Original Article

Clinico-Pathological Evaluation of Oral Leukoplakia at Urban Sindh

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ABSTRACT

Objective: To determine clinicopathological patterns of oral leukoplakia lesions in patients presenting at tertiary care hospitals of Rural Sindh.

Study Design: Descriptive / cross-sectional study

Place and Duration of Study: This study was conducted at the Dental Departments at Tertiary Care Hospitals in Urban Sindh from January 2016 to December 2016.

Materials and Methods: One hundred and twenty patients having suspicious oral leukoplakia belonging to both gender and age between 20-70 years were included in the study. All the cases below 20 and above 70 years of age and having oral lesions that were not classified as leukoplakia were excluded. After initial thorough oral examination, an incisional and excisional biopsy of selected patients was carried out under local anesthesia. The oral tissues were processed with H & E staining which was then examined for histopathological changes by microscopy.

Results: The most common age group (40%) was 31-40 years. Males were found in the majority (85%) as compare to female (15%). Majority (38.3%) patients were found to have more than one addictive chewing habits following by Smoking, Paan, Gutka, betel nut and Mainpuri which were found in percentages of 20.0%, 15.0%, 06.7%, 10.0% and 10.0%respectively. Most of the patients (56.7%) had lesion in buccal mucosa. Majority of the cases (76.7%) were found with homogenous leukoplakia. According to histopathological examination, almost all cases had mild and moderate dysplasia with percentage of 53.3% and 31.7% respectively. Hyperkeratosis without dysplasia was found in 8.3% patients, while only one case was found with severe dysplasia. A significant association was found between homogenous leukoplakia and mild and moderate dysplasia (p-value 0.001).

Conclusion: The study concluded that young males were more affected by oral leukoplakia. Homogenous leukoplakia was the most common finding on clinical examination whereasmild and moderate dysplasia was found to be common on histopathology and the clinical type of leukoplakia correlates with the severity of dysplasia which increases the risk of malignancy in this population.

Key Words: Clinical Patterns, Oral Leukoplakia, Histopathology

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INTRODUCTION

One of the greatest challenges faced by oral medicine specialists is the assessment of the risk status and the potentially malignant status of oral lesions in a clinical setting." Oral leukoplakia is explained as "a predominantly white lesion of the oral mucosa that cannot be characterized as any other definable lesion" or when all further likely factors have been rejected making it "a diagnosis of exclusion[1,2]. Oral leukoplakia is a premalignant lesion hence carries risk of oral cancer which not only increases the morbidity and mortality associated with the disease but also makes most frequent precancerous lesionin mouth[3].

The projected reported incidence of oral leukoplakia globally is estimated almost 2%[4,5] whereas a pooled prevalence obtained from systematic reviews from all over the world was estimated between 1.49% and 4.27%[6]. A rate of 1% prevalence shows an alarming malignant transformation rate of twenty per one million populations annually for oral cancer. Certain geographical variances do exist among gender distribution[7].

Middle-aged males are affected more; it rises with age and even more with smokeless tobacco use[1,8]. Oral leukoplakia may be idiopathic or may be associated with tobacco/areca nut use. Nearly 90% of all oral leukoplakia are associated to related and remaining are idiopathic, however, the role of tobacco for the causation of leukoplakia (oral) has also been extensively reported[9,10]. In certain geographic areas like the Indian subcontinent, areca nut and tobacco usage, either in combination or separately, account for most cases of oral leukoplakia[11].

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MATERIALS AND METHODS

A descriptive cross-sectional study was conducted on one hundred and twenty cases at Out-patient departments of tertiary care dental hospitals in Urban Sindh from January 2016 to December 2016 for one year. The sample size was calculated to be 120 with α = level of error = 5% (0.05), and Confidence Interval = 95%. The sampling technique was non-probability Purposive sampling. All the patients with ages from 20-70 years irrespective of gender and with suspicious oral leukoplakia were included in the study however; patients below 20 years of age or above 70 years with any other oral lesions that was not classified as leukoplakia or with known oral squamous cell carcinoma were excluded from the study.

The word leukoplakia can possibly be applied at various certainty levels (C-factor). "C1 or C2" can be used as a clinical expression while "C3 or C4" as clinicopathological expression. C1- Confirmation from is done on single visitusing palpation and examination as the only diagnostic method (temporary clinical finding). C2- Confirmation is found via a negative outcome of removal of doubted etiologic causes, for instance "mechanical irritation," with follow-up time of 2 to 4 weeks or without any doubted etiological causes (absolute clinical finding). C3- is similar to C2 but supplemented through incisional biopsy (temporary histopathological finding). And C4- confirmation is done after removal as well as pathological investigation of the resected sample (absolute histopathological diagnosis) [4].

After thorough oral examination done in a single visit, suspicious patients with oral leukoplakia with certainty factor 1 (C1), were asked about willingness for oral biopsy. An informed written consent was obtained from all the patients. The patients were assured of the anonymity of the data and that the oral biopsy of the sample was used only for study purpose. The objectives of the study were also explained along with the benefits or hazards of the procedure and protocols. An incisional/ excisional biopsy was carried out under local anesthesia. The oral tissues were processed with H &E stain which was followed by examination for histopathological changes by microscopy which included Dysplasia, Atypia, Metaplasia, Nuclear atypia. The study was approved by ERC(Ethical Review Committee) of Isra University. IBM SPSS version 22.0was used for the analysis of the data using Chi-Square and t-testwas used.Percentages, frequency, S.D, mean were calculated at <0.05 significance value.

RESULTS

In this study most common age group was 31-40 years in 40.0% cases, and 2nd most common age group was 41-50 years in 23.3%. Males were found in the majority 85% as compare to female 15%. In this study different patients had different habits out of them more than one habits were in majority 38.3%, following by Smoking, Paan, Gutka, betel nut and Mainpuri were found with percentage of 20.0%, 15.0%, 06.7%, 10.0% and 10.0% respectively. According to the site involvement, mostly patients 56.7% were found with buccal mucosa, tongue 26.7%, lip 8.3%, Flour of mouth 3.3% and alveolar region 3.3%. According to the clinical examination majority of the cases 76.7% were found with homogenous leukoplakia, while 16.7% were found with speckled leukoplakia, nodular leukoplakia 3.3% and proliferative verrucous leukoplakia was found in 3.3% of the cases.According to histopathological examination almost all cases were found with mild and moderate dysplasia with percentage of 53.3% and 31.7% respectively, Hyperkeratosis without dysplasia was found in 8.3% patients, while only one cases was found with severe dysplasia as shown in Table I.

In this study, Homogenous leukoplakia was found significantly associated with mild dysplasia and moderate dysplasia p-value 0.001. While Speckled leukoplakia and nodular leukoplakia were found significantly associated with moderate dysplasia p-value 0.001 as shown in Table 2.

Table No.I:Distribution of the demographic characteristics of the patients (N= 120)

Variables		Freq-uency	%age
Age in years	20-30	20	16.7%
	31-40	48	40.0%
	41-50	28	23.3%
	51-60	16	13.3%
	61-70	08	6.7%
Gender	Male	102	85.0%
	Female	18	15.0%
Habits	Smoking	24	20.0%
	Mainpuri	18	15.0%
	Gutka	08	6.7%
	Betel nut	12	10.0%
	Paan	12	10.0%
	More than one Habit	46	38.3%
Site of Involvement	Buccal mucosa	68	56.7%
	Tongue	32	26.7%
	Lip	10	8.3%
	Floor of mouth	04	3.3%
	Alveolar region	06	5.0%
Degree of Dysplasia	Hyperkeratosis without dysplasia	10	8.3%
	Mild dysplasia	70	58.3%
	Moderate dysplasia	38	31.7%
	Severe dysplasia	02	1.7%

Table No.2:Comparison of clinical type of leukoplakia and degree of dysplasia (n=60)"

Histopathology	Clinical types of leukoplakia				P- value
	Homogenous leukoplakia n=46	Non Homogenous leukoplakia			
		Speckled leukoplakia n=10	Nodular Leukoplakia n=02	proliferative verrucous leukoplakia n=02	
Mild Dysplasia	33	02	0	0	0.001
Moderate Dysplasia	08	08	02	01	
Severe Dysplasia	0	0	0	01	
Hyperkeratosis without Dysplasia	05	0	0	0	

Figure No.I: Photograph of a patient with Homogenous Leukoplakia

Figure No.2:Photograph of a patient with Non Homogenous Leukoplakia (speckled type) (Printed with permission of patient)

DISCUSSION

Leukoplakia is a clinicopathological diagnosis that can only be made after histological examination of the tissue.

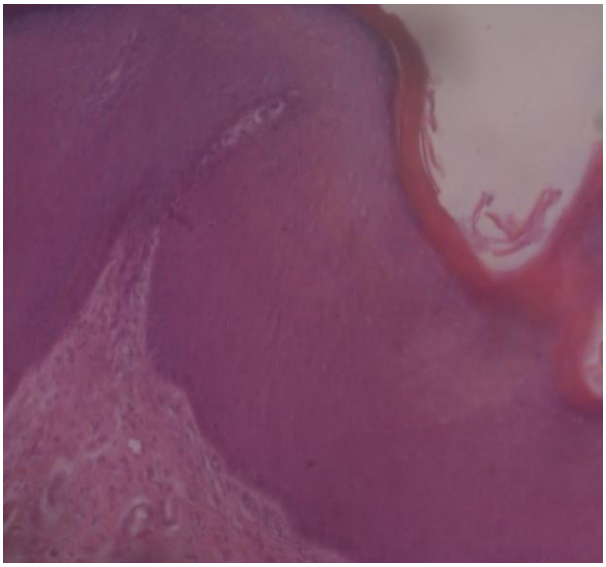

Figure No.3: Microscopic features showing Hyperkeratosis, acanthosis without dysplasia. H&E X 100"

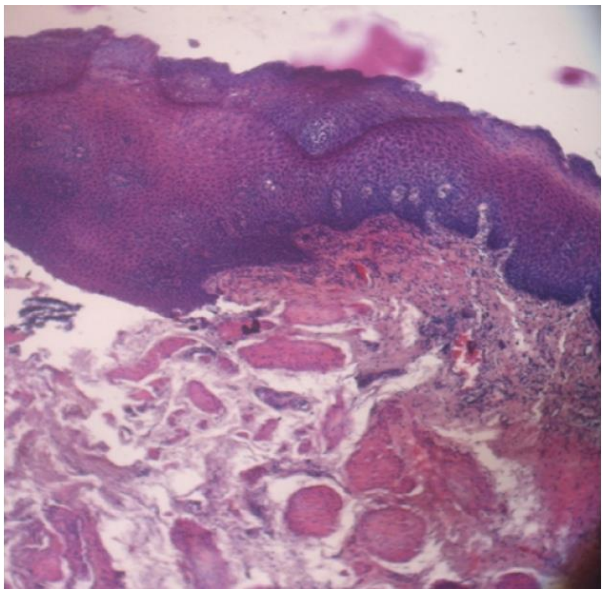

Figure No.4: Microscopic features showing Moderate dysplasia showing marked acanthosis, dysplastic changes, bulbous rete ridges. H&E X 100"

It may exist under different forms such as "benign hyperkeratosis, mild dysplasia, moderate dysplasia, severe dysplasia or microscopically invasive carcinomas[12]." Although, "the risk of transformation of leukoplakia to oral cancer remains difficult to assess, some clinical factors have been identified as indicators of higher risk." These factors include older age, gender, tobacco and alcohol consumption, during of evolution, anatomical location and size of the lesion[13]. All these factors may contribute to the progression of oral leukoplakia into cancer[14,15].

In this study, most common age group was 31-40 years in 40.0% cases, and 2nd most common age group was 41-50 years in 23.3%.However the increase predilection for younger age group is probably due to decrease in the age of patients taking gutka/pan masala, smoking, increased substance abuse early screening, easier access, peer pressure, and advertisement of the substance in the media contribute significantly to this disturbing change in age distribution

The present study observed males were found in the majority 85% as compare to female 15%. According to the Bisht, Ravindra S., et al[16] percentage of oral leukoplakia is higher in men (77.78%) than in women (22.22%) which are similar to the findings of our study. Similarly Maia, Haline Cunha de Medeiros, et al[17] shows consistent result with the present study that the higher percentage of oral leukoplakia was found in males which were (62.3%) and in female (37.7%). This can be explained by a higher incidence of substance abuse in males. Similarly Ohta kazutoshi et al[18] in 2011 reported inconsistent results with the present study showing that 56% female and 52% males in their study.

In this study different patients had different habits out of them more than one habits were in majority 38.3%, following by Smoking, Paan, Gutka, betel nut and Mainpuri were found with percentage of 20.0%, 15.0%, 06.7%, 10.0% and 10.0% respectively. In our study majority of the cases were using more than one habits which are consistent with the previous studies of Rao, Suresh R., et al[19] in (2015) and Gopinath D et al[20] in (2016) reported that multiple habits were commonest. However it is contrary with findings of Liu, Wei et al[21] in (2010) who reported that "oral leukoplakia can be induced and promoted by cigarette smoking." Interestingly researches from indo Pak have revealed tobacco in various form are more commonly use than the smoked one.

In present study according to the site involvement, mostly patients 56.7% were found with buccal mucosa, tongue 26.7%, lip 8.3%, Floor of mouth 3.3% and alveolar region 3.3%. The present study which is consistent with the previous studies of Feller, L et al[3] in (2012), Gurung P et al[22] in (2012) reported that "buccal mucosa was the most common site" observed and Bisht, Ravindra S., et al[16] in (2013) also showed "buccal mucosa is the most common site of leukoplakia comprising 73 cases (81%) out of 90 patients.

In our study severity of the dysplasia significantly was associated with higher grade of clinical staging as, Homogenous leukoplakia associated with mild dysplasia, while speckled leukoplakia and nodular leukoplakia were found significantly associated with moderate dysplasia. Consistent finding were reported in the study of Shetty P et al[23] in (2016), Feller L et al [3] in (2012) and Lan AX et al[24] in (2009) also found that mild dysplasia is more associated with homogenous leukoplakia.

CONCLUSION

We concluded that young male are more effected by oral leukoplakia, on clinical examination homogenous leukoplakia was most common, on histopathology mild and moderate dysplasia commonest and the clinical type of leukoplakia correlate with the severity of dysplasia which increase the risk of malignancy.

Author's Contribution:

Concept & Design of Study:	Shahzaman Memon
Drafting:	Atif Mahmood, Ali Maqbool
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Revisiting Critically:	Shahzaman Memon, Atif Mahmood
Final Approval of version:	Shahzaman Memon

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

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