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Analysing the Sex Predilection of Oral Lichen Planus - A Hospital based Retrospective Study

Research Article

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Abstract

Oral lichen planus is a chronic inflammatory disease affecting the mucous membrane. It has a characteristic papular plaque like appearance. It may be caused due to a dental restoration, having a prolonged oral infection, presence of any autoimmune disorder or sustaining an injury to the mouth. And it also has systemic association with hypertension, diabetes, thyroid dysfunction, GVHD. There a very few studies done on the sex predilection of oral lichen planus. This study will be of epidemiological significance in the south Indian population. The current study was done to analyze the sex predilection of oral lichen planus. This study was done under a university setting with the data collected from June 2019 to April 2020. The sample size was 59 patients. The data was collected from the patient records. Data was verified and tabulated and later appropriate statistics was performed. Females showed a higher prevalence with59% and males 41%. Erosive lichen planus 42% was the most common clinical variant followed by reticular type 37%. On correlating gender with the clinical variants, lichen planus was found to be the most common clinical variant among the females. The chi square analysis between the gender and variant of oral lichen planus was insignificant (P value 0.109.)Within the limitations of the study we conclude that oral lichen planus is more prevalent in females than males. Erosive lichen planus is the most common variant followed by the reticular variant.

Keywords: Oral Lichen Planus; Potentially Malignant Disease; Reticular; Erosive; Female.

Introduction

Oral lichen planus (OLP) is seen as a common inflammatory mucocutaneous disease with an undefined etiology [50, 14]. The reported sex predilection is seen to be 2:1 [10] female to male ratio and the age of onset is generally seen to be in the fourth and sixth decades of life [32]. Clinically there are six variants of oral lichen planus and they are reticular, papular, plaque, erosive, atrophic and bullous types [35]. Histopathologically it shows degeneration of the basal layer and a dense inflammatory lymphohistiocytic infiltrate and there is also an increase in the intraepithelial lymphocytes [5, 12]. If the above three criteria are met, the lesion is considered an actual typical form of lichen planus from a histological view; and in a condition where any on these histological criteria are not met, they are taken to be lesions that are histologically compatible with lichen planus [8]. The differential diagnosis of lichen planus and lichenoid reaction will be observed in relation to the clinical and histological aspects previously mentioned. so all of the clinical and histological rules must be in the acceptance in the case of lichen planus [27]. In contrast, lichenoid reaction patients present with typical lichen planus clinically but not histologically, and vice versa, Only patients who satisfy both clinical and histological criteria are considered as lichen planus [42].

The Typical histopathological observations from the lesional biopsy shows hyper orthokeratosis or hyperparakeratosis, with acanthosis, which is indicated by the increased thickness of the granular layer in combination with intercellular edema [19, 42]. Rete pegs reveal "saw tooth" in appearance. Mononuclear infiltration of the T-cells and histiocytes form an actual band-like appearance subepithelial. The intraepithelial T-cells and degenerating keratinocytes together make the content of the colloid bodies, the homogeneous globules that are eosinophilic are called the civette, cytoid or the hyaline bodies [46]. The prominent feature of Max-Joseph space that appears from the degeneration of basal keratinocytes and supporting units being disrupted. They are

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known as histologic clefts. The colloid bodies consist of apoptotic keratinocytes revealing DNA mutation in these cells. The basement membrane when observed under an electron microscope reveals duplications, branches, and disruptions [11]. The etiopathogenesis of Lichen planus reveals that it is usually a T-cell mediated disease autoimmune in nature where the CD8+ T-cells initiate the self-destruction of oral epithelial cells at the basal layer [26].

Keratinocyte antigen appearance and antigen revealing are involved in the disease process. It may be a heat shock protein [65]. Then followed by the migration of T-cells migrate towards the basal keratinocytes during the chemokine mediated action. The antigen directly binds to the newly migrated CD8+ cells by the major histocompatibility complex-1 (MHC) on keratinocyte [9]. Langerhans cells are high in lesions of lichen planus and there is increased MHC-II expression. The CD4+ cells and interleukin-12 activate CD8+ T-cells that are involved in the self-destruction of keratinocytes through FasL and tumor necrosis factor-alpha (TNF-alpha) [20].There are also other studies which shows some correlation and association of oral lichen planus with genital and cutaneous lichen planus [46, 36].

One of the reasons why this lesion has to be treated with utmost care is due to the frequent malignant transformation of this lesion to oral squamous cell carcinoma with a rate of malignant transformation of 0.4-5.3%. Erosive variant was found to be the most common variant to undergo malignant transformation (Kämmerer, no date) and this characteristic feature of the lesion leads the WHO to add it to the potentially malignant disorders under high risk category. The reticular type is the most widely recognized variant and presents as papules and plaques with interweaving white keratotic lines (Wickham striae) with erythematous borders. The common location of the striae are respectively on the buccal mucosa, mucobuccal fold, gingiva, and less normally on the tongue, palate, and lips. The reticular variant has been more regularly seen in men contrasted with women and is typically asymptomatic. Erosive, atrophic or bullous types cause burning sensation and pain.

The demographic and clinical qualities of OLP have been very much depicted in several studies from developed nations, Though the demographic studies from developing nations was scant. Furthermore, there are no universally accepted specific clinical and histopathological diagnostic rules to date [35]. Biopsy or medical procedures were not acted on by all patients in a few past examinations, while different other conditions, for example, leukoplakia, erythroplakia, and discoid lupus erythematosus can show a similar clinical appearance [47]. A significant issue in the criteria of OLP neoplastic change may be because of differences in the initial case identification, time of development, and data on introduction to known oral cancer-causing agents [28].

Furthermore some of the earlier studies of the demographic location and assessment of the clinical variants lacked the gender correlation. Previously our team has a rich experience in working on various research projects across multiple disciplines [38, 37, 49, 33, 16, 7, 42, 53, 40, 3, 68, 1, 29, 62, 66]. Now the growing trend in this area motivated us to pursue this project. So this study aims ay analyzing the sex predilection of oral lichen planus and then associate it to the various clinical variants.

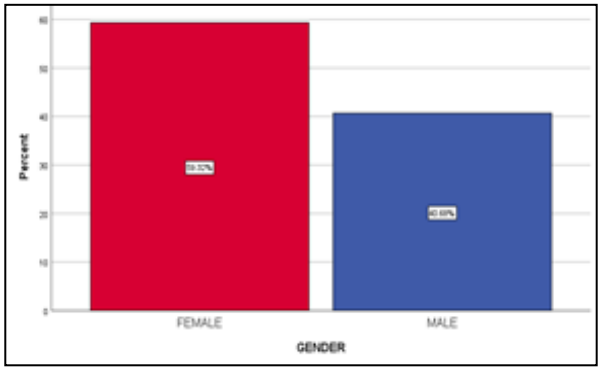
Materials And Methods

The study is done under a university setting. The similar characteristics of the study is that it is done with the available data and under similar ethnicity of the population. The disadvantage of the study can be that the geographic location is similar. The study was approved by the scientific review board of the institution. Two reviewers were involved in the study. The data was taken from patients who had checked in the clinic from June 2019 to April 2020. Total number of sample sizes includes 59 patients. Data collection was after reviewing 86,000 patient records between June 2019 and March 2020. 59 patients were selected and data was collected. The case sheets were verified with the help of photographs. To minimize the sampling bias, we included all the data available and there was no sorting of data done. Internal validity of the study was non-probability inclusion. The external validity of the study includes homogenization and replication of experimentation. The data obtained was tabulated and verified by one external reviewer. The data was then imported to SPSS and the variables were verified. Chi-square test was done to correlate gender with variants of oral lichen planus.

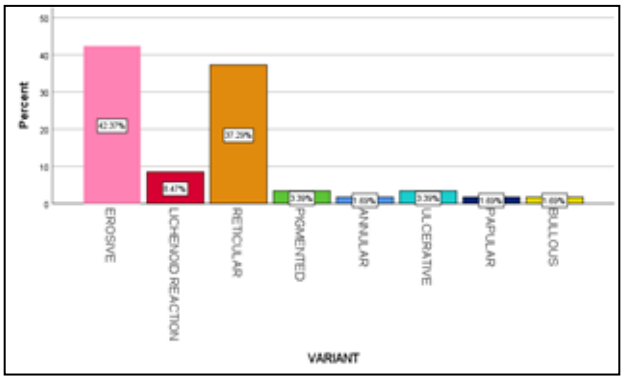
Results

The data collected from the patient management software was tabulated in SPSS and the descriptive statistics were obtained. Out of total 59 patients, Females showed a higher prevalence of 59% and males 41% as shown graph 1. The clinical variant which

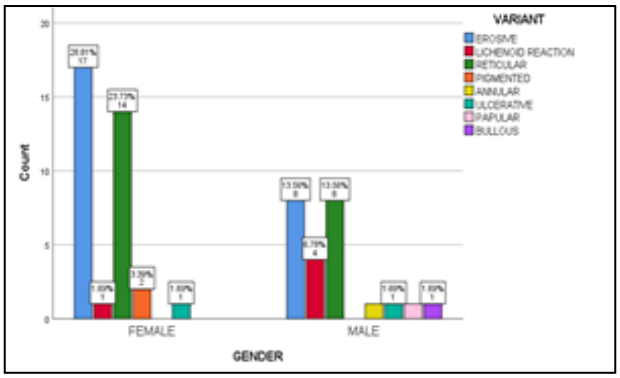
Graph 1- Bar graph representing the frequency of gender distribution of the participants. where x axis denotes the gender and y axis denotes the frequency of the population. Red indicates female population(58.32%) and blue indicates male(40.65%).



Graph 2- Bar graph shows the percentage of different clinical variants of oral lichen planus. X axis denotes the different clinical variants and Y axis denotes the percentage of cases. 42.37% of the cases were Erosive lichen planus, followed by reticular type 37.29%, pigmented type 3.39%, annular type 1.69%, ulcerative 3.39%, papular1.69% and bullous 1.69%.



Graph 3- Bar graph representing the association between gender and clinical variants of oral lichen planus. x axis denotes the gender distribution and y axis denotes the percentage of cases. Blue denotes erosive variant, green denotes reticular variant, orange denotes pigmented variant, yellow indicates annular variant, turquoise indicates ulcerative variant, pink indicates papular variant, purple indicates bullous variant. Majority of the females show Erosive lichen planus(blue) as the predominant variant (28%) followed by the reticular variant(green) which constitutes (24%) than males. However, it is not significant statistically.chi square value: 3.663,P=0.190 (P>0.05).



showed predominance was erosive lichen planus 42% followed by reticular type 37%,pigmented type 3.4%,annular type 1.7%, ulcerative 3.4%, papular1.7%,bulous 1.7%. The erosive variant showed an increased prevalence of 43% in both males and females as depicted in graph 2. The chi square analysis between the gender cand clinical variants was not statistically significant P=0.109 (P>0.05). The correlation revealed that erosive lichen planus was the most common variant seen among the females (graph 3).

Discussion

Our study shows a higher prevalence of oral lichen planus in females than in males. Olivera et al. study among the brazilian patients also concluded with higher prevalence seen among females similar to varghese et al. [2, 61]. The reason could be because the incidence of oral lichen planus is higher in perimenopausal women than in the general population and increases significantly with increase in the severity of depression. oral lichen planus in perimenopausal women can be initiated due to lowered levels of estrogen and progesterone having a direct or indirect effect causing depression that can trigger lichen planus. Hormonal fluctuations during menopause leads to endocrine changes causing changes in sex steroid hormone production [54, 21, 64, 18, 52]. It is well known that estrogen and progesterone have a direct influence on the immune system and causes much disorder like f various sclerosis, systemic lupus erythematosus, and rheumatoid joint pain. Lichen planus, an immune system issue, seen often in perimenopausal women, may likewise get influenced by sex steroid hormones; yet no immediate relationship has been set up yet.

Studies in the south indian population also resolves higher prevalence in females [67, 22, 24, 58, 15, 55]. These studies are in acceptance with the result of our present study, this may be due to the similar sample size range between the studies. Munde AD et al. [31, 61] study shows higher lichen planus prevalence among males. This is in contradiction with our study.

The more prevalent clinical variant observed in our study was the Erosive variant 42%. Miranda et al. [28] study also showed a higher prevalence of the erosive type of lichen planus Erosive lichen planus is a destructive autoimmune disease of unknown cause involving T lymphocytes.

Occasionally, it is drug-induced and will resolve on withdrawal of the responsible drug. Partial response to antifungal agents and antibiotics indicates an abnormal response to local microflora may be involved, especially Candida albicans, Cytokine expression profiling has found increased levels of the interleukins, IL-17 and IL-23 (Website, no date; [22, 17, 59, 57]). This is in consensus with our study. There are also other studies which show an increased

prevalence of the reticular variant lichen planus. Females showed a higher predominance in both erosive and reticular variants. This is in acceptance with the study done by Giuseppina [4]. Kriti et al. [4, 47] study shows male production in contradiction with our study. When the clinical variants were associated with gender, no statistical significance was found, however erosive oral lichen planus was found to be more common in females than in males.

Few limitations of the study are that the study is single centered, with less sample size, similar ethnicity and geographical location. To improve the significance of the study should be done extensively with a large amount of sample size. So that the results are reliable.

Our institution is passionate about high quality evidence based research and has excelled in various fields [39, 40, 44, 13, 44, 56, 63, 6, 30, 45, 48]. We hope this study adds to this rich legacy.

Conclusion

Within the limitations of the study we can conclude that oral lichen planus is more prevalent in females than males, indicating a female sex predilection. Erosive lichen planus was the most common variant observed among females. Erosive lichen planus has been classified under the high risk category for malignant transformation and hence these patients need to be followed up in order to observe any signs of change. Further extensive research is needed to come to a more comprehensive understanding of the pathogenesis underlying the female predilection of this lesion.

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