Quid-Induced Lichenoid Reactions: A Prevalence Study

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INTRODUCTION

Oral mucosal changes associated with the use of areca nut, tobacco and lime in different permutations and combinations have been described in literature. These range from innocuous areas of whitish, yellowish or reddish brown wrinkled encrustations more commonly described as ‘chewers mucosa’, potentially malignant disorders (such as leukoplakia and oral submucous fibrosis) to frank malignancy. The term oral lichenoid reaction (OLR) or oral lichenoid lesion has been applied to a group of mucosal disorders mimicking oral lichen planus (OLP), albeit with a different natural history in interventional studies. The distinction between OLR and OLP is best made using history, clinical examination and histopathological studies. Characteristically, OLR is unilateral and the offending cause can be readily identified. Histopathological examination in OLR may reveal a deeper penetration of inflammatory cells, perivascular cuffing and presence of plasma cells in addition to other changes seen in OLP.1-3

These lesions invariably present a direct cause and effect relationship with different etiological factors, such as restorative materials, drugs, graft versus host disease, and occasionally, with the use of quid. A quid may be defined as a substance or mixture of substances, placed in the mouth or chewed and remaining in contact with the mucosa, usually containing one or both of the two basic ingredients, tobacco or areca nut, in raw or any manufactured or processed form.4 The term betel-quinid lichenoid lesion has been proposed for an entity found exclusively in betel tobacco chewers.4,5 This lesion resembles OLP and is characterized by fine, white, wavy, parallel lines that do not overlap or criss-cross, are nonelevated, and in some instances radiate from a central erythematous area.5 Removal of the offending cause results in resolution of the lesion.6,7

The aim of this study was to determine the prevalence of lichenoid reactions/lesions in quid users (with and without additional combustible tobacco use) in a rural population of Haryana. The two most popular forms of quid use in the study population were ‘Gutta’ and ‘khaini’ (gutta is a chewable tobacco quid containing areca nut and catechu, khaini is a filtered tobacco quid kept in the oral cavity by the user.)

MATERIALS AND METHODS

The study was carried out in the form of a house-to-house field survey, using the WHO form 5394, 1 ORH (12/79)–20000 (1980),8 for identification of mucosal disorders. An attempt was made to include all subjects using tobacco, areca nut and lime alone or in combination(s). After an initial screening of 5,017 individuals, 98 quid users from amongst 878 subjects using tobacco in any form were identified and included in the study.

All field examinations were performed under both natural and artificial light and standard examination procedure covering all oral mucosa sequentially. Only clinically overt white lesions were identified after exclusion of all other lesions for the purpose of this study. A qualified oral medicine specialist (first author) subsequently re-examined the shortlisted subjects in an institutional setting and identified those which met the clinical criteria of diagnosis of oral lichen planus/lichenoid reaction.1,2

A biopsy from the lesion was recommended for all the subjects with clinical diagnosis of OLP/OLR. A written informed consent was taken from the subjects who volunteered, and an incisional biopsy was performed from the affected site. Diagnosis of lichenoid reaction was based on history/clinical examination and histopathology. Clinical photographs of the lesions and photomicrographs of all biopsies were recorded (Figs 1 to 3). Statistical analysis was performed using the Pearson chi-square test to determine the association, if any, between quid use and occurrence of the lesion.

RESULTS

Figure 4 shows prevalence of tobacco habit in the 5,017 population screened. Table 1A shows the distribution of tobacco use habit among the 878 study subjects. As is evident, the habit of smoking was the most prevalent form of tobacco use (91.91%), the use of smokeless tobacco was next (11.16%), whilst a combination of both was less prevalent (3.07%). Table 1B shows the distribution of quid use habit among the 98 quid users. 92 were gutka chewers (singly or in combination), 6 were khaini users (singly or in combination) and two were exclusive chewers of paan.

Keywords: Oral lichen planus, Oral lichenoid reaction, Quid, Gutka, Khaini, Catechu (Kattha).

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A total of six subjects with white lesions meeting the clinical criteria or clinical and histopathological criteria of lichenoid reaction were identified. None of these cases had bilateral occurrence. All these subjects (6 out of 98 quid users, i.e. 6.12%) were users of gutka with frequency of tobacco use ranging from 2 to 12 pouches per day and duration from 6 months to 15 years (Table 2). The brand of gutka/khaini used and their contents (as listed on the pouch) are shown in Table 3.

Statistical analysis (Table 4) revealed a total prevalence of 0.683% (6 out of 878) for lichenoid reactions among all tobacco users. This rose to 5.94% (6 out of 101) among all quid users and 15% (6 out of 40) among gutka users. The Pearson chi-square test yielded a high degree of correlation between the occurrence of the lesion and gutka habit ($p < 0.005$). To confirm the cause and effect hypothesis, the individuals were motivated to quit the habit. The four individuals who quit the habit showed rapid resolution of the lesion.

**DISCUSSION**

Oral lichenoid reactions caused by restorative materials, drugs and graft versus host disease have been frequently reported in the literature from time to time.9,10 A corrugated white lesion mimicking OLP (the betel quid lichenoid lesion) but without criss-crossing has also been occasionally reported in betel quid users. However, oral lichenoid reactions have previously not been reported in gutka users. In the present study, a nonscrapable reticular white lesion mimicking OLP was observed in 15% of gutka users. Clinically, this lesion was unlike betel quid lichenoid lesions described earlier by Daftary DK (1980)5 and Trivedy CR (2002)7 and smoking had no influence on the frequency of its occurrence, the common denominators being use of tobacco, areca nut, catechu and lime. Further, none of the khaini users in this study was found to develop this peculiar lesion, leading one to
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Table 2: Frequency and duration of gutka consumption in 6 study subjects with lichenoid reaction

| Study subjects with lesion | Brand/Type of quid use | Frequency (pouches per day)/ duration (years) | Site involved |
|----------------------------|------------------------|---------------------------------------------|---------------|
| A                          | Shikhar (gutka)        | 12/5                                        | Right buccal mucosa |
| B                          | Shikhar (gutka)        | 10/15                                       | Left buccal mucosa |
| C                          | Dilbag (gutka)         | 4/2                                         | Left lateral border of the tongue and left buccal mucosa |
| D                          | Shikhar (gutka)        | 5/2                                         | Left buccal mucosa |
| E                          | Dilbag (gutka)         | 2/1                                         | Left buccal mucosa |
| F                          | Shikhar (gutka)        | 2/0.5                                       | Left buccal mucosa |

hypothesize that areca nut and catechu (or Kattha–tannin) found in gutka, either singly or in combination, are critical to its development. The duration/frequency of gutka use did not seem to play a major role in the causation of the lesion, demonstrating the allergic nature of the reaction.

The results of this study indicate that quid (or more specifically gutka) associated lichenoid reactions merit consideration as an independent subgroup in this diverse group of lesions. The impact of this lesion on the oral and general health of the individual will need further investigation. Since, the use of gutka is very popular in several parts of the country, documentation and follow-up of these lesions are warranted.

CONCLUSION

This study describes the important finding of oral lichenoid reactions in a statistically significant number of gutka users in a rural population of Haryana. These lesions were clinically different from those described in betel-tobacco chewers in earlier studies. The clinician should be aware of their occurrence and close monitoring/follow-up will be required to demonstrate their clinical behaviour including malignant potential, if any.

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