CLINICAL, RADIOGRAPHIC AND HISTOPATHOLOGICAL EVALUATION OF HEALING AFTER PERIAPICAL SURGERY USING BIOGLASS AND COLLAGEN-CHISTOSAN MEMBRANE

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BACKGROUND: The potentially malignant oral lesions (PMOL) demand that the final diagnosis should be made on both clinical as well as histopathologic examination. The aim of the present study was to determine the correlation between clinical and histopathologic diagnosis of leukoplakia using a discrepancy index (DI) and evaluate clinical as well as histological variations seen in leukoplakia in our department over 8 year(2004-2012) time period.

METHODS: The study consisted of 196 cases clinically examined and diagnosed as leukoplakia. The results of histopathologic diagnosis were compared with the clinical diagnosis. The histopathologic diagnosis was incompatible when the clinical diagnosis was not confirmed histologically. On the basis of the incompatible diagnosis, we calculated a discrepancy index between the clinical and histopathologic diagnosis.

RESULTS: Out of 196 cases clinically diagnosed as leukoplakia, 157 cases (80.10%) were histologically also diagnosed as showing features of dysplasia whereas 39 cases were diagnosed as some other lesion. The discrepancy between clinical and histological diagnosis of leukoplakia was 19.89%.

CONCLUSION: In 80.10% of leukoplakias the clinical diagnosis was confirmed by histopathologic examination. The discrepancy between the clinical and histopathologic diagnoses in 19.89% of cases suggests that all leukoplakia should be submitted to a histopathologic analysis as there are chances of missing out early oral squamous cell carcinoma or carcinoma *in situ*.

KEY WORDS: Leukoplakia, Lichen Planus, Precancerous lesions, Histopathology, Clinical examination.

INTRODUCTION:

A potentially malignant oral lesion (PMOL) has been defined as a morphologically altered tissue in which cancer is more likely to develop than in its apparently normal counterpart. Leukoplakia is the most common potentially malignant lesion of the oral mucosa 1.

In 1877, Schwimmer first used the term leukoplakia2. As defined by the World Health Organization, leukoplakia is "a white patch or plaque that cannot be characterized clinically or pathologically as any other disease3." Leukoplakia should be used only as a clinical term as it has no specific histopathological connotation and should never be used as a microscopic diagnosis. In the examination of the patient, leukoplakia is only a clinical diagnosis of exclusion4. Sometimes a white patch is initially believed to represent leukoplakia, but the biopsy reveals another specific diagnosis. In such cases, the lesion should no longer be categorized as a leukoplakia. It has been suggested that regardless of the grade of epithelial dysplasia, widespread multiple leukoplakias seen in oral cavity may have a higher potential for developing carcinoma5.

The aim of the study was to determine the correlation between clinical and histopathologic diagnosis of leukoplakia using a discrepancy index (DI) and also to evaluate the clinical and histological variations seen in leukoplakia in our department over time period of 8 years (2004-2012).

MATERIALS AND METHODS:

The study comprised of 196 cases selected from the archival records of Department of Oral Pathology and Microbiology of D.J. College of Dental Sciences and Research, Modinagar with the clinical diagnosis of leukoplakia between the years 2004 and 2012. Clinical history was evaluated for age, sex, site of lesion along with habits of patients.

Histopathologic examination of all lesions was performed. The tissues preserved in the archives had been fixed in 10% formalin, embedded in paraffin, cut, and stained with hematoxylin-eosin, following standard laboratory procedures. In the case of multiple biopsies, the severest histopathologic diagnosis was considered as the final diagnosis.

The histopathologic diagnosis was compared with clinical diagnosis. The histopathologic diagnosis was considered incompatible with the clinical diagnosis when the clinical diagnosis was not confirmed histologically. We calculated a discrepancy index (DI) as: (the number of incompatible diagnosis/the number of total sample) x 100 6.

The data thus collected was subjected to statistical analysis. SPSS software package version 17 was used for statistical analysis.

RESULTS:

- The mean (SD) age of the patients was 45.1years years, with a range of 13 to 75 years. The majority of patients (69.89%) were aged between 41and 75 years (Graph 1).
- Out of 196 cases which were clinically diagnosed as leukoplakia, 157 cases (80.10%) were histologically also diagnosed as showing features of dysplasia (Graph 2) whereas 39 cases were diagnosed as some other lesion (Table 1). The discrepancy between clinical and histological diagnosis of leukoplakia was 19.89%.
- Of 39 cases not conforming to clinical di-

agnosis of leukoplakia , lichen planus (n=13) was most common lesion which clinically resembled leukoplakia, followed by oral submucous fibrosis (OSMF) (n=10), leukodema (n=4), lichenoid reaction (n=4), squamous cell carcinoma (n=3), verrucous hyperplasia (n=2), frictional keratosis (n=2), carcinoma in situ (n=1) and adenocarcinoma (n=1) (Graph3).

- Evaluation of sites from which biopsies were taken, revealed that buccal mucosa (79.08%) was most common site followed by lip commissure (12.24%), labial mucosa (4.59%), alveolar ridge(1.02%), retromolar area (2.55%), tongue (0.5%) (Graph4).
- Majority of cases were recorded in males and only 2.55% cases were reported in females.
- Bidi smoking (82.8%) was most common etiological factor for leukoplakia seen in the study (Table2) whereas other etiological factors included cigarette smoking (4.4%), gutkha chewing (7%) and tobacco chewing (5.8%) (Graph5).

TABLE 1

Total number of cases with Clinical diagnosis of leukoplakia	Number of cases with histological diagnosis of Hyperkeratosis	Number of cases with histological diagnosis of dysplasia			Number of cases with histological diagnosis of other lesions(n=39)			
		Mild	Moderate	Severe	Lichen planus	OSMF	SCC	OTHER
196	38	77	36	6	12	10	3	14

TABLE 2: Showing relation of habit to grade of leukoplakia (n=157)

Habit	Hyperkeratosis	Mild dysplasia	Moderate dysplasia	Severe dysplasia
Bidi smoking (n=130)	33	65	29	3
Cigarette smoking (n=7)	1	3	2	1
Gutkha chewing (n=11)	3	4	3	1
Tobacco chewing (n=9)	1	5	2	1
Total	**38**	**77**	**36**	**6**

DISCUSSION:

Leukoplakia has evolved as a clinico-pathologic concept over many years. Nowadays, dentists recommend that an initial clinical diagnosis of leukoplakia should be considered provisional and confirmed histologically if the lesion persists after 2-4 weeks and when all other possible etiologic risk factors have been ruled out.

The range of clinically altered appearances of oral mucosa involved by leukoplakia is varied. Many lesions may be focal and smooth or homogeneous to "pumice-like", with an associated low risk of malignant transformation. Other lesions may be heterogeneous or non-homogeneous (speckled, erosive, ulcerative, verrucous), which may be interspersed with red or atrophic areas and are associated with a higher risk of dysplasia and malignant transformation7.

In the present study, the most common histological diagnosis of clinically diagnosed leukoplakia was of mild dysplasia with hyperkeratosis. The most frequent location of leukoplakia was buccal mucosa followed by lip commissural area which is similar to epidemiological study conducted by Mishra M et al8. The association between tobacco smoking and leukoplakia is confirmed in present study highlighting the role of bidi smoking in this region. In the study, males(97.45%) were mostly affected by leukoplakia which is similar to review done by Waldron et al9 which also showed male predominance.

Discrepancy index of 19.89% was calculated between clinical and histopathologic diagnosis of leukoplakia in the present study which is in accordance with study conducted by Marija Bokor-Bratic 10 who also found DI of 17.6% . However, Onofre et al6 found a DI of 24.4%, and the higher DI was detected among the homogeneous and non-homogeneous leukoplakias although they investigated a smaller number of cases with leukoplakia than the present study.

Most common lesion which clinically resembled leukoplakia in the study was lichen planus, followed by OSMF, therefore indicating the role of histopathological examination in diagnosing white lesions as they require different treatment modalities.

Four lesions which were clinically diagnosed as leukoplakia were diagnosed histologically as showing features of malignancy such as oral squamous cell carcinoma (n=3)and adenocarcinoma (n=1) indicating that clinical diagnosis of leukoplakia should always be accompanied by histological diagnosis to rule out carcinoma-in-situ and malignancy.

CONCLUSION:

In conclusion, the obtained results show that, in 80.10% of leukoplakias, the clinical diagnosis was confirmed by the histopathologic examination. However, the discrepancy between the clinical and histopathologic diagnoses in 19.89% of cases suggests that all cases clinically diagnosed as leukoplakia should be submitted to a histopathologic analysis as there are chances of missing out oral squamous cell carcinoma or carcinoma in situ.

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A successful oral cancer screening and dental camp was organized on 29-03-2014 by the Kothiwal Dental College and Research Centre, Moradabad in collaboration with International College of Dentists in therural area ofFatehpur situated 12 Kilometers away from Moradabad city. The team was headed by Principal of Kothiwal Dental College and Research Centre, Dr. Swatantra Agarwal (MDS).The camp successfully campaigned against the threatening consequences of oral cancer and the effect of tobacco on the general health and oral health. Apart from educating about the causes, spread and prevention of oral cancer and periodontal diseases, a screening using Toluidine Blue was also done in which a population of 240 people were screened and of which 26 patients showed positive results. Education about oral health and prevention of oral cancer was imparted by a group of renowned Doctors which included Dr. Pradeep Tangade (MDS), Head of the Department, Public Health Dentistry,Dr. NarendraNath Singh (MDS), Head of Department, Oral Pathology and Microbiology, Dr. RajendraGowdaPatil (MDS), Head of Department – Oral Medicine Diagnosis and Radiology, Dr. Amit Tirth (MDS) Reader – Department of Public Health Dentistry and a group of postgraduate students who represented various Departments of Kothiwal Dental College and Research Centre. Around 300 peoplewere educated 'face to face' with an 'Information Education and Communication' method about the cause and prevention of oral cancer. Education about causes of oral cancer and its early signs was given. Events like this shall be very helpful in educating the general population about the ill effects of cancer and reducing the burden of disease to the nation.

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