Correlation of clinical and histopathological diagnoses of oral mucosal lesions at tertiary care centre: a retrospective study

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ABSTRACT

Background: The objective of the study was to study the correlation between clinical and histopathological diagnoses of oral lesions.

Methods: Data of all patients attending the department of Dermatology KEM Hospital, Mumbai with oral mucosal lesions who underwent biopsy for histopathological examination in a duration of one year was included in this retrospective study. Their clinical and histopathological diagnoses were correlated and data was analysed.

Results: A data of total of 164 patients was included in study. Out of the clinically diagnosed, histopathological correlation was found to be 66.66% for oral leucoplakia, 81.25% for lichen planus, 72% for squamous cell carcinoma, 88% for pemphigus vulgaris and 75% for submucosal fibrosis. Overall correlation found was 75.60%.

Conclusions: Histopathological examination of oral mucosal lesion is very important to arrive at the accurate diagnosis and to plan definitive treatment. Histopathological examination of oral mucosal lesions must be done routinely because wide variety of conditions present with similar morphologic features and can be the initial signs of many skin disorders.

Keywords: Oral mucosal lesions, Clinical histopathological correlation, Dermatology

INTRODUCTION

Oral mucosal lesions (OML) are a serious global problem as these affect the quality of life of people.1 Prevalence of OML in out-patient department in western Maharashtra was approximately 39.1%.2 Dermatological diseases not only involve the skin and its appendages but may also involve the oral cavity. Hence examination of oral cavity is important for a dermatologist. The lesions of oral cavity in dermatological disorders may precede before skin manifestation or may be the sole manifestation of these disorders or may occur simultaneously with skin lesions.3 OML may present with variety of symptoms like burning sensation, soreness, intolerance to spicy food, difficulty in swallowing, ulceration, decreased mouth opening which affects day to day activities.

Various groups of dermatological diseases associated with OML are pre-malignant lesions like leukoplakia, erythroplakia, oral submucosal fibrosis (SMF), actinic cheilitis; malignant oral squamous cell carcinoma (SCC); vesiculobullous disorders; lichen planus and other lichenoid disorders; infections: bacterial, viral and fungal; collagen vascular diseases; vasculitis like behcets disease; erythema multiforme; recurrent aphthous stomatitis; miscellaneous.

Diagnosing OML becomes difficult because of the wide variety of conditions that may present with similar looking lesions.
Thus, forming appropriate differentials and histopathology is necessary in order to reach the definite diagnosis.\textsuperscript{4}

**Rationale**

OML may be pre-malignant. Therefore, secondary prevention in the form of early detection and timely treatment is the key. Many times, OML are the initial sign of the skin diseases. Therefore, it is necessary to diagnose at the earliest and prevent further progression of the disease. Despite all above, OML are often neglected as they go unnoticed or take time to become symptomatic.

Due to similar morphological appearance of the lesions, histopathology is the gold standard. And in this study, we will find out the correlation between clinical and histopathological diagnoses.

There is wide discrepancy on clinic-histopathological correlation of different types of OML, ranging from 17% to 50%.\textsuperscript{5,6} Recently a study showed prevalence of 39% of OML in OPD patients in western Maharashtra, which is very high as compare to other areas.

So, a study was conducted in our tertiary center of Mumbai to study the correlation of clinical and histopathological diagnosis of different OML.

**Aim**

Aim of the study was to correlation between clinical and histopathological diagnoses.

**METHODS**

This is a retrospective study of all patients with OML who underwent biopsy over a period of 1 year from January 2018 to December 2018 in KEM hospital, Mumbai.

**Inclusion criteria**

All biopsied cases of OML that have presented to department of dermatology of KEM hospital, Mumbai.

**Exclusion criteria**

Patients with OML that did not consent for biopsy and incomplete data available at the time of analysis.

Records of biopsy conducted in the Department of Dermatology of KEM Hospital over one year were reviewed. All cases of OML with detail clinical and histopathological data were selected. Histopathology slides of all archived tissues were retrieved for review.

164 patients were included in the study.

**Statistical analysis**

All responses were tabulated by the investigator using Microsoft-Excel Software. Graphical representation was made wherever necessary. Concordance index and discrepancy index were calculated as follows.\textsuperscript{7,8}

\[
\text{Concordance Index (CI) of a specific OML (%) = } \frac{\text{Number of patients clinically diagnosed that correlated with HPE}}{\text{Number of patients clinically diagnosed as that specific OML}} \times 100
\]

\[
\text{Discrepancy Index (DI) of a specific OML (%) = } \frac{\text{Number of patients clinically diagnosed that did not correlate with HPE}}{\text{Number of patients clinically diagnosed as that specific OML}} \times 100
\]

**RESULTS**

Out of the total 164 patients, 104 (63.41\%) were males and 60 (36.58\%) were females. Maximum number of patients were in the age group of 35 to 50 years.

**Table 1: Clinicohistopathological correlation of different OML.**

| Condition            | Clinical diagnosis | Percentage | No of cases correlated with HPE diagnosis | Concordance index | No of cases not correlated with HPE | Discrepancy index |
|----------------------|-------------------|------------|-----------------------------------------|-------------------|-----------------------------------|------------------|
| Lichen planus        | 64                | 39.02      | 52                                      | 81.25             | 12                                | 18.75            |
| Leucoplakia          | 33                | 20.12      | 22                                      | 66.66             | 11                                | 33.33            |
| Leukokeratosis       | 5                 | 03.4       | 3                                       | 60                | 02                                | 40               |
| SMF                  | 12                | 07.31      | 9                                       | 75                | 03                                | 25               |
| Pemphigus vulgaris   | 25                | 15.24      | 22                                      | 88                | 03                                | 12               |
| Mucocele             | 3                 | 01.82      | 3                                       | 100               | 0                                 | 0                |
| Warts                | 2                 | 01.21      | 0                                       | 0                 | 2                                 | 100              |
| Melanocytic nevus    | 2                 | 01.21      | 1                                       | 50                | 1                                 | 50               |
| LE                   | 2                 | 01.21      | 1                                       | 50                | 1                                 | 50               |
| Lichenoid reaction   | 5                 | 03.04      | 3                                       | 60                | 2                                 | 40               |
| SCC                  | 11                | 06.70      | 8                                       | 72.72             | 3                                 | 27.27            |
| **Total**            | 164               | -          | 124                                     | 75.60             | 40                                | 24.39            |
Table 2: Histopathological diagnosis of non-correlating cases.

| Clinical diagnosis       | Total non correlating cases | Leukoplakia | LP | Leukokeratosis | Lichenoid reaction | PV | SCC |
|--------------------------|-----------------------------|-------------|----|---------------|-------------------|----|-----|
| Lichen planus            | 12                          | 07          | -  | 02            | 02                | 01 | -   |
| Leukoplakia              | 11                          | -           | 06 | 02            | -                 | -  | 03  |
| Leukokeratosis           | 02                          | 02          | -  | 01            | -                 | -  | -   |
| SMF                      | 03                          | -           | -  | 03            | -                 | -  | -   |
| Pemphigus vulgaris       | 03                          | -           | -  | 02            | -                 | -  | -   |
| Warts                    | 02                          | 02          | -  | -             | -                 | -  | -   |
| Melanocytic nevus        | 01                          | -           | -  | 01            | -                 | -  | -   |
| LE                       | 01                          | -           | -  | -             | -                 | -  | -   |
| Lichenoid reaction       | 02                          | -           | 02 | -             | -                 | -  | -   |
| SCC                      | 03                          | 02          | 01 | -             | -                 | -  | -   |
| Total                    | 40                          | -           | -  | -             | -                 | -  | -   |

Table 3: Sex distribution of histopathologically proven cases.

| S. no. | Clinical diagnoses | HPE correlated | Male | Female |
|--------|--------------------|----------------|------|--------|
|        |                    |                | No. of cases | Percentage | No. of cases | Percentage |
| 1      | Lichen planus      | 52             | 20   | 38.4   | 32   | 61.5 |
| 2      | Leukoplakia        | 22             | 12   | 54.5   | 10   | 45.4 |
| 3      | Leukokeratosis     | 3              | 2    | 66.6   | 1    | 33.3 |
| 4      | SMF                | 9              | 5    | 55.5   | 4    | 44.4 |
| 5      | Pemphigus vulgaris | 22             | 9    | 40.9   | 13   | 59.1 |
| 6      | Mucocele           | 3              | 2    | 66.6   | 1    | 33.3 |
| 7      | Melanocytic nevus  | 1              | 0    | 0      | 1    | 100  |
| 8      | LE                 | 1              | 0    | 0      | 1    | 100  |
| 9      | Lichenoid reaction | 3              | 2    | 66.6   | 1    | 33.3 |
| 10     | SCC                | 8              | 6    | 75     | 2    | 25   |

Clinically, 64 cases (39.02%) were lichen planus, 33 cases (20.12%) were leukoplakia, 5 (3.04%) leukokeratosis, 12 cases (7.31%) were SMF, 25 cases (15.24%) were pemphigus vulgaris, 3 (1.8%) were mucocele, 2 (1.21%) cases each of mucosal warts, melanocytic nevus and lupus erythematosus, 5 (3.04%) cases of lichenoid reaction and 11 (6.7%) cases of squamous cell carcinoma.

Out of clinically diagnosed, histopathologically correlated were 52 cases (81.25%) lichen planus, 22 cases (66.66%) were leukoplakia, 3 cases (60%) leukokeratosis, 9 cases (75%) were SMF, 22 cases (88%) were pemphigus vulgaris, 3 (100) were mucocele, 1 (50%) cases each of melanocytic nevus and lupus erythematosus, 3 (60%) cases of lichenoid reaction and 8 (72.72%) cases of squamous cell carcinoma.

The clinical and histopathological diagnoses were in correlation for 124 cases out of 162 cases. The overall percentage of correlation was 75.60%.

12 cases with clinical diagnosis of lichen planus were diagnosed as 7 cases of leukoplakia, 2 cases of leukokeratosis, 2 cases of lichenoid reaction and 1 case of pemphigus vulgaris. 11 cases with clinical diagnosis of leukoplakia were diagnosed as 6 cases of lichen planus, 2 cases of leukokeratosis, 3 cases of SCC. 2 cases with clinical diagnosis of leukokeratosis were diagnosed as leukeplakia. 3 cases with clinical diagnosis of SMF were diagnosed as 1 cases of lichen planus and 2 cases of SCC. 3 cases of pemphigus vulgaris were diagnosed as lichen planus. 3 cases of SCC were diagnosed as 2 cases of leukoplakia and 1 case of lichen planus.

**DISCUSSION**

Lichen planus was the most common condition seen in our study, which is in contrast to study done by Abidullah et al. Histopathological correlation was found to be 81.25%. In this study, the commonest site of oral lichen planus was buccal mucosa.

Leukoplakia was the second common condition in our study. Majority of the patients were male. Maximum were gutkha chewers followed by smoking with buccal mucosa being most common site. There is wide discrepancy in histopathological correlation in different study.
A report on the Clinicopathologic relations of 788 gingival retrospective study including only biopsied cases. The overall percentage of clinical diagnoses correlating with histopathological diagnosis was 75.60% with discrepancy index of 24.39%, hence histopathology is very important to arrive at the accurate diagnosis and to plan definitive treatment. Histopathological examination of OML must be done routinely because wide variety of conditions present with similar morphologic features and can be the initial signs of many skin disorders. At times histopathological examination is nonconclusive but clinical suspicion is very strong, so repeat biopsy is advisable. Also, few of the OML can be potentially malignant in nature, in such cases multiple site biopsy is better.

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Table 4: Comparison with similar studies with respect to lichen planus.

| Lichen planus       | CI (%) | Males (%) | Females (%) |
|---------------------|--------|-----------|-------------|
| Abidullah et al⁹    | 73     | 60        | 40          |
| Bukhari et al⁹      | 43     | 43.3      | 56.6        |
| Mravak-Stipetić et al¹⁰ | 68.47  | -         | -           |
| Our Study           | 81.25  | 38.4      | 61.5        |

Table 5: Comparison with similar studies with respect to leukoplakia.

| Leukoplakia         | CI (%) |
|---------------------|--------|
| Mohd abidullah et al⁹ | 92     |
| Bukhari et al⁹      | 40     |
| Mutalik et al¹¹      | 76.52  |
| Bokor-Bratić et al²  | 92.3   |
| Our study           | 66.66  |

Table 6: Comparison with similar studies with respect to pemphigus vulgaris.

| Pemphigus vulgaris | CI (%) | Males (%) | Females (%) |
|--------------------|--------|-----------|-------------|
| Bukhari et al⁹     | 80     | 40        | 60          |
| Shamin et al¹²     | 100    | 40        | 60          |
| Our study          | 88     | 40.9      | 59.1        |

Pemphigus vulgaris was the 3rd most common entity in our study. The reason for lesser correlation could be most of the patients biopsied were without skin lesion and intact blisters are difficult to find in oral cavity.

SMF more common in males with 75% histopathological correlation. The discrepancy in the clinical and histopathological diagnosis could be attributed to other lesions presenting with same complains, that is difficulty in opening mouth. Most of the patient were beetle nut chewer. Squamous cell carcinoma with 72% correlation with males more commonly affected than females. Majority of them were addicted to tobacco chewing or smoking or both. To our knowledge, there are no similar studies with respect to oral SMF and oral SCC. The most common site for all the above conditions was buccal mucosa in our study.

This was retrospective study including only biopsied patient, many of them who did not consent for the biopsy or lost data were not accountable. Also, this study has no statistically significant data with respect to all other OML. Therefore, more detailed prospective randomised studies with a larger sample sizes are recommended to further establish the clinic-histopathological correlation in OML.
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