2.3. PALATAL CHANGES AMONG REVERSE SMOKERS

Introduction

The term "palatal changes" describes the reaction of the palatal mucosa to reverse *chutta* smoking (see Appendix I). This form of smoking evokes diverse alterations in the palatal mucosa which can be categorized into several interrelated components such as: palatal keratosis, excrescences, patches, red areas, ulcerations, and pigmentation changes. They may occur independently or coexist. One component may change into another over time, indicating a single pathogenic mechanism. Therefore, although red areas, patches, and excrescences resemble erythroplakia, leukoplakia, and smoker's Palate, respectively, they are not classified in these terms. Palatal changes occur in up to 46% of the reverse smokers, the peak occurrence being in the 55-64 year age group.

Classification

Palatal keratosis: Palatal keratosis denotes the diffuse whitening of the palatal mucosa. It may be mild, moderate (Fig. 1)., or serve in intensity. Palatal keratosis may occur independently or coexist with other components. Overall, it forms up to 55% of the palatal components.

Fig. 1. Moderate palatal Keratosis in a reverse *chutta* smoker. Note the diffused involvement of the palatal.

Excrescences: Excrescences comprise 1-3 mm elevated area, often with central red dots marking the orifices of the palatal mucosa glands (Fig. 2). Some 46% of the palatal changes consist of excrescences. Excrescences represent the initial palatal reaction and they are generally transient. The milder form of excrescence resemble the smoker's palatal seen in conventional smokers.

Fig. 2. Excrescence in a reverse smoker. Note the pigmentation.

Reverse *dhumti* smoker's lesion: *Dhumti* is a kind of cigar used in Goa. *Dhumti* is smoked is reverse by a small section of people (See Appendix I). This form of smoking produces a palatal changes induced by reverse *chutta* smoking (Fig. 3).

Patches: Patches are well defined, elevated plaques which could qualify for the clinical term leukoplakia. Palatal patches show characteristics histologic features that differ from the features of leukoplakia. Patches can be small or large (Fig. 4). These account up to 12% of the palatal components.

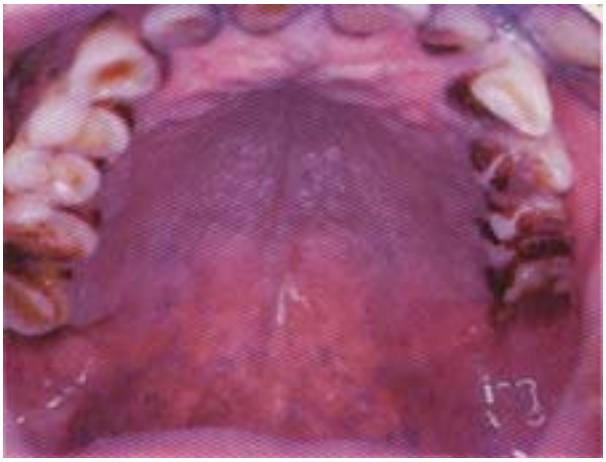

Fig. 3. Mild excrescences and Keratosis in the plate of a reverse *dhumti* smoker. Note the reticular pigmentation on the soft palate.

Red areas: Red areas are well-defined reddening of the palatal mucosa (Fig. 5). Clinically, they are indistinguishable from erythroplakias. Red areas form only 2% of the palatal components. Nevertheless, they are the most serious, showing epithelial dysplasia in 52% of the case. Long-term studies demonstrate a high rate of malignant transformation.

Ulcerated area: ulcerated areas are characterized by crater-like ulcerations with

Fig. 4. A large patch with an ulceration in the posterior part of the palate. Note the patchy pigmentation.

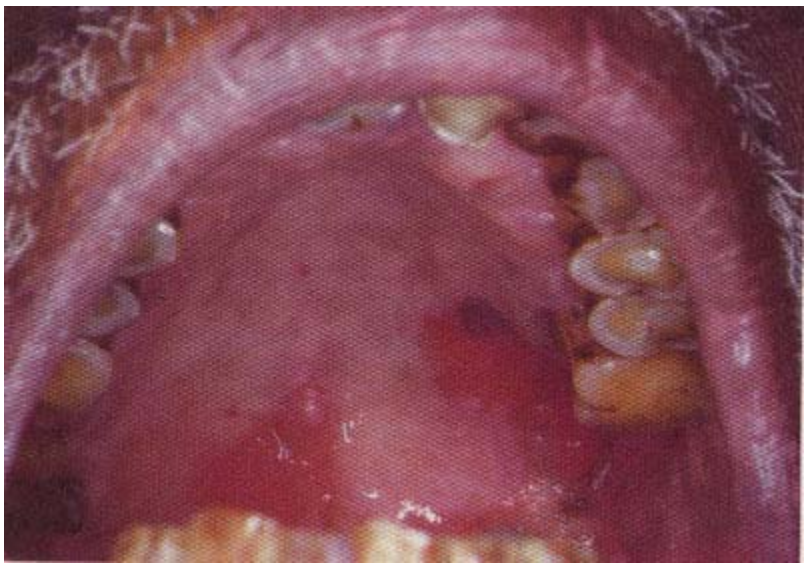

Fig. 5. Bright-red velvety areas on the posterior part of the hand and the soft palate. Note the pigmentation in the red area. A biopsy from the red area posteriorty showed severe epithelial dysplasia.

deposits of fibrin often surrounded by keratinization (Fig. 6). Ulceration from only 2% of the palatal components. They represent a "burn" type reaction of the palatal mucosa from the intense heat of the lighted end of *chutta*. A similar lesion was observed in an individual from Emakulam District who ate "piping-hot" rice but never smoked in the reverse fashion (Fig. 7 & 8).

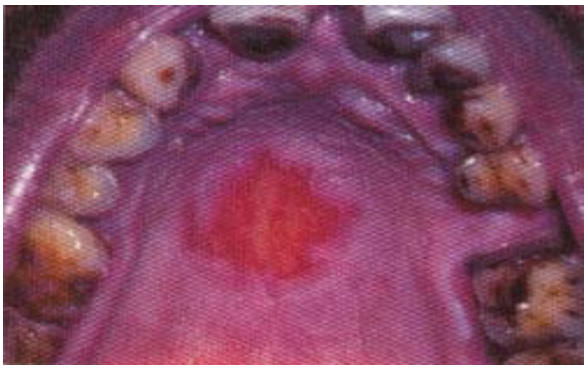

Fig. 7. Redness on the palate caused by eating "piping hot" rice. This picture was taken two days after the patient noticed the lesion. He chewed betel quid and smoked *bidis.*

Fig. 6. An ulceration with peripheral keratinization in a reverse smoker.

Fig. 8. Eight days following the appearance of the lesion shown in Fig. 7., it regressed considerably and was partially replaced by keratinization.

Hyperpigmentation: Pigmentation changes that include hyperpigmentation and loss of pigmentation, occur in almost all reserves *chutta* smokers. Hyperpigmentation manifests in various forms, such as the spotted, linear, patchy, diffuse, and reticular types (Fig. 9). Palatal pigmentation in reverse smokers is perhaps a protective reaction to the heat and smoke; it is not known to predispose to a melanoma or any other pathology. Microscopically, hyperpigmented area show increased melanin deposits in the basal cell layer and the lamina propria.

Nonpigmented areas: Nonpigmented areas indicate areas of paltal mucosa which are clinically devoid of melanin pigmentation (Fig. 10). Nonpigmentation areas result following the regression of red areas. Loss of pigmentation may render the palatal

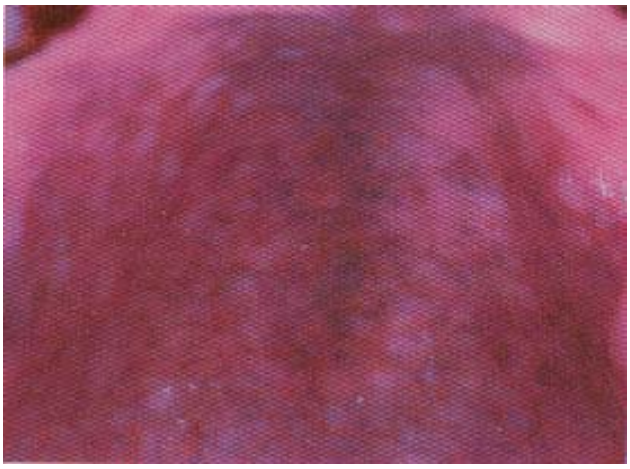

Fig. 9. Reticular pigmentation in a reverse smoker. Note areas devoid of pigmentation.

Fig. 10. Nonpigmenated areas and patchy pigmentation in a reverse smoker. Also seen are mild keratosis and a red area in the center of the palate.

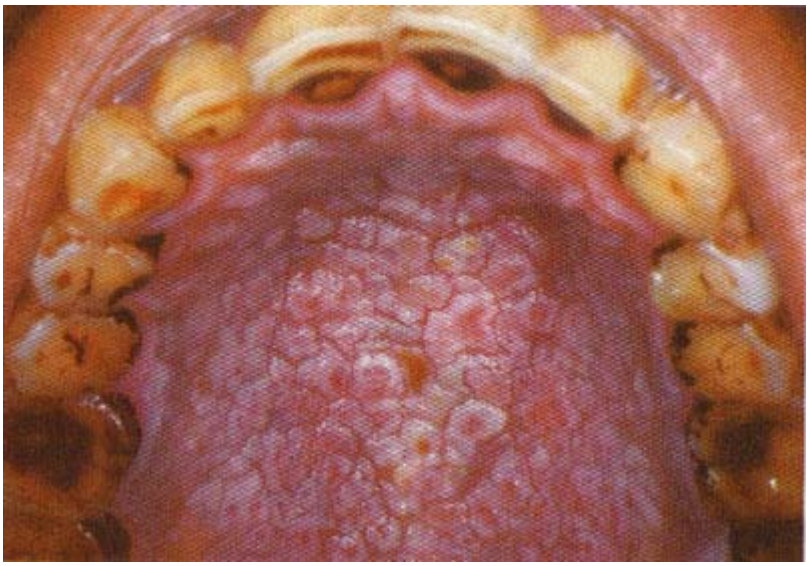

Fig. 11. Multimorphic palatal lesion comprising excrescences, and patches with fissuring.

mucosa more vulnerable to the action of carcinogens in tobacco. Microscopically nonpigmented areas are marked by minimal or no melanin deposits in the basal cell layer. Epithelial dysplasia was observed in 19% of nonpigmented areas.

Clinical aspects

Multimorphic lesion: As mentioned above, various palatal components may coexist (Fig. 11,12 & 13), and they also occur in association with non-palatal lesions.

Keratosis and excrescences coexist more frequently, followed by a combination of excrescences and patches (Fig. 12.); and red areas and patches (Fig. 13.) Furthermore, palatal changes may occur with non-palatal lesions as well.

Coexistent palatal changes with nonpalatal lesions: About 5% of the palatal changes (Fig. 14). Are associated with non- palatal lesions, the most common of which

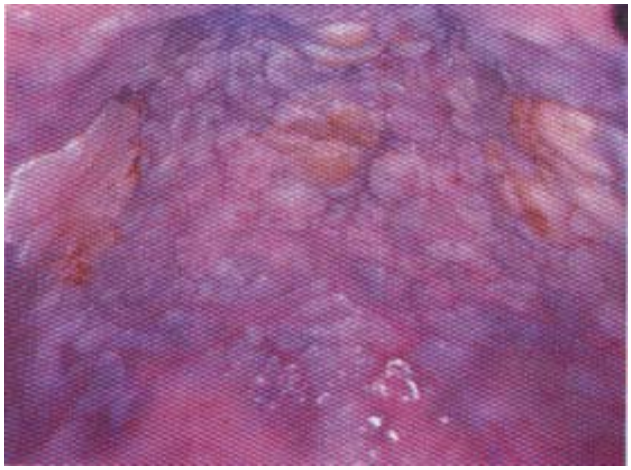

Fig. 12. An intense palatal change consisting of keratosis, patches, and excrescences.

Fig. 13. Red areas, patches and keratosis involving the entire palate.

Fig. 14. An extensive palatal patch smoker who also had a leukoplakia on the dorsum of the tongue.

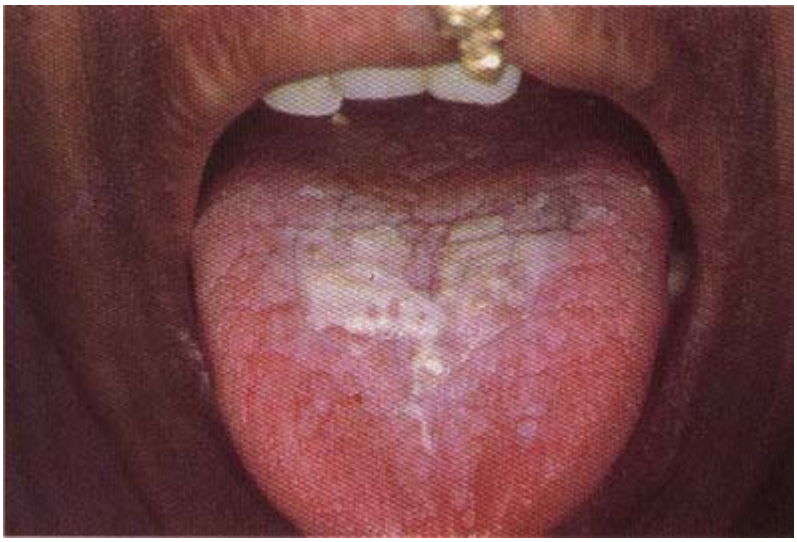

Fig. 15. A leukoplakia on the dorsum of the tongue form the patient whose palatal patch was shown in Fig. 14. This leukoplakia progressed to cancer.

is leukoplakia (Fig. 15). Interestingly, 25% leukoplakias occur on the drsum of the tongue which is otherwise an uncommon location.

Natural history

Palatal changes remain stationary, regress, recur, or progress to cancer. Some 75% of the palatal changes remain stationary, 14% regress spontaneously, about 11% show variable characteristics, i.e. they regress, recur, and regress again. The most important consequence from a clinical point of view is that a small proportion (0.3%) progress to cancer.

Malignant transformation: Malignant transformation of palatal changes was responsible for 91% of oral cancers that developed in Srikakulam District of Andhra Pradesh during a 6-year observation period.

Fig. 16. A palatal patch in a reverse smoker.

Fig. 17. Two years later, a small nonindurated ulceration developed in the center of the patch shown in Fig. 16 and a granular area on the right side.

Fig. 18. Two years following the clceration, there was an infiltrative lesion which was confirmed microscopically squamous cell carcinoma.

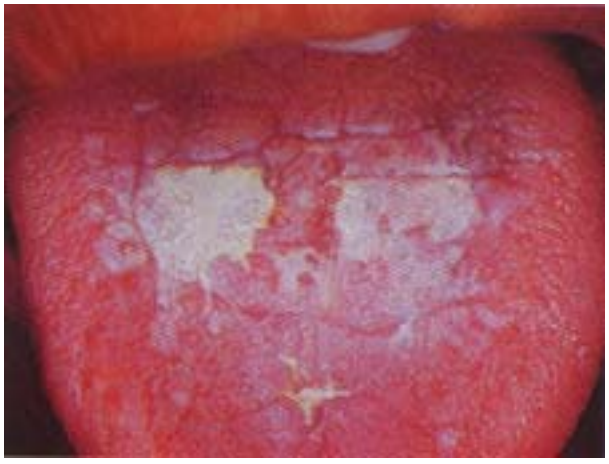

Fig. 19. Leukoplakia on the dorsum of the tongue in a reverse smoker who also has a palatal patch (Fig. 14).

Palatal cancer developed from patches (Fig. 16, 17 & 18) and most often from red areas (see section 2.4). Palatal patches exhibited a malignant transformation rate of 12 per 1000 and red areas, 118 per 1000. This finding shows that the palatal red areas is the most dangerous component of palatal changes.

As mentioned above, the dorsum of the tongue is an uncommon location for leuloplakia and it is also rare to see malignant transformation in that site in conventional smokers. Among reverse smokers, however, leukoplakias do occur commonly and some of them even progress to oral cancer in this location (Fig. 19 & 20). This indicates that extends to other locations that are in close proximity to the lighted end of *chutta.*

Fig. 20. Ten years later there was an infiltrative growth from leukoplakia which was confirmed microscopically as a squamous cell carcinoma.

Conclusions

All palatal patches and red areas must be biopsied. If they show moderate or severe epithelial dysplasia, they must be treated accordingly. All patients must be educated to discontinue their tobacco use as it is known that discontinuation will lead to higher regression rates of palatal changes.