the assumption that delayed diagnosis did lead to upstaging of cancer since it was noted that 38.6% of the patients whose diagnosis was delayed due to covid faced upstaging of CRC, thus adding to fatalities.[14]

In another done in Canada, the Alberta Cancer Registry Showed that the there was a mere 6.5% decrease in the delay of cancer diagnosis by the means of asymptomatic screening.

All of this points to the notion that though also responsible directly fatalities in CRC patients due to their low level of immunity, Covid 19 led to delay in diagnosis since many patients didn't consult in time just leading to progression of the disease.

CONCLUSION

Covid-19 compelled about 46% of the total subject population to seek treatment later then they should have which led to progression of the disease. The Virus proved to be 75% fatal in the patients who contracted the virus. Delay in diagnosis was the main effect of the pandemic during the period of two years.

Author's Contribution:

Concept & Design of Study:	Muhammad Aamir Jameel
Drafting:	Rida Usman, Muhammad Imran Anwar
Data Analysis:	Haroon Javaid Majid, Hafsa Jameel
Revisiting Critically:	Muhammad Aamir Jameel, Rida Usman
Final Approval of version:	Muhammad Aamir Jameel

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Original Article

Frequency of Cholesteatoma in Chronic Suppurative Otitis Media and its Treatment Modality in a Tertiary Care Setup - A Retrospective Study

Syeda Amna Bukhari[1], Syed Zohaib Maroof Hussain[2], Syed Salman Hashmi[3], Sana Sadiq[4], Fatima Siddiqui[5] and Muhammad Razzaq Dogar[6]

ABSTRACT

Objective: To explore the frequency of cholesteatoma in chronic suppurative otitis media and its treatment modality among Pakistani population.

Study Design: Retrospective Observational Study

Place and Duration of Study: This study was conducted at the department of otorhinolaryngology, Jinnah Post Graduate Medical Centre Karachi, Pakistan, from January 2015 to December 2020.

Materials and Methods: All patients of CSOM were selected by using non probability purposive sampling technique. Data was collected from patients' files. Patients with a history of severe systemic illness, those who were unfit for the surgery and those who refused were excluded. Structured proforma was used to collect information. Descriptive statistics were used to explore incidence of cholesteatoma in chronic suppurative otitis media.

Results: We identified 677 patients through the coding system of our hospital between 1st of January 2015 till 31st of December 2020. Systemically ill patients, unfit patients for surgery and those who refused surgery were excluded. Females were in a higher number 373 (55.1%). The mean age was 21.74±8.97. For exploratory analysis, participants were divided into four age groups. Most common age group was between 6 to 20 years (52.4%). Out of 677 patients, 157 (23.1%) had cholesteatoma present.

Conclusion: Cholesteatoma is known sequelae in CSOM patients. It needs extra care and expertise to prevent complications. Timely recognition and correct choice of management may result in better hearing outcomes. In addition, improvement in socioeconomic status (good hygiene) and awareness may reduce the number of cases.

Key Words: CSOM, cholesteatoma, treatment modality

INTRODUCTION

Chronic suppurative otitis media (CSOM) is a long standing (lasting >6-12 weeks) disease of middle ear cleft [1]. It is characterized by persistent ear discharge, tympanic membrane perforation and hearing loss [2].

The distinction remains between active CSOM (mucosal and squamosal disease), where there is active inflammation and productive pus, and inactive CSOM, where this is not the case though there is potential for the ear to become active at some time. A third clinical entity is healed CSOM where there are permanent abnormalities of pars tensa but the ear does not have the propensity to become active because pars tensa is intact and there is no significant retraction of pars tensa or flaccida [1].

Long standing acute otitis media (AOM) leads to CSOM. It most commonly affects children. Risk factors include frequent upper respiratory tract infections and poor socioeconomic conditions (overcrowded housing and poor hygiene and nutrition) [3,4]. Hearing loss is the leading and preventable sequelae of CSOM which retards child's speech development, education and behavior [5,6].

Cholesteatoma can be either congenital (behind an intact tympanic membrane) or acquired. The overall incidence is estimated to be around 9 per 100,000 people. At least 95% of cholesteatomas are acquired. The incidence is similar in children and adults [7]. Cholesteatoma are the end stage of (squamous epithelial) retractions of pars tensa or flaccida that are

[1]. Department of ENT, Fatimiyah Hospital, Karachi.

[2]. Department of Surgery, Aga Khan University, Karachi.

[3]. Department of ENT, Patel Hospital, Karachi.

[4]. Department of Otorhinolaryngology, Sir Syed Medical College & Hospital, Karachi.

[5]. Department of ENT / Head and Neck Surgery, Jinnah Medical & Dental College, Karachi.

Correspondence: Syed Amna Bukhari, Fatimiyah Hospital Britto Rd, Karachi, Sindh.
Contact No: 0334-35688989
Email: amnabukharinaq@gmail.com

not self-cleansing, retain epithelial debris and elicit a secondary, inflammatory mucosal reaction [2]. It is a cystic structure lined by keratinizing stratified squamous epithelium, resting on a fibrous stroma of variable thickness, which may be having some element of original mucous lining [8]. It can spread locally and involve facial nerve [1]. Intracranial manifestations include brain abscess, meningitis and lateral sinus thrombosis. Without prompt intervention, these are common causes of death in CSOM [9,10].

The annual incidence of acquired cholesteatoma ranges from approximately 9 to 12.6 cases per 100,000 adults and from 3 to 15 cases per 100,000 children [11]. Burden of CSOM varies and according to World Health Organization (WHO), there is prevalence in the developing world as high as 7% [12]. CSOM is more neglected and improperly managed in developing countries like Pakistan [11]. Therefore, associated complications are higher and devastating. Reasons to this disparity include illiteracy, poverty, overcrowding, and lack of health facilities [13]. Similarly, it is one of the common otological conditions seen in India by an otorhinolaryngologist [14].

To the best of our knowledge there is no data available on such large scale which explores frequency of cholesteatoma in CSOM and its management accordingly in Pakistan.

MATERIALS AND METHODS

This is a retrospective observational study conducted at the department of otorhinolaryngology, Jinnah Post Graduate Medical Centre, Karachi (JPMC), Pakistan over a period of 6 years from January 2015 to December 2020. All patients of CSOM were selected by using non probability purposive sampling technique. Patients included were all diagnosed cases of CSOM irrespective of age, sex and socioeconomic status between 1st of January 2015 till 31st December 2020. Patients were identified from coding system of our hospital. The data was collected over a period of four months (February 2021 to May 2021). Patients excluded were those who had some serious systemic illness, those who were unfit for surgery and those who refused. Patients were subjected to management and planned follow up of 1 year. The results were later evaluated.

The data was collected by using a pro forma in which information was entered from the patient's files. The information that was collected included general history of the patient (age, and gender), past medical history (diabetes and hypertension), patients were also noted about duration and frequency of disease, and symptoms suggestive of complications (facial nerve involvement, vestibular and neurological functions). We also collected data for lab reports including hematological, ear pus culture and sensitivity. Furthermore, we recorded radiological data as well including X ray

mastoid both ears and CT-Scan temporal and brain. Lastly, audio-logical assessment including pure tone audiometry (PTA) and tympanogram were also reported. During the study, patients' privacy and confidentiality were maintained. Statistical Package for Social Sciences (SPSS) version 23.0 (IBM SPSS Statistics, Armonk, NY) was used for data entry and statistical analysis.

Descriptive statistics were reported. Frequencies and percentages (%) were reported for categorical variables (gender, and comorbidities, family history, past medical and surgical history) and assessed by chi-square test where appropriate. Mean ±SD was reported for quantitative variables such as age. A p-value of < 0.05 was considered as significant throughout the analysis.

Ethical approval was obtained for this study from the Ethical Review Committee (ERC), JPMC. This study was conducted in accordance with the tenets of the Declaration of Helsinki.

RESULTS

We identified 867 patients through the coding system of our hospital between 1st of January 2015 till 31st of December 2020. 55 patients were considered as ineligible. Out of 812 eligible patients, 135 were excluded on the basis of exclusion criteria. Hence, 677 patients were included in final analysis.

Out of which females were higher i.e. 55.1% (95% CI, 50.5%-57.0%). We further divided data according to patients' origin and preoperative information of all patients as shown Table 1.

Table No.1: Socio-demographic characteristics and Pre-operative information of all patients (n=677)

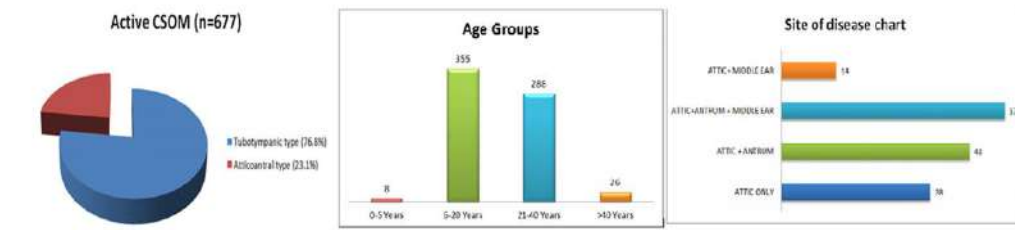|	Frequency	Percentage
Gender		
Female	373	55.1%
Male	304	44.9%
Regions		
Sindh	446	65.8%
Balochistan	90	13.2%
Afghanistan	75	11.0%
Khyber Pakhtonkhwa	55	8.1%
Punjab	11	1.62%
Type of CSOM		
Mucosal Com	520	76.8%
Squamous Com	157	23.1%
Associated complications		
Yes	75	11.1%
No	602	88.9%
Presence of Cholesteatoma		
Yes	157	23.1%
No	520	76.8%

Figure No.1: Exploratory Analysis

Table No.2: Intraoperative data of all patient

Operative Procedures	Frequency (Percentage)
Cortical Mastoidectomy	411(60.7%)
Tympanoplasty	104(15.4%)
Modified Radical Mastoidectomy	103(15.2%)
Atticotomy	34(5%)
Combine Approach Tympanoplasty	12(1.8%)
Radical Mastoidectomy	07(1%)
Combine Neurosurgery and Mastoid Exploration	06(0.9%)

Table No.3: Association of CSOM patients with different variables

Study Variable		Disease Type		P-value
		Mucosal COM	Squamous COM	
Gender of Patient	Male	230(34%)	74(10.9%)	0.635
	Female	288(42.5%)	85(12.6%)	
Complication	YES	26(3.8%)	49(7.2%)	<0.001*
	NO	492(72.7%)	110(16.2%)	
Presence of Cholesteatoma	YES	1(0.1%)	156(23%)	<0.001*
	NO	517(76.4%)	3(0.4%)	
Type_Com1	Positive	26(3.8%)	49(7.2%)	<0.001*
	Negative	492(72.7%)	110(16.2%)	
Operative Procedures	Tympanoplasty	103(15.2%)	1(0.1%)	<0.001*
	Cortical Mastoidectomy	409(60.4%)	2(0.3%)	
	Atticotomy	0(0%)	34(5%)	
	Modified Radical Mastoidectomy	2(0.3%)	101(14.9%)	
	Radical Mastoidectomy	0(0%)	7(1%)	
	Combine approach tympanoplasty	4(0.6%)	8(1.2%)	
	Combine Neurosurgery and mastoid exploration	0(0%)	6(0.9%)	
Division of Complication	Extra cranial	26(3.8%)	40(53.3%)	<0.001*
	Intracranial	0(0%)	9(12%)	
Division of Surgery	Canal Wall Up	516(76.2%)	11(1.6%)	<0.001*
	Canal Wall Down	2(0.3%)	148(21.9%)	

For exploratory analysis, participants were divided into four age groups as shown in Figure 1.

The mean age was 21.74±8.97. Most common age group was between 6 to 20 years (52.4%). Intraoperative data of all patients in Table 2.

All of 677 patients were labeled as tubo tympanic type (active mucosal) and as atticoantral type (active squamous) of CSOM on the basis of history and clinical examination as shown in Figure 1.

Pure tone audiometry revealed that 504 patients (74.4%) had pure conductive deafness whereas 173 (25.5%) had mixed deafness; preoperative examination revealed that all 677 cases (100%) had perforated ear drum. We also reported site of cholesteatoma as show in Figure 1.

Association of CSOM patients with different variables are shown in Table 3.

DISCUSSION

This study aimed to find out the incidence of cholesteatoma in CSOM patients among Pakistani population, Table 1. Out of 677 eligible patients of CSOM, 157 (23.1 %) patients had cholesteatoma. This study is consistent with other studies of our region[14-16]. CSOM remained a prime infection of middle ear and mastoid cavity in our region. Cholesteatoma associated with CSOM is notorious to cause more damage as potentially it is dangerous because of its capacity to destroy bone[17]. Therefore, prompt treatment is necessary in order to avoid devastating intra and extra cranial complications. Cholesteatoma is more common in people less than 30 years, as reported in a review that around 68% patients were between 1-30 years of age[18]. Similarly, in our study above 50% were less than 30 years of age, as shown in Figure I. Cholesteatoma in children is more aggressive as compared to adults[19]. This might be the cause of more devastating complication in children.

History and comprehensive ear examination help in diagnosing cholesteatoma. In addition, computed tomography (CT), magnetic resonance imaging (MRI) and ancillary diagnostic tools aid to make definitive diagnosis. Early diagnosis helps to treat with less invasive procedures than conventional treatment. Moreover, it will help in preventing complications such hearing loss, particularly in children[20].

Treatment modality includes nonsurgical approach and surgical approach. In former case, antibiotic coverage is recommended to reduce the active inflammation and formation of granulation tissue[21]. Among different antibiotics, fluoroquinolones (ciprofloxacin or levofloxacin) are most appropriate[22]. In systemically unwell patients, oral or systemic antibiotics should be

considered. However, nonsurgical management is not a definitive treatment for cholesteatoma. In fact, it is only to reduce the ongoing inflammation, prevent intra and post-operative complications[20]. All patients in our study received antibiotic coverage as a protocol measure.

Currently, surgical removal of cholesteatoma is the only definitive treatment[20]. There are two options widely available; canal-wall-up (CWU) procedure involves posterior tympanoplasty approach. Other is canal-wall down (CWD) procedure consists mainly of modified radical mastoidectomy[23,24]. The choice of surgery plays significant role in defining hearing outcomes. Patients who receive CWD may result in worse hearing outcomes than those who undergo CWU due to impairment of resonance in the middle ear[25,26]. HO SY et al reported in their study that, CWU achieved significant improvement in hearing with speech reception threshold of less than 25 dB[23]. Likewise, in present study CWU procedure led to significant improvement in hearing. Special consideration should be given in pediatric cases. Given the complex and aggressive form of disease in children, early intervention increases the chance of preserving or reclaiming the hearing of patients[20]. However, delay results in opposite to it.

Post-operatively, patient should be regularly monitored. Deciding follow up duration is really challenging task for clinician. Up to 90% of recurrent cases present within 5 years. However, long term studies reported recidivism up to 24 years as well. Hence, it advisable to follow up as long as possible.

In order to prevent recidivism, we highly recommend complete eradication of disease and the consideration of recurrence risk factors, such as type of surgical treatment, the extent of disease, history of grommet insertion, and poster superior type of cholesteatoma.

Strengths of our study include largest data from Pakistan, multiple experienced surgeons involved, and one of the largest health sectors setting in a developing country. Major limitation of our study includes retrospective nature of our study.

CONCLUSION

Cholesteatoma is a known sequalea in CSOM patients. It needs extra care and expertise to prevent complications. Timely recognition and correct choice of management may result in better hearing outcomes. In addition, improvement in socioeconomic status (good hygiene) and awareness may reduce the number of cases.

Author's Contribution:
Concept & Design of Study: Syeda Amna Bukhari
Drafting: Syed Zohaib Maroof Hussain, Syed Salman Hashmi
Data Analysis: Sana Sadiq, Fatima Siddiqui, Muhammad Razzaq Dogar
Revisiting Critically: Syeda Amna Bukhari, Syed Zohaib Maroof Hussain
Final Approval of version: Syeda Amna Bukhari

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Original Article

Short Term Hospital Outcome of Atrioventricular (AV) Block in the Setting of Acute Inferior Wall Myocardial Infarction (M.I) Treated by Primary Percutaneous Coronary Intervention (PPCI)

Akram Yousif[1], Faisal Qadir[1], Sanober Soomro[2], Feroz Ali[1], Noor Ahmed[1] and Muhammad Rahman Khalid[3]

ABSTRACT

Objective: To assess impact of the Primary Percutaneous Coronary Intervention (PPCI) on the early resolution of AV block in patients presenting with acute inferior STEMI.

Study Design: Analytic study

Place and Duration of Study: This study was conducted at the National Institute of Cardiovascular Diseases (NICVD), Karachi from November 2020 to April 2021.

Materials and Methods: We enrolled 165 patients with acute inferior STEMI who presented with any degree of AV block. All patients received PPCI as an initial therapeutic strategy. Pre-and post-procedure clinical parameters were recorded for 5 days after invasive therapy.

Results: Out of 165 enrolled patients, AV block was more common in the older patients (mean age 60.08 ±10.09 years), in males118 (71.5%), and in 86 (52.1%) patients with multi vessel coronary artery disease. The predominant culprit artery was the right coronary artery in 152 (92.1%) patients. 139 (84.2%) patients had restoration of normal AV conduction at end of 5 days of hospitalization. The average time for reversal of AV block was 51.3± 30.2 hours. 23 (14%) patients had persistent AV block and underwent permanent pacemaker implantation. 3 (1.8%) patients had in-hospital mortality.

Conclusion: PPCI for acute inferior wall STEMI significantly enhances early resolution of AV block. Our study highlights that a significant number of patients had restoration of AV conduction at end of five days following PPCI. We suggest delaying waiting time to at least five days after PPCI, before final consideration of implanting permanent pacemaker in this patient group.

Key Words: A V block, Inferior wall, Infarction, coronary intervention

INTRODUCTION

AV block (Atrioventricular block) is the commonest arrhythmic complications in the situation of acute ST-elevation myocardial infarction (STEMI).[1]

[1.] National Institute of Cardiovascular Diseases (NICVD), Karachi.
[2.] DHO Central Karachi.
[3.] LUMHS Jamshoro

Correspondence: Dr. Akram Yousif MBBS, FCPS Clinical Fellow, NICVD, Karachi.
Contact No: 03337060740
Email: Akramchanna@gmail.com

The incidence of high-grade atrioventricular block was reported to be 3-4% in the thrombolytic period, and was associated with increased in-hospital mortality.[2–4]

With advancements in mechanical reperfusion strategies and improved anti-thrombotic therapy, the incidence of high grade AV block has reduced remarkably over the last few decades and was reported to be 3.2% according to the results of one study.[2,5] Acute myocardial infarction Patients (inferior wall) are considerably more vulnerable to developing AV block and have 2-4 fold increased risk of development of high grade atrioventricular block compared with those having anterior wall myocardial infarction (MI).[3]

Factors linked with the development of AV block in the setting of STEMI include: hypertension, diabetes mellitus, smoking, older age, female gender, prior myocardial infarction and presence of multi vessel coronary artery disease.[6] Several mechanisms have been proposed for the development of AV block in acute coronary syndrome; parasympathetic system

activation in inferior wall MI may result in bradycardia and AV block, compromised blood supply may lead to ischemia of the AV node.[7–9]

AV block in the situation of acute inferior infarction has propensity for reversibility after revascularization and it seems reasonable to allow waiting time to affect this improvement in AV conduction.[10] This, however, would translate into an extended monitoring period and lengthening of hospital stay. At present, for these patients there is no clear consensus on the ideal waiting time. With this background, we aimed to assess the impact of PPCI on early resolution of atrioventricular block in the setting of acute inferior STEMI and clarify the waiting timeline for implantation of permanent pacemaker in this patient group.

MATERIALS AND METHODS

A study was conducted at the National institute of cardiovascular diseases (NICVD), Karachi during time interval between November 2020 to April 2021.

Data was analyzed by using SPSS software through non-probability, consecutive sampling technique; the sample size was calculated to be 165.

Data Collection: Approval from ethical review committee of the institute was taken and verbal informed consent for enrolment in the study and for performance of PPCI procedure was sought from patients. Clinical parameters of patients who fulfilled the selection criteria were documented in data collection questionnaire form. Patients who presented with symptoms consistent with acute inferior STEMI and met electrocardiographic criteria i.e., ST-elevation of 1 mm or more in two or more contiguous ECG limb leads (leads II, III anda VF) and with any degree of atrioventricular block at presentation were included. Patients who did not consent to undergo PPCI were excluded. Temporary trans-venous pacemaker was placed in patients who were hemodynamically unstable or had symptomatic bradycardia (heart rate less than 40 bpm). After interventional treatment, patients were monitored for 05 days at coronary care unit, Patients' who had restoration of AV conduction within 5 days after STEMI

were discharged home on medical treatment, while patients who had persistent complete heart block after 5 days post-STEMI were implanted a permanent pacemaker.

The acquired data was analyzed using SPSS version 20. For quantitative data, mean and standard deviation were determined, while frequency and percentage were computed for qualitative variables.

RESULTS

The study population comprised 165 patients presenting with acute inferior wall STEMI and any degree of atrioventricular block. Baseline characteristics, clinical presentation, extent of coronary artery disease and PPCI procedural characteristics are shown in Table 1.

Atrioventricular block was seemed more frequent in the older population (mean age: 60.08±10.09 years), predominantly in males115 (69.7%), in those who had prior history of diabetes mellitus78 (47.2%), hypertension 98 (59.4%) and tobacco use 72 (43.6%) patients. 18 (10.9%) patients presented in Killip class III or IV. Predominant culprit artery was right coronary artery in 152 (92.1%) subjects. Right ventricular infarction was present in 32 (19.4%).Patients with multi vessel coronary artery disease were observed high atrioventricular block as compared to those with single-vessel coronary artery disease (52.1%vs 47.9%). On angiography right artery dominance were seen in majority of patients 143 (86.6%). TIMI III flow was achieved in 150 (90.9%) of patients after revascularization. There was requirement for temporary trans-venous pace maker in 108 (65.4%) patients.

Degree of AV block at clinical presentation, restoration of AV conduction and in hospital mortality is shown in Table 2. Third degree AV block and first-degree AV block were seen in majority of patients at presentation (72.1% and 14.5% respectively). Restoration of normal AV nodal conduction was seen in 139 (84.2%) patients within 5 days. The average time for reversal of AV block was 51.3± 30.2 hours. Third degree AV block was the predominant bradyarrhythmia among patients who had persisted atrioventricular block beyond 5 days post- STEMI and majority (95.3%) of them had multi-vessel disease. In-hospital mortality was in 3 (1.8%) patients.

Table No.1: Baseline characteristics, clinical presentation, extent of coronary artery disease and PPCI procedural characteristics.

Age	**60.08 ± 10.09**
Gender:	
Male (%)	115 (69.7)
Female (%)	50 (30.3)
Risk Factors:	
Diabetes mellitus (%)	78 (47.2)
Hypertension (%)	98 (59.4)
Tobacco use (%)	72 (43.6)
Right ventricular involvement (%)	32 (19.4)
Killip class III or IV (%)	18 (10.9)
Culprit coronary artery:	
Left main coronary artery (%)	0 (0)
Left anterior descending coronary artery (%)	1 (0.6)
Right coronary artery (%)	152 (92.1)

Left circumflex coronary artery (%)	14 (8.5)
Coronary artery dominance:	
Right (%)	143 (86.6)
Left (%)	22 (13.4)
TIMI flow III achieved (%)	150 (90.9)
Number of diseased vessels:	
Single vessel disease (%)	79 (47.9)
Multi-vessel disease (%)	86 (52.1)

Table No.2: Degree of AV block at clinical presentation, restoration of AV conduction and in hospital mortality

Need for temporary pacemaker insertion (%)	**108 (65.4)**
Type of AV block at presentation:	
1st degree block (%)	24 (14.5)
Mobitz type I, 2nd degree AV block (%)	08 (4.8)
Mobitz type II, 2nd degree AV block (%)	14 (8.5)
Complete heart block (3rd degree AV block)(%)	119 (72.1)
Restoration of AV nodal conduction:	
Day 1 (%)	57 (34.5)
Day 2 (%)	40 (24.2)
Day 3 (%)	18 (10.9)
Day 4 (%)	14 (8.5)
Day 5 (%)	10 (6.1)
Total (%)	139 (84.2)
Average time to reversal of AV block (hours)	51.3 ± 30.2
Persistent AV Block:	
1st degree block (%)	5 (21.7)
Mobitz type I, 2nd degree AV block (%)	3 (13.4)
Mobitz type II, 2nd degree AV block (%)	6 (26.1)
Complete heart block (3rd degree AV block) (%)	9 (39.1)
Total (%)	23 (13.9)
Nature of lesion in persisted AV Block	
Single vessel disease	1 (4.3)
Multi-vessel disease	22 (95.7)
In-hospital mortality (%)	3 (1.8)

DISCUSSION

Like other complications of STEMI, incidence of atrioventricular block has reduced in the current era of improved reperfusion strategy with PPCI and adjuvant anti-thrombotic therapy. PPCI can ameliorate atrioventricular block in significant number of patients presenting with acute inferior STEMI patients and associated AV block.

Early beginning AV block is caused by obstruction of the AV nodal branch of the right coronary artery (RCA), which is the AV node's major supply; second, RCA blockage enhances acetylcholine release from vagal efferent neurons in ischemic inferior wall myocardium. Late onset AV block is related to the metabolic changes due to coronary ischemia.[9]

The results of our study showed that older people were at higher risk of developing AV block in setting of acute inferior wall STEMI. These results are consistent with earlier research.[6,10] Female gender has been shown to be an independent risk factor for developing AV block.[6,11] In contrast, our results showed that males were more affected (69.7%). Studies by Auffret and Singh et al have also demonstrated a male dominancy distribution.[10,12] Other independent risk factors like diabetes mellitus, hypertension, and tobacco use were noticeable in a significant number of our patients. This pattern is also consistent with results of other studies.[6,10,13,14]

On admission, the AV block was primarily caused by an infarction in the right coronary artery. Patients with AV block and any type of acute coronary syndrome and found nearly two-thirds of the patients had infarction or ischemia of right coronary artery.[6] This finding is in line with studies during and after the thrombolytic era.[10,12,15]

Patients with multi vessel coronary artery disease are theoretically more prone to suffer from AV block, as there may be ischemia of AV node due to compromised blood flow from the primary as well as the collateral vessels. In our study, AV block was also more prevalent among patients with multi vessel disease. It was further noticed that there was either delayed or no improvement in AV conduction in such patients. Singh et al in their study noted similar observations.[12]

The most common AV block at presentation was complete AV block followed by first degree AV block. After PPCI, early reversal of AV block was seen in nearly 35% on day 1 and 24.2% on day 2. This early reversal signifies the immediate benefit provided by mechanical reperfusion therapy. This is consistent with results of studies by Gang and Yadav, et al.[2,13] One of the known mechanisms of AV block in inferior wall MI is parasympathetic activation known as the Bezold-Jarisch reflex, this may also have contributed to the early restoration of AV nodal conduction.

During hospitalization, complete heart block increased the risk of heart failure, cardiac shock, electrical arrhythmias, mechanical problems, and mortality. Survival after discharge was comparable for individuals with and without heart block.[16] Our study, 3(1.8%) patients mortality observed in five day in-hospital, among those patients have multi vessel coronary artery disease and presentation with Killip class >II. Malik et

al found mortality rate of 3.3% in a similar group of patients.[17] Presence of right ventricular infarction was also a major contributory factor to mortality. Pirzada et al reported significant impact of right ventricular infarct on mortality among same group of patients.[18]

Insertion of temporary pacemaker was utilized in 65.4% of our patients; Hwang etal showed 22.2% of their patients were implanted a temporary pacemaker peri-procedure.[19] At the end of 5 days following PPCI, about three-fourths (84.2%) of patients restored normal AV conduction with an average time to AV block reversal of 51.3 ± 30.2 hours. Yadav et al showed average time to reversal of AV block of 24.5 ± 35.5 hours in their study.[13]

Despite the reversible nature of AV block in inferior STEMI, permanent pacemakers are implanted relatively early in contemporary clinical practice. According to US data,the mean time from admission to permanent pacemaker implantation with inferior STEMI and high grade AV block was 3 days in mostly patient.[20].

CONCLUSION

PPCI significantly improves clinical outcomes with early resolution of AV block in the setting of acute inferior STEMI.A significant number of patients regained normal AV conduction within 5 days following PPCI, which provides suggestion for a reasonable waiting timeline for clinicians before final consideration of implanting a permanent pacemaker in this patient group.

Limitations: To the best of our knowledge, this is the first study to examine the incidence of varying degrees of AV block. at presentation with acute inferior STEMI and to assess the favorable impact of PPCI on early restoration of different degree of AV block. Study limitations were that this was a single institution experience and that there was limited number of patients. We utilized waiting time of 5 days after PPCI for our patients, however because of the reversibility potential of AV block post STEMI, a longer waiting time with continued monitoring may have yielded further chances of improvement in AV conduction.

Author's Contribution:

Concept & Design of Study:	Akram Yousif
Drafting:	Faisal Qadir, Sanober Soomro
Data Analysis:	Feroz Ali, Noor Ahmed, Muhammad Rahman Khalid
Revisiting Critically:	Akram Yousif, Faisal Qadir
Final Approval of version:	Akram Yousif

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Original Article

Perception of Women Regarding Breast Feeding During Covid 19 Pandemic

Aliya Nasim[1], Farhan Saeed[2], Erum Saboohi[3], Naima Shah[4] and Madiha Batool Zaheer[5]

ABSTRACT

Objective: To assess the perception of women regarding breast feeding and lactation during Covid 19 pandemic.
Study Design: Cross-sectional descriptive study.
Place and Duration of Study: This study was conducted at the obstetrics and gynecology Department, neonatal follow-up clinics and vaccination center at Darul Sehat Hospital Karachi from September 2021 to November 2021.
Materials and Methods: A questionnaire was introduced to women after taking informed consent. Included females were either lactating currently or practicing since last six month and those with breast feeding problems were excluded from study. Questionnaire contain three portions of which first part inquired about demographic features, second part contained questions about perception and third part is about practices of breast feeding during Covid -19 pandemic. Data was analyzed using IBM-SPSS version 23.0. Means with standard deviation were given for quantitative variables and chi square test is used to assess association between perception of breast feeding and different study variables.
Results: The study included 206 participants. Mean age was 28.8 years (SD ±5.0). 66.2% suggested breastfeeding should continue even in covid prevalent communities, 33.8% claimed that covid virus can be transmitted via breastfeeding, 57.6% said wearing a mask should be mandatory while breastfeeding and 84.3% suggested washing hands prior to breastfeeding helps prevent transmission of virus from mother to baby. 66.2% thought breastfeeding protects the child against covid disease.
Conclusion: Covid 19 pandemic has affected breastfeeding practices. Majority women suggested breastfeeding should continue even in communities where covid is pandemic, and that breastfeeding protects the child against covid disease.
Key Words: Covid 19 disease, pregnancy, lactation, breastfeeding

INTRODUCTION

As Covid 19 is highly contagious and rapidly emerging disease and declared pandemic by WHO on 11 March 2020 [1], many concerns have been raised regarding impact of novel virus on pregnant and lactating population. Because of their unique physiological situation, this population is considered as high risk.

[1.] Department of Obstet & Gynae / Pediatrics[2], Liaquat College of Medicine and Dentistry, Karachi.
[3.] Department of Pediatrics, Sir Syed College of Medical Sciences for Girls, Karachi.
[4.] Department of Obstet & Gynae / Peadiatric[5], Darul Sehat Hospital, Karachi.

Correspondence: Dr. Aliya Nasim, Associate Professor, Obstetrics & Gynaecology, Liaquat College of Medicine and Dentistry, Karachi.
Contact No: 0300 9217582
Email: aliyaakhter@yahoo.com

As this is new emerging situation, limited literature is available regarding breast feeding safety and transmission of infection through breast feeding showing different results and suggestions.

SARS-COV 2 can present from asymptomatic to a severe acute respiratory infection requiring intensive care [2]. Although most of the infections occur in adults older than 60 years [3], some pregnant women have also been infected, causing concerns for the management of the perinatal period [4]. A few studies have explored the infection of neonates with SARS-CoV-2 and none showed breastfeeding as method of the transmission of the virus. [5, 6, 7]

There is an ongoing debate regarding risks of intrapartum transmission of the virus or transmission through lactation. In the past few months, the SARS-CoV- 2 antibodies of IgA, IgG and IgM in breast milk have also been reported [8,9]. Because of diversity in literature different policies have been advocated by different centers worldwide. Chinese colleagues just do not consider the breast- feeding option, nor the use of expressed breast milk for newborn infants. [10, 11, 12] Instead, initial literature from USA, Italy, Brazil suggests to avoid direct breast feeding, as sucking at the

breast presumably might increase the risk of SARS-CoV-2 transmission via aerosol due to the intimate contact during feeds.[13-15] These measures contradict World Health Organization (WHO) recommendations which stated that mothers with suspected or confirmed COVID-19 infection should be encouraged to initiate and continue breastfeeding because benefits of breastfeeding substantially outweigh the potential risks of transmission.[16]

Rationale: Whether to continue breast feeding during pandemic and can it be a source of infection to new born is a big question and because of much differences in literature and variations in clinical practices by different authorities and clinical settings women are facing much confusion regarding continuation of breast feeding during illness and pandemic.

The authors aim to find the perception of women and their knowledge regarding lactation and breast feeding during Covid 19 pandemic and their awareness of about precautions taken during breast feeding. At the same time their concerns, fear and anxiety are addressed and precautions are explained.

MATERIALS AND METHODS

This Cross sectional study was conducted in obstetrics and gynecology out & inpatient department, neonatal follow-up clinics and vaccination center at Darul Sehat Hospital Karachi for 3 months after approval from IRB LCMD from 1st September 2021 to 30th November 2021.

Sampling Technique: Non probability purposive sampling.

Sample size: It was estimated using online sample size calculator available at www.openepi.com with proportion method, version 3.01, after assuming 97% positive perceptions on breast feeding in COVID-19 pandemic, **at 5%** margin of error and 95% confidence interval we required at least n=206 samples for this study [23].

SAMPLE SELECTION:

Inclusion criteria:

The study will be conducted among lactating females coming to hospital for follow up visits in obstetric clinics, neonatal clinics and vaccination center for newborn vaccination who are lactating their infants currently or has been lactating since previous six months.

Exclusion criteria: Those females with breast problems like cracked nipples, mastitis, breast abscess and active herpetic lesion of breast are excluded.

Data collection procedure: A detailed questionnaire was introduced to women who fulfilled the inclusion criteria after taking verbal and informed consent. Objective of the study were explained to women and only those showing willingness to participate were interviewed. Questionnaire contained three parts. In first part demographic feature of the respondents were recorded the next part contained more specific questions about their perception regarding breast feeding during Covid-19 pandemic and against each question respondent's answer were marked with yes, no or don't know options. Third part comprised of questions regarding practices of breast feeding during Covid-19 pandemic like washing hands, wearing masks and use of top feeding instead of exclusive breast feeding in covid positive cases and finally source of information.

Data analysis plan: Data was stored and analyzed using IBM-SPSS version 23.0. Means with standard deviation were given for baseline quantitative data (age, parity, duration of breast feeding etc.), Counts with percentages were reported for qualitative study variables, (like gender, education, socio economic class, breast feeding status etc.). Pearson chi square test was used to test the association of breast-feeding perceptions during covid-19 with studied factors. P-values less than 0.05 were considered statistically significant.

Ethical considerations: A written informed consent was taken from participants after informing them the objective of the study and only those who felt comfortable and agreed were included in study. The names and other identities of the participants were kept confidential and only principal investigators were allowed to access the data.

RESULTS

The study included 206 females participants. Table 1 reports the means of quantitative variables. Mean age was 28.8 years (SD ±5.0). Mean number of live births was 2 (SD ±1). Mean number of antenatal checkups were 7 (SD ±2.4). Mean age of last child born was 257 days (SD ±505).

64 patients (30.5%) were primiparous, while 146 (69.5%) were multigravida. Most of the patients belong to middle class i,e (86.7%). 91 patients (43.3%) were undergraduate while 61 (29%) were graduate and above. 174 patients (82.9%) were not employed, 148 patients (70.5%) had past breastfeeding experience, 41 (19.5%) had no past breastfeeding experience while 21 patients (10%) had no children. 164 females (78.1%) were currently breastfeeding their babies, while 46 (21.9%) were not.

45 patients (21.4%) claimed they had not been informed about breastfeeding during their antenatal check-ups, while 165 (78.6%) claimed that they had been well informed about breastfeeding. Feeding decision was made before, during and after pregnancy in 165 (78.6%), 24 (11.4%) and 21 (10%) patients respectively. 117 ladies (55.7%) claimed they had received social support for breastfeeding during covid pandemic, while 93 ladies (44.3%) claimed otherwise.

Out of all, 130 (61.9%) had tested, while 80 (38.1%) did not take any covid test. Out of 130 women who

tested, 4 (3%) had positive PCR test, while 11 (8.4%) had positive serology.

Table No.1: Means of quantitative variables

Variable	Mean	Standard deviation
Age (years)	28.8	± 5.0
Duration of breastfeeding (min)	11.5	± 6.4
Number of live births	2	± 1
Antenatal clinic visits	7	± 2.4
Age of last child (days)	257	± 505

Table No.2: Perception of participants regarding breastfeeding and Covid

Variable		Frequency	%tage
In communities where covid 19 is prevalent, should mothers breastfeed?	Yes	139	66.2%
	No	38	18.1%
	Don't know	33	15.7%
Can covid 19 infection be transmitted through breastfeeding?	Yes	71	33.8%
	No	96	45.7%
	Don't know	43	20.5%
Will you initiate and continue breastfeeding during corona disease outbreak?	Yes	155	73.8%
	No	29	13.8%
	Don't know	26	12.4%
Does breastfeeding protect the child against covid 19 disease?	Yes	139	66.2%
	No	27	12.9%
	Don't know	44	21%
Do you think wearing a mask is mandatory during breastfeeding?	Yes	121	57.6%
	No	70	33.3%
	Don't know	19	9%
Do you prefer direct breastfeeding over top feed if you are suspected or confirmed case of covid 19?	Yes	71	33.8%
	No	59	28.1%
	Don't know	80	38.1%
Do you think hand washing prior to breastfeeding helps prevent transmission of covid 19 to your baby if you are a suspected or confirmed case of covid 19?	Yes	177	84.3%
	No	13	6.2%
	Don't know	20	9.5%
Avoid coughing or sneezing on the baby while feeding at the breast?	Yes	152	72.4%
	No	26	12.4%
	Don't know	32	15.2%
Has lockdown affected breastfeeding practices to child?	Yes	62	29.5%
	No	100	47.6%
	Don't know	48	22.9%
Following delivery, should baby be placed skin to skin if mother is suspected or conformed covid 19?	Yes	5	2.4%
	No	166	79.4%
	Don't know	38	18.2%
If mother with suspected or	Yes	32	15.2%

confirmed covid 19 is too unwell to breastfeed, should she give expressed milk?	No	150	71.4%
	Don't know	28	13.3%
In **Covid** pandemic, is it still necessary to give exclusive breast milk to infant?	Yes	101	48.3%
	No	56	26.8%
	Don't know	52	24.9%

Table 02 reports breastfeeding practices. 139 women (66.2%) suggested breastfeeding should continue even in communities where covid is pandemic, 155 women (73.8%) claimed that they would continue breastfeeding during covid outbreak, while only a minority, i.e. 5 women (2.4%) claimed that baby should be placed skin-to-skin with mother if mother is covid prositive. Regarding transmission of virus, 71 (33.8%) claimed that covid virus can be transmitted via breastfeeding, 121 (57.6%) said wearing a mask should be mandatory while breastfeeding and 177 women (84.3%) suggested washing hands prior to breastfeeding helps prevent transmission of virus from mother to baby. Regarding beneficial effects of breastfeeding, 139 women (66.2%) thought breastfeeding protects the child against covid disease. If suspected or confirmed case of covid pneumonia, 71 women (33.8%) said they would still prefer direct breastfeeding over top feeding. 62 mothers (29.5%) reported that lockdown had affected breastfeeding practices,

Figure 1 reports sources from where mothers took breastfeeding advice. Most was from healthcare professionals (29%), while social circle helped in 27.6% of the ladies, and 19% had benefitted from social media.
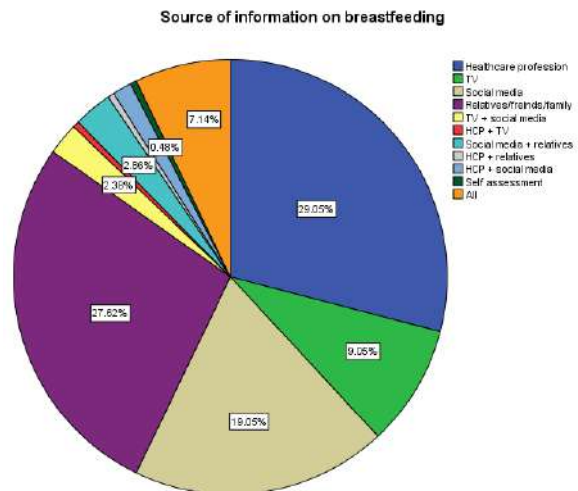

Figure No.1: Depicts the percentage wise distribution of resources from which mothers took guidance regarding breastfeeding

When breastfeeding practices were compared with other categorical variables, literacy rate and working status were statistically significantly related with knowledge regarding breastfeeding protection, covid 19 precautions and transmission, breastfeeding during

covid pandemic, expressing breast milk in case of illness to mother (p value <0.05).

DISCUSSION

Covid 19 pandemic has engulfed the world completely in its fearsome aura and has changed how healthcare looked like to a big extent. It has also put doubts and fears in minds of many regarding basic practices which were once considered a societal norm. One of such practices is of breastfeeding, therefore this study was designed to evaluate the breastfeeding practices and beliefs in women of Pakistan during covid pandemic.

A study conducted in India in 2021 to evaluate the knowledge of healthcare personnel regarding breastfeeding practices showed grave deficiency, with 294 (54.1%) participants (who were obstetricians or pediatricians) having adequate knowledge regarding breastfeeding recommendations. On the other hand, 15% of participants were not aware of any guidelines on breastfeeding during the COVID-19 pandemic. [16]

A retrospective analysis of Medline, Embase, Web of Science, Cochrane Library, China Biology Medicine disc, China National Knowledge Infrastructure and Wanfang by Nan Yang and *et al* in 2020 showed that covid is not transmitted via breast milk. Nevertheles, women with suspected or confirmed covid disease should take precautions when feeding their babies. [17] This is consistent with the results of our study, in which 66.2% of women suggested breastfeeding should continue even in communities where covid is pandemic. A study by Kailey Snyder showed mothers' ability to obtain breastfeeding support was negatively impacted by the pandemic due to inability to engage with individuals in-person and the lack of access to childcare. First-time mothers may be at higher risk of early breastfeeding cessation due to lack of support. [18] This is contrary to our study, in which majority women (47.6%) were of the opinion that breastfeeding practices have not been affected by lockdown.

In our study, majority women (45.7%) did not believe that covid could be transmitted via breast milk, majority (62%) also believed that breastfeeding actually protects the infant against covid pneumonia, This is in accordance with the study published in *International Breastfeeding Journal* in 2020, in which authors commented that breastfeeding should be encouraged and skin-to-skin contact ensured throughout the COVID-19 pandemic. If mothers are too ill to breastfeed, they should still be supported to express their milk.[19] Regarding wearing mask while breastfeeding, American Academy of Pediatrics states that it is not necessary if mother is fully vaccinated. However, if mother has symptoms of covid or had close contact with covid positive patient, then it is advisable to wear a mask.[20] This was also suggested by many participants in our study, precisely 121 women (57.6%), In our study, participants reported that they mostly took

information and guidance regarding breastfeeding practices from healthcare personnel (61 women, i.e 29%) This was emphasized upon by Tsorng-YehLeea *et al* and Qiu Ju Ng *et al* in their studies in which authors reported that majority of women had breastfeeding guidance from healthcare professionals, and lack of this bridge caused anxiety, trauma, emotional instability and other difficulties for mothers. [21, 22]

CONCLUSION

Covid 19 pandemic has affected breastfeeding practices. Majority women suggested breastfeeding should continue even in communities where covid is pandemic.

Author's Contribution:

Concept & Design of Study:	Aliya Nasim
Drafting:	Farhan Saeed, Erum Saboohi
Data Analysis:	Naima Shah, Madiha Batool Zaheer
Revisiting Critically:	Aliya Nasim, Farhan Saeed
Final Approval of version:	Aliya Nasim

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Factors Associated with Low Acceptability of Postpartum Intrauterine Contraceptive Device (PPIUCD), in A Tertiary Care Centre

Zubaida Masood[1], Fauzia Ali[2], Seema Ghani[3], Zaira Batool[2], Shabnam Nadeem[2] and Jarry Masood[4]

ABSTRACT

Objective: To assess the Factors associated with low acceptability of PPIUCD.

Study Design: Cross sectional study

Place and Duration of Study: This study was conducted at the Antenatal Clinic of Abbasi Shaheed Hospital, Karachi from February 2022 to April 2022.

Materials and Methods: All the 288 women attending antenatal clinic were counseled for immediate PPIUCD and after written consent were included in the study and assessed for acceptability and attitude about the insertion of PPIUCD and also explored factors associated.

Results: A total of 288 women were counseled for PPIUCD during their antenatal visits. Out of which 43.8% accepted PPIUCD and poor Attitude towards PPIUCD was reported in 69.8%. Most of the women 26.4% had concerns and fears of post procedural complications like expulsion, infection, bleeding etc. Refusal from husband's side is also reported by 18.1% women.

Conclusion: The use of PPIUCD was noticeably low. In order to increase postpartum IUD utilization, which further improves mother and child health generally; women's educational status and antenatal counselling use must be up scaled.

Key Words: PPIUCD, Factors, Acceptability, Attitude

INTRODUCTION

Family-planning is a basic right of all women to ensure their health, their families and healthy community. By allowing women to space births, prevent unplanned pregnancies and abortions, and discontinue childbearing when they get their ideal size of family, long-acting reversible contraception approach can save as many as one out of three maternal fatalities.[1, 2] Rate of maternal mortality across the world is quite high, with an estimated 42% of deaths occurring during labour and delivery.

[1.] Department of Gynae, Sobhraj Hospital, KMDC, Karachi.

[2.] Department of Gynae, KMDC, Karachi.

[3.] Department of Gynae, Hamdard University Hospital, Karachi.

[4.] Department of Gynae, Dow International Medical College, Karachi.

Correspondence: Dr. Zubaida Masood, HOD Gynae, Sobhraj Hospital, KMDC, Karachi.
Contact No: 03082153400
Email: zubaidamasood@hotmail.com

Everyday, almost 800 women worldwide die from pregnancy or birth-related complications.[3] In Pakistan more than 25,000 women are reported to die every year as a result of complications associated with pregnancy that may be prevented.[4]

An IUCD is a "T-shaped" device inserted into a woman's uterus. It's also described as a "coil, loop, or IUD". Postpartum IUCD is placed during the postpartum period which is defined as up to forty-eight hours post birth, ideally within 10 minutes of placenta delivery.[3,5] Copper IUD's are quite safe, reliable, efficient, and long-lasting contraceptive protections. In order to reduce expulsion risks and complications, early post-partum IUD (PPIUCD) implantation should be conducted by a qualified and certified clinician, however these services are not commonly accessible. The International Federation of Obstetricians and Gynecologists (FIGO) will initiate an intervention to institutionalize PPIUCD training as a regular aspect of the OB/GYN training plan and to incorporate it as part of standard practice at the time of delivery in intervention facilities.[2] Worldwide, 214 million women of reproductive age in low-income countries are considered to desire to prevent getting pregnant but are not utilizing a modern methods of contraception.[6]

World Health Organization (WHO) recommended 2-years gap between childbirth and pregnancy.[7] Existing literature has demonstrated that long-acting interventions, such as IUDs, can reduce unmet need and unintended pregnancy especially in low-resource settings.[8, 9] During the postpartum phase, women are much more encouraged to accept family-planning measures.[10]. Because the majority of women typically do not return for postnatal-care, failure to offer timely postpartum contraception might contribute to the incidence of unplanned pregnancies.[9, 11] The significant obstacles to PPIUCD adoption were a lack of procedural understanding, unskilled practitioners, predisposition for quick-acting contraceptives, spousal rejection, and concerns about complications.[9, 12, 13] Finding the best available evidence of the prevalence of PPIUCD acceptance, attitude, and factors associated to its rejection and poor attitude were the study's main objectives. The results of this study will provide scientific support to the health professionals and policy makers for PPIUCD service improvement. It may be helpful to discover program aspects that need improvement with the assistance of evidence on the acceptability of immediate PPIUCD utilization.

MATERIALS AND METHODS

This was a "Descriptive Cross Sectional" study which was conducted on 288 women attending department of Obstetrics and Gynaecology OPD of Abbasi Shaheed Hospital from February to April 2022 after taken IRB approval. Women who gave a written informed consent included in the study. Demographic and detailed history i.e. age, educational status of women/Husband, Occupation, residence, parity etc was also taken. Study subjects were enrolled using non-probability consecutive sampling technique. Sample size was calculated by using "OpenEpi sample size calculator". By taking prevalence of PPIUCD acceptance 12.4%[11], at precision level 5% and 95% confidence interval.

All women between ages 15-45 years who wants spacing between births were given pre structured questionnaire. Therefore women were counseled for IUCD insertion in prenatal period or in labour and willing to participate in the study were included in the study. Women with PID, multiple fibroid, coagulation disorders, fever, or clinical symptoms of infection during labour, obstructed labour, congenital malformation of uterus, active STD and allergy to copper were excluded. For assessment of acceptance and attitude towards PPIUCD a pre-structured questionnaire given to all women and responses were obtained.

Data was analyzed by using SPSS version-21. Descriptive statistics of all the study variables were presented in term of frequency and percentages. Outcome variables attitude and acceptance for PPIUCD also reported. Association was assessed between acceptance and attitude for PPIUCD with factors like age, educational status, parity etc. by applying Chi-Square test. P-value≤0.05 was considered as significant.

RESULTS

Table No.1: Demographic Characteristics of subjects

Study Variables		Frequency	% age
Age (in years.)	<20	28	9.7
	20 - 29	173	60.1
	30 - 39	73	25.3
	>40	14	4.9
Education (women)	No education	71	24.7
	Primary	74	25.7
	Secondary	95	33.0
	Intermediate or higher	48	16.7
Educational (Husband)	No education	87	30.2
	Primary	68	23.6
	Secondary	90	31.3
	Intermediate or higher	43	14.9
Occupation (women)	Housewife	258	89.6
	Working	30	10.4
Residence	Rural	33	11.5
	Urban	255	88.5
Parity	Multipara	204	70.8
	Primipara	84	29.2
Antenatal care visits	≥4	107	37.2
	< 4	181	62.8
Status of birth	Planned	181	62.8
	Unplanned	107	37.2
No. of live births	0	69	24.0
	1	63	21.9
	2	72	25.0
	3	53	18.4
	4	24	8.3
	5	3	1.0
	6	4	1.4
Future pregnancy desire	No	91	31.6
	Yes	197	68.4
Contraceptive use before current birth	Condom	51	17.7
	Contraceptive	8	2.8
	Injectable	9	3.1
	IUCD	30	10.4
	No	185	64.2
	Withdrawal method	5	1.7
Who will decide the use of modern contraceptive method?	Both of us	213	74.0
	Husband	57	19.8
	Wife	18	6.3
Reason for rejection	Fear	43	26.4
	Desire for more children	24	14.6
	Husband desire	29	18.1
	Interference with sexual intercourse	5	2.8
	Prefer other methods	24	14.6
	Religious beliefs	3	1.7

All the women of reproductive age were enrolled in this study. Majority of women 173(60.1%) were having age of 20-29 years followed by 73(25.3%) 30-39 years of age group. Educational status of both showed similar pattern. More than half of the women 181(62.8%) had history of less than 4 antenatal care visits. Future pregnancy desire for more children was reported in 197(68.4%) women.

Table No.2: Assessment of Attitude and Acceptability for PPIUCD

Questions		Freq-uency	%tage
"Have you ever heard about IUCD as a contraceptive method? Immediately after delivery"?	"Yes"	184	63.9
	"No"	104	36.1
"Do you know IUCD prevent unwanted pregnancies at least 3 years"?	"Yes"	165	57.3
	"No"	123	42.7
"IUCD has interference with sexual intercourse"	"Yes"	99	34.4
	"No"	148	51.4
	Do not know	41	14.2
"Do you think IUCD insertion and removal is highly painful"?	Agreed	97	33.7
	Disagreed	36	12.5
	Do not know	155	53.8
"Do you think IUCD cause irregular bleeding"?	Agreed	117	40.6
	Disagreed	42	14.6
	Do not know	129	44.8
"Using IUCD restrict normal activity".	Agreed	71	24.7
	Disagreed	74	25.7
	Do not know	143	49.7
"IUCD may impair future fertility".	Agreed	88	30.6
	Disagreed	55	19.1
	Do not know	145	50.3

Previous history of contraceptive use status showed that, Condoms reported as the most common method to avoid pregnancy followed by IUCD which was used by 30(10.4%) and 185(64.2%) study subjects stated that they did not use any contraceptive method. According to 213(74%) study participants, husband and wife both will decide the use of modern contraceptive method. (Table 1). Acceptance rate for PPIUCD among the study subjects was 126(43.8%) and attitude towards PPIUCD was reported poor in 201(69.8%) (Graph1). Most common reasons for rejection are concerns and fears of post procedural complications. Refusal from husband's side and desire for more children are also main reason for rejection.
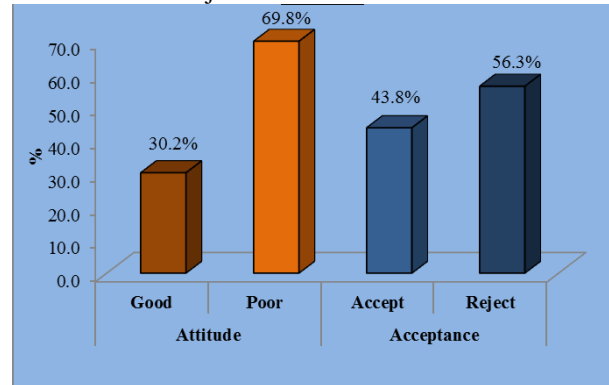

Figure No.1: Attitude & Acceptability towards PPIUCD

Out of total 184(63.9%) women already heard or knew about IUCD/PPIUCD as contraceptive method. 99(34.4%) women thought IUCD has interference with sexual intercourse. 155(53.8%) women had no information regarding pain experience, 97(33.7%) agreed on that the insertion and removal of IUCD is painful and only 36(12.5%) disagreed with this. 129(44.8%) women did not know about bleeding cause by IUCD, according to 117(40.6%) women IUCD cause irregular bleeding while 42(14.6%) disagreed. 145(50.3%) women were unaware about the statement" IUCD may impair future fertility ".(Table 2)

Association of attitude towards PPIUCD and acceptance with associated factors showed in table-3. It was found that educational status of husband, mother's occupation, residential status, and previously used contraceptive methods had significant association with attitude (P-value<0.05). It was found that educational status of husband, mother's occupation, had significant association with acceptance for PPIUCD (P-value<0.05).

Table No.3: Association of Attitude towards PPIUCD and Acceptance with associated factors

Associated Factors		Attitude		Sig.	Acceptance		Sig.
		Good	Poor		Accept	Reject	
Age (in yrs.)	<20	8(28.6%)	20(71.4%)	0.843**	13(46.4%)	15(53.6%)	0.992**
	20 – 29	55(31.8%)	118(68.2%)		75(43.4%)	98(56.6%)	
	30 – 39	21(28.8%)	52(71.2%)		32(43.8%)	41(56.2%)	
	≥40	3(21.4%)	11(78.6%)		6(42.9%)	8(57.1%)	
Educational Status	No education	20(28.2%)	51(71.8%)	0.226**	29(40.8%)	42(59.2%)	0.766**
	Primary	18(24.3%)	56(75.7%)		30(40.5%)	44(59.5%)	

(Women)	Secondary	29(30.5%)	66(69.5%)		44(46.3%)	51(53.7%)	
	Intermediate or higher	20(41.7%)	28(58.3%)		23(47.9%)	25(52.1%)	
Educational Status (Husband)	No education	16(18.4%)	71(81.6%)	0.019*	27(31.0%)	60(69.0%)	0.035*
	Primary	25(36.8%)	43(63.2%)		35(51.5%)	33(48.5%)	
	Secondary	28(31.1%)	62(68.9%)		42(46.7%)	48(53.3%)	
	Intermediate or higher	18(41.9%)	25(58.1%)		22(51.2%)	21(48.8%)	
Occupation (women)	Housewife	69(26.7%)	189(73.3%)	0.000*	104(40.3%)	154(59.7%)	0.001*
	Working	18(60.0%)	12(40.0%)		22(73.3%)	8(26.7%)	
Residence	Rural	5(15.2%)	28(84.8%)	0.045*	13(39.4%)	20(60.6%)	0.592**
	Urban	82(32.2%)	173(67.8%)		113(44.3%)	142(55.7%)	
Parity	Multipara	59(28.9%)	145(71.1%)	0.459**	91(44.6%)	113(55.4%)	0.647**
	Primipara	28(33.3%)	56(66.7%)		35(41.7%)	49(58.3%)	
Antenatal care visits	≥4	33(30.8%)	74(69.2%)	0.857**	50(46.7%)	57(53.3%)	0.433**
	< 4	54(29.8%)	127(70.2%)		76(42.0%)	105(58.0%)	
Status of birth	Planned	59(32.6%)	122(67.4%)	0.251**	75(41.4%)	106(58.6%)	0.303**
	Unplanned	28(26.2%)	79(73.8%)		51(47.7%)	56(52.3%)	
Future pregnancy desire	Yes	61(31.0%)	136(69.0%)	0.681**	86(43.7%)	111(56.3%)	0.962**
	No	26(28.6%)	65(71.4%)		40(44.0%)	51(56.0%)	
Contraceptive use before current birth	Condom	16(31.4%)	35(68.6%)	0.000*	25(49.0%)	26(51.0%)	0.294**
	Contraceptive	1(12.5%)	7(87.5%)		4(50.0%)	4(50.0%)	
	Injectable	4(44.4%)	5(55.6%)		4(44.4%)	5(55.6%)	
	IUCD	22(73.3%)	8(26.7%)		18(60.0%)	12(40.0%)	
	Withdrawal method	1(20.0%)	4(80.0%)		1(20.0%)	4(80.0%)	
	No	43(23.2%)	142(23.2%)		74(40.0%)	111(60.0%)	
Decision taker for contraceptive method	Both	70(32.9%)	143(67.1%)	0.220**	94(44.1%)	119(55.9%)	0.961**
	Husband	12(21.1%)	45(78.9%)		24(42.1%)	33(57.9%)	
	Wife	5(27.8%)	13(72.2%)		8(44.4%)	10(55.6%)	
Chi-Square test applied; Significance level <0.05							

DISCUSSION

The Intrauterine devices offers long term, reliable, convenient, and safe contraceptive protection that does not restrict breastfeeding throughout the postpartum period.

In this research poor attitude towards PPIUCD was 69.8% and rate for acceptance was 43.8%. Similar to these findings, a study reported that 41.1% women accepted the PPIUCD insertion.[14] A study conducted in rural India demonstrated 32% PPIUCD acceptance rate. Further studies showed that, the acceptance rate is quite variable this might be due to diverse settings, locality and multiplicity in characteristics of socio demographic.[15] In a follow-up based study,[16] acceptance was 14% in natural births and 11% in Cesarean-section deliveries. Lower acceptability of PPIUCD is a result of the lack of comprehensive and up-to-date details. the author generate high acceptability of PPIUCD 20% by providing counseling, skills training during antenatal visits.[17] In Egypt a study was conducted showed the acceptance rate 29%.[18] In a recent study conducted in Bangladesh reported the acceptance rate 5.3% which is lower than other studies.[19] In comparison; our acceptance rate is relatively higher. Possible cause may be the immediate postpartum insertion method is a less familiar for those populations.

There are variety of misconceptions, concerns, and fear about the approach. Most of the women in our study 26.4% had concerns and fears of post-procedural complications like expulsion, infection, bleeding etc. Refusal from husband's side was also reported by 18.1%.The factors including age group, occupational status of partners, educational status both husband and wife, adequate knowledge, spouse support, consultation, antenatal care visits, and existing awareness about IUCD were determinants that influence the utilization of PPIUCD. In this study mother's occupation and husband's educational status

showed significant impact on acceptance rate. It can be seen that rejection rate is higher in the group of subject those husband's had no formal education and mother who lives at home were not in favor of device insertion. In our study; PPIUCD acceptance rate is higher among educated women, educated husbands, working women, women with adequate antenatal care visits and those who had history of IUCD use. The immediate PPIUCD acceptance was 12.4%. Women who rejected provided their reasons; most common reason found was the concerns and fears of complications 25%, 20% declined because of their religious beliefs and 18% women refused due to the disagreement with husband. Educational status found to have significant factor (OR: 3; 95% CI = 11.8---53.9). Acceptance was relatively higher among women who attended more antenatal care visits (OR: 1.81; 95% CI = 0.34-0.85) and housewives were 4.4 (95%CI: 2.24-8.81) prone to consider taking PPIUCD. Under utilization is may be due to low educational, perceived fear, and concerns about complications. It is also influenced by the male partner's opposition and religious views. In order to eradicate myths and allay concerns adequate attention should be paid to raising the educational level of women as well as men.[11]Some findings contradict with our findings.

In another analysis,[3] Women over the age of 35 had a 5-fold higher likelihood of utilizing PPIUCD than did younger women. Moreover, multi-countries research from Tanzania, Sri Lanka, and Nepal supports this evidence.[20] While in this study each age groups showed the same level of acceptance for PPIUCD. Women who gave birth naturally via vaginal delivery, women who obtained PPIUCD counseling during the antenatal period, mothers who received spousal approval, mothers with birth to pregnancy intervals of more than two years and women who had more than one child were more likely to utilize PPIUCD.[6]

To promote the utilization of PPIUDs, clinicians and nurses must receive high-quality antenatal counseling and training. Although in low-resource countries where antenatal care doesn't include counseling on postpartum contraception due to a lack of clinician time or competence, women may not be aware of PPIUD before going to the hospital for birth.

CONCLUSION

There is a need for good antenatal counselling of couple, by qualified female healthcare professionals, particularly for PPIUCD, at health facilities and scheduled workshops.

Author's Contribution:

Concept & Design of Study:	Zubaida Masood
Drafting:	Fauzia Ali, Seema Ghani
Data Analysis:	Zaira Batool, Shabnam Nadeem, Jarry Masood
Revisiting Critically:	Zubaida Masood, Fauzia Ali
Final Approval of version:	Zubaida Masood

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Association of Recurrent Apthous Stomatitis Types with Body Mass Index Among Pakistani Population

Zainab Rizvi[1], Nakhshab Choudhry[2], Aamir Jamal Gondal[3], Amna Rizvi[4], Faiz Rasul[1] and Nighat Yasmin[3]

ABSTRACT

Objective: to determine association of BMI in RAS development.

Study Design: Analytic study

Place and Duration of Study: This study was conducted at the Outpatient Department of Punjab Dental Hospital, Lahore from January 2019 to December 2019.

Materials and Methods: Total of 172 RAS patients were enrolled in this study. After taking consent, a self-structured questionnaire was filled out to determine demographic variables, types of RAS and BMI. Data was analyzed by SPSS version 22 for percentage and frequency of variables including age, gender, RAS types and BMI. For association, Chi-square test was used and p-value <0.05 was considered significant.

Results: Our data showed that the mean age was 29.82 (SD=13.19) and female gender was >64%. Minor RAS was the more common type (69.8%), followed by major (24.4%) and herpetiform (5.8%). Among RAS patients, BMI was recorded as 44.2% high, 39.5% normal and 16.3% low. Significant association was observed at 0.008 in RAS types and BMI.

Conclusions: BMI is an important risk factor for RAS. Minor RAS was more common than major and herpetiform.

Key Words: Recurrent Aphthous Stomatitis (RAS), Body Mass Index (BMI)

INTRODUCTION

Oral cavity is a landscape of many different elements and variables working together or in opposition. It is composed of mucosa, stratified squamous keratinized and non-keratinized, teeth, gingiva and prone to certain injuries, chemical insults, pathogens, ulcers and autoimmune diseases. However, body's protective and defensive system keep it healthy like salivary immunoglobulins. [1, 2]

Recurrent aphthous stomatitis (RAS), a benign ulcerative condition, affected 25% of population worldwide. [3] It is defined as the recurrent formation of non-contagious ulcers in otherwise healthy individuals.

[1.] Department of Oral Pathology, de'Montmorency College of Dentistry, Lahore.

[2.] Department of Biochemistry, KEMU, Lahore.

[3.] Department of Biomedical Sciences, KEMU, Lahore.

[4.] Department of Endocrinology, SIMS, Lahore.

Correspondence: Faiz Rasul, Department of Oral Pathology, de'Montmorency College of Dentistry, Lahore.
Contact No: bayfaiz871@gmail.com
Email: 0304-1930485

On the basis of ulcer size, location and healing pattern, it is categorized into three types: minor, major, and herpetiform. The exact pathogenesis of RAS has not been determined yet. It has been shown that RAS developed by imbalance of T-cell mediated immune response in which T-cells attacked oral epithelium and disrupt epithelium cells directly or indirectly by inflammatory cytokines. [4] This leads to formation of mouth ulcers. Many factors can trigger the ulcer formation including stress, nutritional deficiencies, hormonal aberrations, certain foods/additives, allergic and genetic propensities and dehydration. [5]

Minor aphthous present ulcers to five in number having <10mm in size and involving non-keratinizing mucosa mainly on lips, cheeks, on and floor of the mouth. Morphologically, they are round to oval in shape with grey white pseudo-membrane and an erythematous halo. They heal completely in couple of days to a fortnight but no scarring is observed. Major aphthous ulcers are >10mm in size and more in number with healing time upto a month or more and with high risk of scarring. Morphologically, it is similar to minor aphthous in presentation but involves more keratinized sites. Herpetiform type presents as small ulcers (2-3mm) with numbers ranging up to hundred and involving both keratinized and non-keratinized sites.

Morphologically, they are deep and have irregular contours. They heal in less than a month with no risk of scarring. These three types represent spectrum of same disease but different inciting factors with a broad range of manifestations. [3]

RAS present a diagnostic and therapeutic challenge because of highly individualized ability to develop after specific stimulus. This variability transcribes into broad range of demographics resulting in varied patients response to different treatment modalities. [5]

Among the various indicators used to determine body health over the years, Body Mass Index (BMI) is the one that has stood the test of time. Although its is a subjective measurement, it is still used as the change in reference value for specific person and used to classify a body as underweight, normal weight, overweight and obese. [6] Stress is one of the key factor in developing ulceration and aberrant BMI values may induce body stress, consequently leading to deranged functions of T-cells and ultimately RAS developed. Therefore, it is beneficial to find out the distinctive variables resulting the RAS and may help to establish the responsiveness of different treatments used.

MATERIALS AND METHODS

This study was approved by Ethical Review Committee of King Edward Medical University, Lahore. Sample size of 172 RAS subjects was calculated [7] and collected by convenient sampling technique from the Outdoor Patient department of Punjab Dental Hospital, Lahore. After taking consent, data was collected using a structured, self-administered questionnaire (Table 1). Briefly, the questionnaire had four parts: (1) Demographic information such as age and gender (2) Inclusion criteria for RAS type identification with four questions in major and ten in minor criteria (3) Types of RAS (minor, major, and herpetiform) (4) Information regarding BMI. Responses were gathered in the form of yes and no. Known cases of COPD, asthma, acute infection, inflammatory bowel disease and patients taking steroids were excluded from the study. Participants' weight and height were calculated by the principal investigators. BMI was calculated using Quetelet's Index with normal (18.5-24.9), below (<18.5) and high (>25). [8]

Data were analyzed by SPSS version 22. Qualitative variables were reported as frequencies and percentages while quantitative variables like age and BMI were reported in mean and SD. Chi-square test was used to evaluate the association between types of ulcers and BMI. *p*-value <0.05 was considered significant.

RESULTS

In study, total of 172 RAS patients was analyzed. The mean age of the respondents was 29.82 (SD 13.19) and the female gender was more than 64%. Minor RAS was more common type 69.8%, major 24.4%, and 5.8% herpetiform. The majority of respondents have a high BMI 44.2%, while 39.5% have a normal BMI and 16.3 % have a low BMI. The detailed results are given in Table 2.

Table No.1: Self-Structured Questionnaire for RAS used in this study [9]

Variables	Sub-categories
Age (Years)	<18
	>18
Gender	Male
	Female
Criteria of RAS Diagnosis	
Major criteria	Single or multiple round/oval ulcers shallow, regular margins, yellow grey base surrounded by erythmatous margins never preceded by vesicles <1cm in diameter.
	At least three attacks of RAS within past three years, ulcers do not appear on same focal site.
	Painful lesions exacerbated by movement of ulcer affected area.
	Ulcers heals spontaneously without sequelae with/without treatment.
Minor Criteria	Family history.
	First attack below 40 years age.
	Non-keratinized oral mucosa involved.
	Ulcer last for few days to few week.
	Irregular recurrence pattern.
	Non-specific information in histology.
	Triggered by hormonal changes, specific foods, drugs, infection or local trauma.
	Documented deficiency of Ferritin, Iron, Folate B12 or Zinc.
	Non-smoker or RAS developed after quitting smoking.
	Heals with oral or systemic steroid
Type of Ulcer	Minor
	Major
	Herpetiform
BMI	Normal (18.5-24.9)
	Low (<18.5)
	High (>25)

A significant association was found between types of ulcer and BMI (*p*-value=0.008). However, the association was not statistically significant between ulcer types and age (*p*-value=0.06). Similarly between types of RAS and gender (*p*-value=0.8).

When BMI was analyzed in minor, major, and herpetiform, among 120 cases of minor RAS 58 (48.3%) cases showed high BMI (>25), 38 (31.7%) normal BMI, and 24 (20.0%) low BMI. Similarly, out of 120 cases, 92 (76.7%) were adults (> 18 years of age) and 28 (23.3%) were minors (< 18 years of age). Out of 120 cases of minor RAS, females were slightly more than 70 (58.3%) as compared to males 50 (41.7%). The detailed results are given in Table 3.

Table No.2: Descriptive Statistics (Frequency & Percentage) of RAS and BMI (n=172)

Variables	Sub-groups	Frequency (n)	%age
Age (Years)	<18	38	22.1
	>18	134	77.9
	Total	172	100.0
Gender	Male	62	36.0
	Female	110	64.0
	Total	172	100.0
Ulcer Types	Minor	120	69.8
	Major	42	24.4
	Herpetiform	10	5.8
	Total	172	100.0
BMI	Normal (18.5-24.9)	68	39.5
	Low (<18.5)	28	16.3
	High (>25)	76	44.2
	Total	172	100

Table No.3: Association analysis of BMI and RAS

	BMI	Types of RAS				p-Value
		Minor	Major	Herpetiform	Total	
BMI	Normal	38(31.7%)	24(57.1%)	6(60.0%)	68(39.5%)	0.008
	Low BMI	24(20.0%)	2(4.8%)	2(20.0%)	28(16.3%)	
	High BMI	58(48.3%)	16(38.1%)	2(20.0%)	76(44.2%)	
	Total	120(100%)	42(100.0%)	10(100%)	172(100%)	
Age	<18 year	28(23.3%)	8(19.0%)	2(20%)	38(22.1%)	0.836
	>18 year	92(76.7%)	34(81.0%)	8(80.0%)	134(77.9%)	
	Total	120(100%)	42(100%)	10(100%)	172(100%)	
Gender	Male	50(41.7%)	10(23.8%)	2(20.0%)	62(36.0%)	0.064
	Female	70(58.3%)	32(76.2%)	8(80.0%)	110(64.0%)	
	Total	120(100%)	42(100%)	10(100%)	172(100%)	

DISCUSSION

It is acknowledged fact that aphthous ulcers are multifactorial with varied etiology while BMI was originated to categorize person into its respective categorical weight group. BMI showed an association with metabolic diseases mainly diabetes and hypertension. Due to this profound association, it is not inimical for other diseases to be referenced against BMI. Here, the BMI are compared to three main RAS types. It has been reported that Minor aphthous ulceration were more prevalent in patients with high BMI in comparsion to low BMI indicating that metabolic syndrome is associated with aphthous ulceration. Although it can be associated with either environmental factors or decreased immunity due to underlying metabolic diseases. [10] [11] One thing to keep insight is that people with normal BMI fall below the overweight and above the underweight group. It would neither be judicial to say that being underweight is a protective factor against ulcerations nor is an exclusive association of this disease with the overweight group. The extrapolation of these findings would be to state that "the occurrence of minor aphthous ulcerations and BMI are directly proportional. An increase in BMI causes a proportional increase in susceptibility of minor aphthous ulcerations."

Major type is 8 times more common in overweight group as compared to underweight group. While in comparison to underweight and overweight group, it is 12 and 1.5 times more common in the normal-weight group respectively. This data is ambivalent; giving the impression of uncertain and idiopathic nature and also portraying the voluminous association of disease with an increased BMI. To extrapolate the overall association of major aphthous with BMI, we can say that the severity increases with an increase in BMI until the upper range of the normal BMI group and after that, it starts to fall. [12] However, in the current study, the total cases of major RAS were 24.4% out of which most respondents have a normal BMI (57.1%) followed by a high BMI (38.1%) and low BMI (4.8%).

On the other hand, herpetiform aphthous ulcerations were observed equally in underweight and overweight group, and 3 times more common in normal-weight group. These can be attributed first to small proportion of people in this group and secondly, after some time these ulcerations merge to form larger ulcers and often not categorized as herpetiform aphthous ulcerations anymore. [12] Furthermore, as the procedure of data collection in this study is cross-sectional, so the presentation of herpetiform aphthous ulceration, overlapping with many other diseases most commonly herpes, can result in its categorization as some other disease.

Therefore, the expression of herpetiform with BMI has been arbitrary; having equal expression in overweight and underweight groups and thrice the incidence in normal-weight group.

In the current study, BMI is highly significant with the type of ulcers (*p*-value=0.008) while another study reported that BMI is not a significant factor (*p*-value=0.579) however they did not categorize it in types of ulcers. In our study, BMI was categorized as normal (39.5%), low (16.3%) while high (44.2%) with sample size of 172. However, sample size of RAS patients in previous study was smaller (n=98) with BMI low (12.2%), normal (69.3%) and high (18.4%). In both studies, the female gender is more common (64% in our study and 61.2%). [13] Mean age of respondents in our study is 29.82 which is slightly high as repoviously [13] In another study, RAS-positive cases were more prevalent in low-BMI group with the age of the respondents was 20-40 years. [14]

We reported that RAS and BMI were significantly associated among cases (*p*-value=0.008). However, another study found no significant association among control and RAS group (*p*-value=0.178). No significant association was observed between age, gender and RAS. [15] In our study, the mean BMI was 25.0 with mean age 29.82 while different studies reported varied BMI such as 26.0 [15], 23.76 with mean age 29.73 [16], 21.1 with mean age of 16 years [17] and 23 with mean age of 28.76 ± 9.14 years [18]. Dajani et al reported no significant difference in BMI <25 and >25 in lifetime prevalence of RAS 8.1 and 8.3 % respectively. In the current study, 44.2% of respondents have high BMI while in their study it was 72.6%. [19] RAS cases were reported to be more common among female [16, 17, 19]. A case and control study conducted in Pakistan showed that RAS was more common in female (65.7%) [18]. Similar pattern was observed in our study.

CONCLUSION

Minor RAS was more common type of ulceration with predoimance of female gender, high BMI and adult population (>18 years).

Author's Contribution:

Concept & Design of Study:	Zainab Rizvi, Nakhshab Choudhry, Aamir Jamal Gondal, Nighat Yasmin
Drafting:	Zainab Rizvi, Faiz Rasul, Nighat Yasmin
Data Analysis:	Aamir Jamal Gondal, Amna Rizvi, Faiz Rasul
Revisiting Critically:	Zainab Rizvi, Nakhshab Choudhry, Nighat Yasmin
Final Approval of version:	Zainab Rizvi, Nakhshab Choudhry, Nighat Yasmin

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Case Report

Efficacy of Platelet-Rich Plasma (PRP) in a Patient with Optic Nerve Atrophy: A Case Report

Asif Mashood Qazi[1], PS Mahar[2], Sadia Bukhari[1], Israr Ahmed Bhutto[2], Attiya Zehra Rizvi[2] and Abid Abro[3]

ABSTRACT

Optic atrophy is one of the alarming conditions with no promising treatment. In clinical practices, Platelet-rich plasma (PRP) is widely used for nerve regeneration in this era. A 5-year-old female patient presented in Al-Ibrahim eye hospital with the complaint of headache and painless decrease in vision for 3 years. Ocular examination showed that best corrected visual acuity hand motion (HM) in the right eye. All the other vital sign in their normal range. After the bio-microscopic examination it was observed that the anterior segments were exceptionally intact in both eyes with a slight sluggish pupillary reaction in the right eye and increased intraocular pressure of 10mmgh in both eyes. 0.05ml plasma rich platelete with recombinant human nerve growth factor was given to the patient. After the 6th injection, visual acuity improved from HM to 6/24 with changed disc colour.
Key Words: Optic atrophy, Plasma-rich platelet, Nerve regeneration

INTRODUCTION

Nerve regeneration mainly depends on the restoration of nerve axons as well as marinating the functional activity of the myelination process. The network of synaptic field and their functional capacity restoration is an important part of the recovery phase of any nerve injury[1]. Now a day the usage of platelet-rich plasma makes valuable importance in treatment of optic nerve injuries. Visual impairment is one of the major health problems, and researchers are trying to gather evidences for the treatment of visual impairment. The plasma that contains platelets can be obtained from the blood sample of the same patient. The plasma is composed of many growth factors and growth stimulating factors that play remarkable effects in healing the tissue and restoring nerve injury[2]. The monolayer of cell that is present between the Bruch's membrane and photoreceptors of pigmented layer of retina.[3,4]

[1.] Department of Ophthalmology, Al-Tibri Medical College and Hospital. Isra University Karachi Campus.
[2.] Department of Ophthalmology, Isra Postgraduate Institute of Al-Ibrahim Eye Hospital, Karachi.
[3.] Civil Hospital, Karachi.

Correspondence: Asif Mashood Qazi, Assistant Professor, Department of Ophthalmology, Al-Tibri Medical College and Hospital. Isra University Karachi Campus.
Contact No:
Email:

The objective of this experiment was to evaluate the effectiveness of platelet-rich plasma in the restoration of visual impairment by stimulation underlying various growth factors in the cellular microenvironment.

CASE

A 5-year-old female patient presented to the pediatric department of Al-Ibrahim eye hospital with complaints of headache and painless decrease of vision for 3 years. She had previous history of viral infection 3 years back which was associated with Fever which later subsided with treatment (according to her mother). Visual loss was painless, acute in onset and there was no history of increased intra ocular pressure (IOP). Ocular examination revealed her best corrected visual acuity (BCVA) Hand motion in the right eye and 6/6 in left eye.

During the early examination, patient showed normal vital signs with complete consciousness and well oriented to time. Unremarkable anterior segments in her both eyes were observed during the bio-microscopic examination except for the sluggish pupillaryreaction in right eye and intra-ocular pressure (IOP) of 10 mmHg in either eye. On fundoscopy with +90D volk lens revealed right eye optic disc margins appear sharp and the disc was pale in color and about two disc diameter with orange color in the left eye. Fundus photos were recorded (Figure no:1) and advised Visual evoked potential (VEP), which revealed severe optic nerve pathway dysfunction in the right eye.

Unfortunately, there is no proven treatment for such type of optic atrophy. The patient was given intra-vitreal platelet-rich plasma injection (0.05ml) in the right eye under sterile conditions in the operating room

at one-month interval for 6 months. Her visual acuity improved from HM to 6/24 (after 6th injection) and
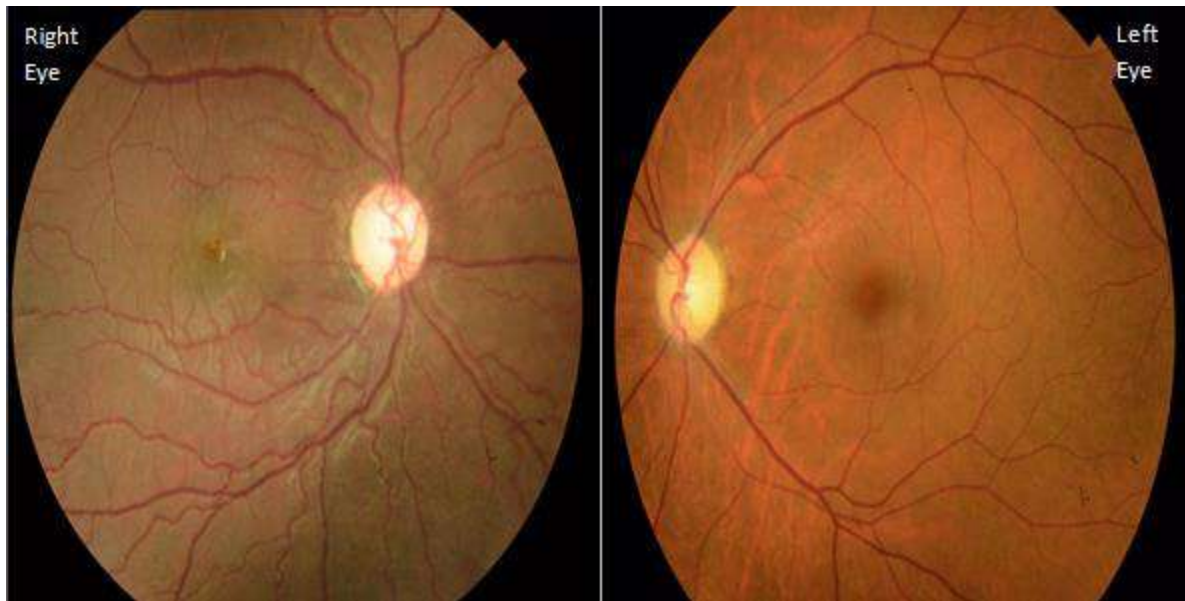
changes appeared in disc colour (figure no:2).

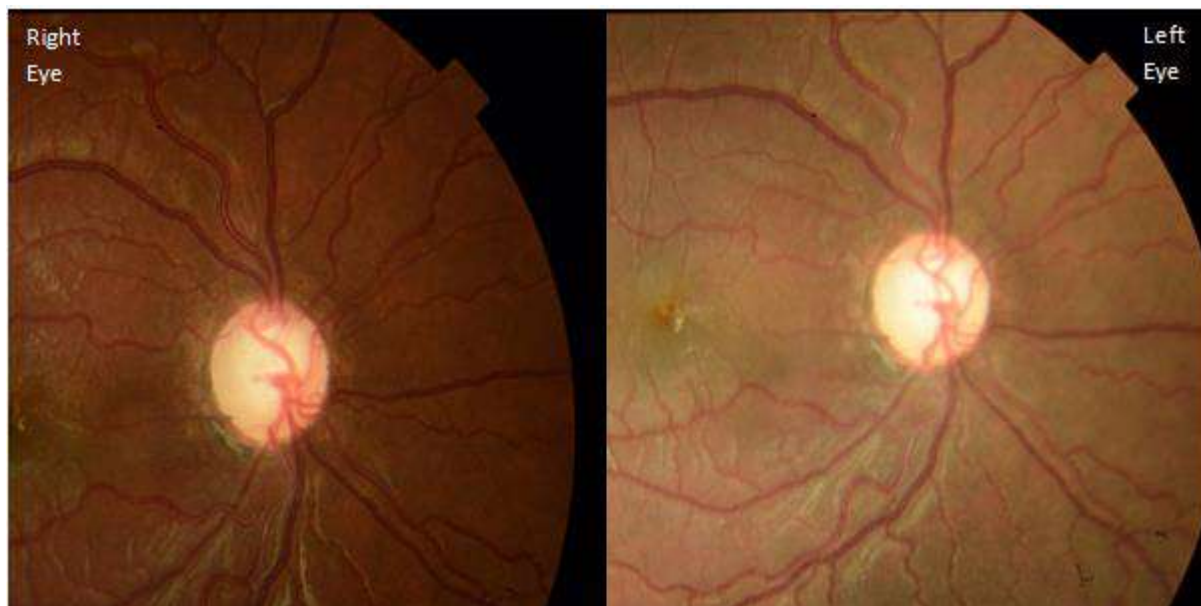**Figure No.1: Before treatment Right and Left Eye**

Figure No.2: After treatment Right and Left Eye

Preparation of PRP: This is a cost effective method of preparing PRP.

Patient blood is used to obtain PRP for the treatment in OT

*The required amount of patient's own whole blood is drawn with 5cc syringe which contains 10% volume of anticoagulant (CPDA) the ratio should be 0.05ml of anticoagulant into 1ml of patient's whole blood.

*The anticoagulant blood is then transferred to sterile empty test tube.

*The time and speed of centrifugation is set on:

1. Preparation of Platelet-Rich Plasma yields a three to four-minute light spin (2000g).

2. Relative centrifuge force (in g) was calculated through the following formula:

RCF(in g)= 28.38 × radius of centrifuge motor in inches × (rpm 1000) ^{2}

Centrifuge the whole blood to separate RBCs. After that three layers appeared first upper layer contains the WBCs, intermediates a buffy layer contains the platelets and the bottim layer contains RBCs. Separate the buffy layer which has most of the PPP (platelets poor plasma)

DISCUSSION

According to the study, the platelet-rich plasma was induced to recover the muscular injury, with application of plasma the growth factor enhance the protein synthesis that helps in muscular tissue repairing same as in present study the plasma works in restoration of optic nerve damage[5,6]. According to the results of another study, the author concludes the numbers of regenerative nerve fibers in the distal segment, after implementation of plasma-rich platelets in peripheral nerve restoration. Similar regenerative status was found in the present study[7]. There is one of the best evidence-based conclusions was given by Arslan U et al: after using subtenon injections of plasma rich platelets for the treatment of retinitis pigmentosa and statically proven the positive results with long term follow-up[8,9]. Application of plasma-rich platelets as a therapeutic agent in one of the case was reported to restore the leprosy induced neuropathy and significant positive effects were observed same as in present case the generative mechanism of plasma on degenerative nerve effects[10,11].

Author's Contribution:

Concept & Design of Study:	Asif Mashood Qazi
Drafting:	PS Mahar, Sadia Bukhari
Data Analysis:	Israr Ahmed Bhutto, Attiya Zehra Rizvi, Abid Abro
Revisiting Critically:	Asif Mashood Qazi, PS Mahar, Sadia Bukhari
Final Approval of version:	Asif Mashood Qazi

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