Research Article

A retrospective analysis to assess correlation between habit association and site involved, treatment provided, and its outcome in oral leukoplakia patients

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Abstract

Background: Oral leukoplakia, being a potentially malignant disorder, has been noted to be associated with tobacco usage in various forms and was treated by both surgical and nonsurgical modalities, but its treatment outcome is not the same in every case.

Objective: This study aims to determine various sites involved in association with different types of habits, their frequency, duration, and also outcome of the treatment provided for oral leukoplakia patients pertaining to our geographical area.

Materials and Methods: The data were retrieved from the archives of the department of oral medicine and radiology and it include information about patients—demographics, associated habits, site of the lesion, histopathological report, and the treatment provided.

Result: Of the 151 clinically and histopathologically diagnosed oral leukoplakia cases recorded within 6 months of follow-up, the most commonly involved site for leukoplakia was observed to be buccal mucosa with its peak prevalence in the fifth and sixth decades, and those involving tongue and floor of the mouth showed higher risk for malignant transformation. Treatment was provided according to the site and size of the lesion, with diffused large ones treated with systemic antioxidants alone, well-circumscribed small ones treated surgically aided with antioxidants, and for those with super-added fungal infection, topical antifungal medication is provided along with systemic antioxidants, which had showed satisfactory results.

Conclusion: Early identification and prompt treatment along with patient self-determination to quit the habit are necessary to decrease the prevalence of these lesions and diminish their chances of transformation into malignancy, which will recuperate the quality of life of an individual.

KEY WORDS: Oral leukoplakia, tobacco, potentially malignant disorders

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Introduction

Leukoplakia is defined as "a white plaque of questionable risk having excluded (other) known diseases or disorders that carry no increased risk for cancer."[1,2] It is the best-known potentially malignant disorder of the oral mucosa with its prevalence ranging from 0.7% to 24.8%.[4,5] Its malignant transformation potential was around 0.13% to 17.5% comparing both nondysplastic and dysplastic cases of oral leukoplakia

according to various habits practiced by the people confined to that particular geographical area.[3–6]

Etiology for these lesions is mostly thought to be smoking and their role in development of leukoplakia is a very well-established fact ever since it was first recognized by Sir James Paget in 1837 and has been supported by many with experimental evidences. The particular type and form of tobacco used does have a correlation between the developments of various oral mucosal lesions.[7–12]

Various treatment modalities documented according to earlier literature can be categorized as surgical and nonsurgical methods. Surgical modalities include surgical excision using scalpel, laser surgery, cryosurgery; and nonsurgical methods include retinoids, vitamin A, C, and E; and for those cases with super-added candidal infection, topical antifungal applications had shown to be effective.[13] Although different treatments were provided, the response to the treatment varies from individual to individual. Thus, if we could assess the ability of the treatments provided for patients in our geographical area for curing these potentially malignant disorders, then we can probably arrest their progression to malignancy. This retrospective study was undertaken to determine various sites involved in association with the type of tobacco habit, their frequency, and duration, and also the prognosis of treatment provided in patients with oral leukoplakia of our geographical area.

Materials and Methods

The data were retrieved from the archives of the department of oral medicine and radiology, Vishnu Dental College, Bhimavaram. It includes information about patient's demographics, type of habits associated, site of the lesion involved, histopathological evaluation report, and treatment provided with follow-up. Study subjects with inadequate demographic data, with no histopathological evaluation report, and those with improper follow-up were excluded from the study. In addition, we observed two subjects with idiopathic leukoplakia and few oral leukoplakia cases with no dysplastic features but they did not turn up for follow-up; hence, excluded from the study. From a total sample of 270 cases after exclusion, data of 151 patients were collected, evaluated, and analyzed statistically to assess the most common age group, gender predilection, demographic presentation, habit and its clinical manifestation, duration of habit, frequency with that of severity of dysplasia, and prognosis of treatments provided using SPSS version 17. Chi-square test and Kruskal–Wallis analysis of variance was applied and p value <0.05 was considered significant.

Result

Figure 1 shows that in different age groups with respective sites involved, the most common occurrence was within 51–60 years (27.8%) followed by 41–50 years (19.9%). The site most commonly involved was observed to be buccal mucosa (65.5%) (35%—unilateral, 30.5%—bilateral), followed by palate (15.2%), combination of sites (6.6%), and commissures (5.3%).

Figure 2 shows that in the sex and the site involved, although male subjects (81.5%) lie in the main stay, this study noted that a few female subjects (18.5%) in our geographical area were associated with leukoplakia. The reason being there is more of male predilection toward use of tobacco. The most common site being involved among male subjects was buccal mucosa (54.3%) followed by palate (11.9%) and among female subjects was buccal mucosa (11.3%) followed by palate (3.3%).

Figure 3 shows that most of the subjects with oral leukoplakia belong to rural population (75.5%) when compared with urban population (24.5%).

Figure 4 shows the comparison between different types of habits and their respective sites, and it was observed that the most common site for cigarette (19.9%) and bidi (3.9%) smokers, Gutka (2%), pan (8.6%), khaini (1.3%) chewers was unilateral buccal mucosa; for chutta smokers (8.6%) and those with alcohol habit supplemented with tobacco (4.6%) was bilateral buccal mucosa; and among reverse smokers was the palate (11.9%).

Figure 5 shows the duration of each type of habit with severity of dysplasia, and there was increased severity of dysplasia with increased duration of habit, which was mostly observed to be with cigarette smoking followed by chutta and reverse smoking.

Figure 6 shows the frequency of each type of habit with severity of dysplasia, which showed an increase in severity of dysplasia with an increase in frequency of habit. Most common habit was reported to be cigarette smoking.

Figure 7 shows prognosis of each treatment provided and good prognosis was observed to be 100% with surgical treatment when supplemented with systemic antioxidants, 62.5% with antioxidants along with topical antifungal medication, and 57.9% with antioxidants alone. Fair prognosis observed was 33% with antioxidants alone, 2% with antioxidants along with topical antifungal medication; poor prognosis was observed in 4% of cases given with antioxidants alone.

Discussion

Oral leukoplakia lesion usually being asymptomatic can go unnoticed by the patient and may transform into malignancy. Owing to this fact, it has been considered under potentially malignant disorders. In this study conducted in people pertaining to this geographical area, data of 151 cases with leukoplakia were considered following exclusion criteria and they were observed to have various habits that can be broadly categorized as smoking (includes conventional and reverse smoking) and smokeless form. These lesions were mostly observed in elderly people especially among men, but surprisingly a good number of women particularly with reverse smoking habit were being associated with oral leukoplakia.

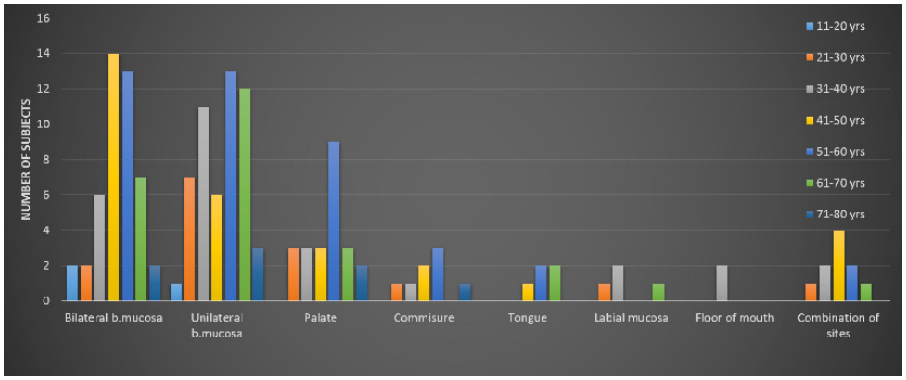

Figure 1: Comparison between different age groups and sites involved.

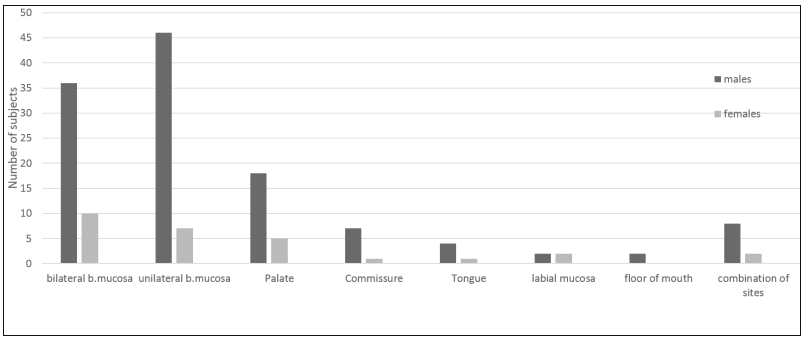

Figure 2: Comparison of sex and most common site involved.

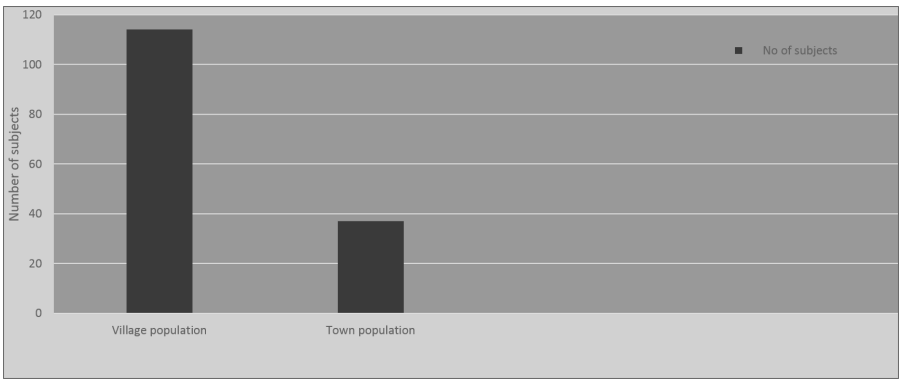

Figure 3: Demographic distribution.

Most of the patients belonged to rural population and the common site was observed to be buccal mucosa (unilateral) followed by palate. On assessing the role of duration and frequency of each type of habit with severity of dysplasia, it was noted to be directly proportional, with the most common habit being cigarette smoking. Treatment provided includes both nonsurgical and surgical modalities in which surgical modality showed best response in smaller lesions, when further supplemented with systemic antioxidants rather than using systemic antioxidants alone, which was preferred for treating larger diffuse lesions.

Most of the patients observed in this study were within the age range of 51–60 years followed by 41–50 years and thus depicts that with the advancing age there is an altered

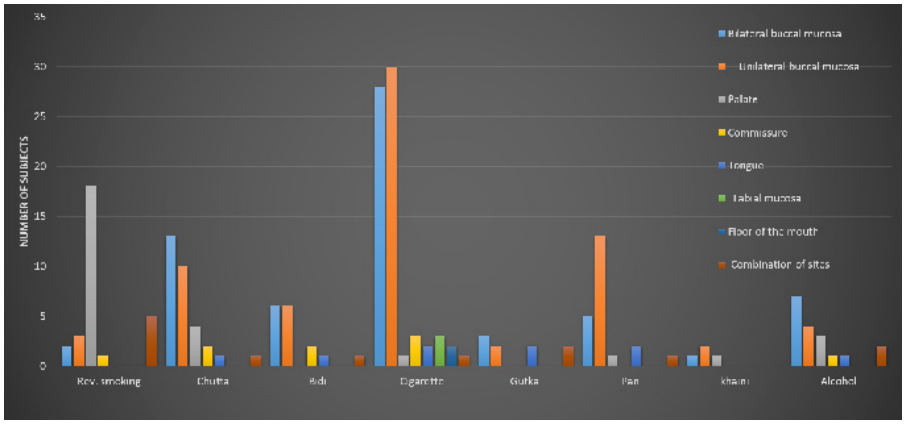

Figure 4: Comparison of type of habit with site involved.

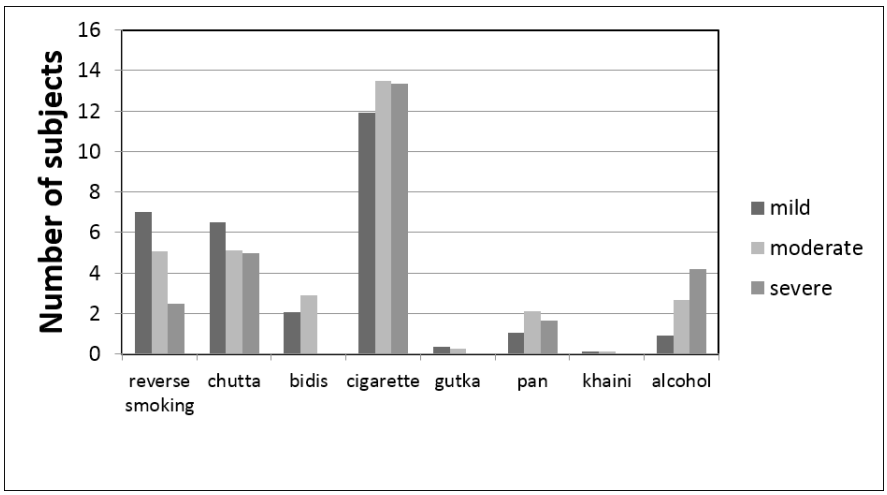

Figure 5: Comparison of mean duration of habit with severity of dysplasia.

immune status that had probably made them more susceptible to such oral changes.[4,5] It was most commonly observed to be occurring among men, similar to many studies conducted in India and worldwide. The women with respect to this study were associated mostly with reverse smoking habit similar to study conducted by Gomez et al.[16] and had remarkably ranged up to 18.5%. The site most commonly involved among men was observed to be the buccal mucosa similar to the earlier studies conducted by Ravindra et al. and More et al.[5,8,18] followed by palate and commissures, whereas in women it was found to buccal mucosa, tailed by palate, and combination of sites, which was not in accordance with the earlier study conducted by Lima et al., which had showed tongue or floor of the mouth as the most common site of occurrence among women.[7] Demographic data reveal that most of the subjects belong to rural population and a very few belong to urban population, which goes in harmony with the study by More et al., which may be owing to lack of knowledge about ill effects of tobacco and their usage especially in raw forms that had further made them more liable to oral leukoplakia.[5] The most common involved site appreciated was unilateral buccal mucosa in those using tobacco in the form of cigarette, bidi, gutka, pan, and khaini; palate among reverse smokers (using chutta placing fire end inside the mouth); and on bilateral buccal mucosa among chutta smokers and in those with alcohol consumption in addition to tobacco habit.[7,14] Sites with more chances for malignant transformation were observed to be tongue and floor of the mouth similar to earlier studies by Jaber et al. and Lima et al.,[7,17] may be pertaining to their thin epithelium, which causes increased permeability

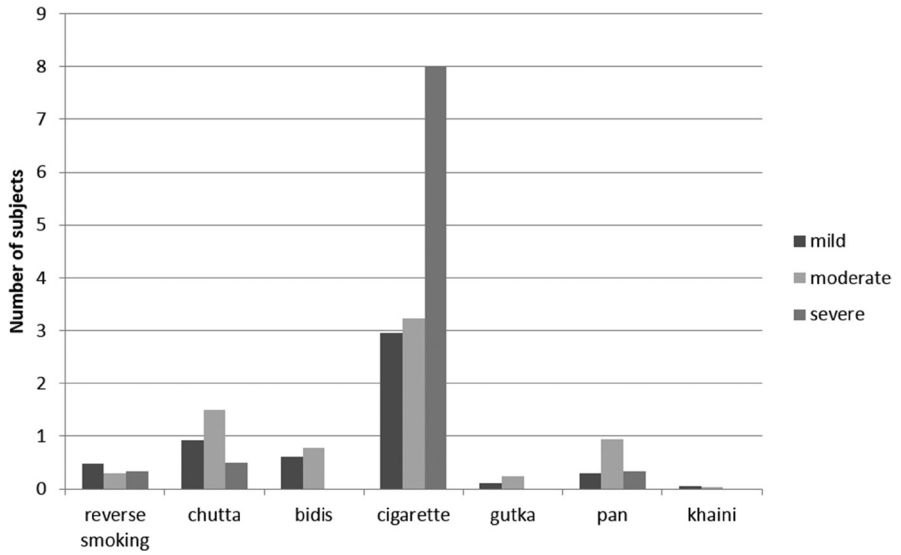

Figure 6: Comparison of frequency of habit with severity of dysplasia.

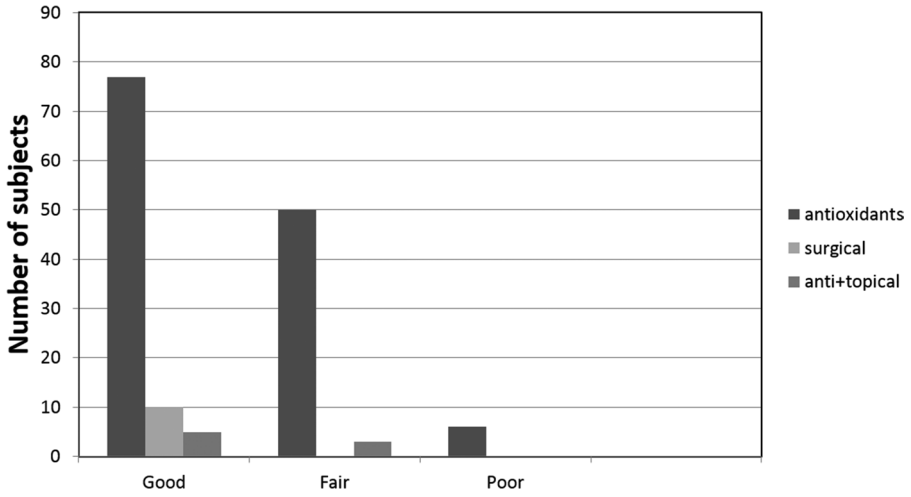

Figure 7: Comparison of prognosis of the lesion with treatment provided.

to toxic ingredients, the rich blood supply that promotes easy and fast spread, and also the intimate contact with saliva containing harmful constituents of tobacco, which renders them to be more susceptible for such lethal oral changes.[7,17]

As per the earlier literature, those with moderate and severe dysplasia have more chances of malignant transformation compared with that of milder variants.[8,10] So the influence of duration and frequency of various habits was evaluated and it was noted that there was an increased severity of dysplasia with increased duration of habits (especially with cigarette smoking, followed by reverse and chutta smoking) and also with increased frequency of habits (such as cigarette smoking, followed by chutta smoking, and pan chewers).[15,18] This may be owing to the increased association of oral mucosal sites with these habits, which will instigate genetic alterations within them and might eventually result in more grievous outcome.

Treatment of oral leukoplakia was broadly categorized as nonsurgical and surgical modalities. In nonsurgical treatment, systemic antioxidants were administered for those cases with diffused wide lesion having ill-defined margins, for subjects not willing for interventional surgical therapy, and for those lesions with mild-to-severe dysplasia. In cases with super-added candidal infection, systemic antioxidants along with topical antifungal application were prescribed. In surgical modality, excision of lesion using scalpel blade was performed in cases with well-circumscribed small lesions having well-defined margins[8] and mild dysplasia. Although surgical modality was recommended in moderate-to-severe dysplasia cases, it was shown to have chances of recurrence ranging from 10% to 35% as per the literature.[17] So to prevent chances of recurrence, only cases with mild dysplasia were opted and they were further supplemented with systemic antioxidants.

Prognosis following treatment was determined as good, fair, and poor. Good prognosis included cases with complete remission of lesions within 6 months of follow-up without any recurrence. Fair prognosis included cases with partial remission of lesion and also in those lesions that showed initial remission and recurrence within 6 months of follow-up. Poor prognosis included cases with lesions, which did not show any response and continued to persist in spite of treatment provided. Good prognosis was observed in 57.9% cases with systemic antioxidants alone, 62.5% in those with systemic antioxidants along with topical antifungal application, and 100% in surgical treatment supplemented with systemic antioxidants. Fair prognosis was observed to be 33% with systemic antioxidants alone and 2% with systemic antioxidants along with topical antifungal application. Poor prognosis was observed to be 4% with systemic antioxidants alone. Reason for this being, the cases selected for systemic antioxidants alone were diffused widespread with mild-to-severe dysplasia. Better results obtained with surgical aspect may be owing to selection of small well-circumscribed lesions having mild dysplasia cases, which were further supplemented with systemic antioxidants.

This study showed increased frequency of oral leukoplakia in women with habit association, especially with reverse smoking, which may be pertaining to the fact that immigration of the migrants (agriculture field workers) from the coastal areas such as Srikakulam to West Godavari district.[19] Surgical option had yielded better results in small and mild dysplastic cases followed by systemic antioxidant administration, provided the subject had complete cessation of the habit of using tobacco. As this study was performed in 151 subjects, this fact can be generalized if randomized controlled trials with larger sample size and longer follow-up periods are performed so as to rate the actual prevalence of oral leukoplakia and the efficacy of treatments provided for people pertaining to this geographical area.

This study, thus, infers that the tobacco habit in various forms render our oral mucosal tissues susceptible to potentially malignant condition such as oral leukoplakia. Hence, early identification and prompt treatment along with patient self-determination to quit the habit are necessary to decrease the prevalence of these lesions and diminish their chances of transformation into malignancy, which will recuperate the quality of life of an individual.

Conclusion

To summarize, this study had inferred that various sites have been involved with different types of habits, and increased severity of dysplasia was observed with increased duration and frequency of the habit associated with. Prognosis was seen to be better in patients with cessation of the habit in spite of various treatments provided. This infers the pivotal role of habit cessation on treatment outcome, so being oral physicians if we succeed to educate and motivate the patient, we can drop the incidence and also progression of these potentially malignant diseases to a malignant form. So let us be a part in eradicating these habits and in building up a thought in people to know about this habit and say no to it.

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