

Mucoscopy of Oral Leukoplakia: A Case Series

Abstract

The application of a dermoscope in the study of mucosal pathologies is increasingly gaining importance. An easy, noninvasive characterization of pathological changes serves as an aid to dermatologists, sometimes even obviating the need for histopathology. The aim of the present case series was to describe the mucoscopic features of histologically proven oral leukoplakia. Five consecutive cases of histologically proven oral leukoplakia were included for mucoscopy. Polarized mucoscopy shows white-to-pink structureless areas (100%), intervening pink lines (80%), and surface corrugations (60%). The periphery of the lesions showed white clods (100%) and dotted vessels with irregular arrangement (60%).

Keywords: Dermatoscopy, dermoscopy, leukoplakia, mucoscopy, oral mucosa

Introduction

The current applications of a dermoscope have moved beyond skin, hair and nail.^[1] Dermatologists have realized the importance of using dermoscope in the study of oral pathologies.^[2-4] Mucoscopy is the application of technique of dermoscopy to the mucosal pathologies.^[1] Mucoscopy can be utilized for the oral and genital mucosa. Oral leukoplakia is a pre-malignant condition and early detection may be facilitated by mucoscopy.^[5] In the present series, we have evaluated the typical mucoscopic features among patients with leukoplakia on tongue.

Case Series

Five consenting patients with histologically proven leukoplakia visiting the dermatology out-patient department from January 2019 to December 2019 were included in this series (CARE guidelines were followed while reporting these cases). The demographic characteristics, history, and examination were recorded on a predesigned proforma. Patients with history of treatment for leukoplakia in the past 3 months and those not consenting were excluded from the analysis. Mucoscopy was performed with a universal serial bus (USB) dermoscope [Dinolite AM 4115ZT; 20-220x; Polarizing] using the

technique of performing mucoscopy suggested by Jakhar *et al.*^[1] Mucoscopy was performed by the same author in all patients. Mucoscopic images were taken at a magnification of 20x at polarizing mode. Mucoscopy was performed at the lesions and at periphery of the lesions.

The mean age of the patients was 41.4 years with male: female ratio of 4:1. The mean disease duration was 1.8 years. Leukoplakia patch was located on the tongue in all patients [Figure 1]. Clinically, four patients had homogenous leukoplakia, while one had nonhomogenous leukoplakia. Three patients had involvement of the right side of tongue, while two had involvement of the left side. The size of the leukoplakia patch ranged from 1 × 2 cm to 3 × 5 cm. Polarized mucoscopy showed white-to-pink structureless areas (with variable shapes and translucency) in 100% of the patients [Figure 2a-c]. Other features included intervening pink lines (80%) and surface corrugations (60%) [Figure 3a]. The periphery of the lesions showed white clods (100%) and dotted vessels with irregular arrangement (60%) [Figure 3b]. Histopathology was performed in all patients and was consistent with the diagnosis of leukoplakia. Histopathological examination showed stratified squamous epithelium with lower most epithelial layer showing loss of polarity and nuclear hyperchromasia (mild or low-grade dysplasia was noted in three

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patients). Rest of the patients didn't show any evidence of dysplasia. In addition, the epidermis showed acanthosis, hyperkeratosis, and parakeratosis. Subepithelium showed fibrocollagenous and muscular tissue, lympho-plasmocytic infiltration, congested and dilated blood vessels [Figure 4]. None of the patients showed evidence of carcinoma *in situ* or invasive carcinoma.

Discussion

Leukoplakia is a precancerous condition and is defined as 'white plaque of questionable risk having excluded (other) known diseases or disorders that carry no increased risk for cancer'.^[6] Leukoplakia is clinically distinguished as homogenous or nonhomogenous.^[6] Homogenous leukoplakia

is characterized by flat and uniform white plaque, with or without presence of fissuring. It usually has at least one area which is well-demarcated.^[6,7] Nonhomogenous leukoplakia, on the other hand, has speckled/erythroplakic appearance and nodular/verrucous areas.^[8] The most important challenge is to rule out the malignant potential of leukoplakia. Diagnosis is based on history, clinical examination, and histopathology.^[7-9] Histopathology remains the gold standard.^[9] In general, leukoplakia on histopathology may show hyperkeratosis, parakeratosis, acanthosis, epithelial atrophy, inflammatory infiltrate, and evidence of dysplasia, carcinoma in-situ or invasive carcinoma.^[7-9] Leukoplakia without dysplasia is also known as keratosis of unknown significance (KUS).^[9]

In a study on normal healthy lingual dorsum, mucoscopy showed filiform and fungiform papillae.^[10] The length of filiform papillae ranges from 0.3-0.5 mm (categorized as short, medium, and long type). The authors also documented the presence of biofilm on tongue in these healthy individuals. Mucosal vessels on the tongue were not described in healthy individuals.

The application of mucoscopy in the diagnosis of leukoplakia is sparsely reported.^[5] Mucoscopy of leukoplakia is reported as white structureless areas of irregular shapes and translucency, whitish-pink veil at the periphery, whitish-pink clods, and thick lines.^[5] White-to-pink structureless areas were noted in all of our patients. Histologically these areas correspond to hyperkeratosis and acanthosis. The pink hue results from the nonhyperkeratotic suprapapillary areas.^[5] The red dots seen at the periphery results due to congested and dilated vessels, and lymphocytic infiltrate. The surface corrugations on mucoscopy was seen in all three patients showing mild dysplasia. We believe that presence of mucoscopic surface corrugations may be an indication of underlying dysplasia.^[5] As there was only one patient with nonhomogenous leukoplakia, we could not do a comparison between homogenous and nonhomogenous leukoplakia. In this patient, nonhomogenous leukoplakia showed features similar to homogenous leukoplakia.



Figure 1: Leukoplakia of the tongue

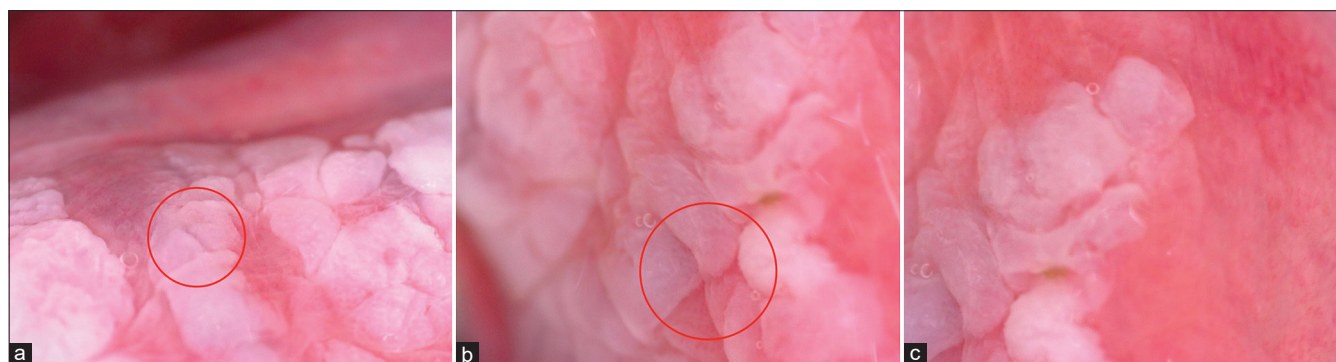


Figure 2: (a) Mucoscopy showing white-to-pink-colored structureless areas with corrugations (red circle) and intervening pink lines. [Dinolite AM413ZT; 20X; Polarizing]. (b) Mucoscopy showing white to pink colored structureless areas with corrugations (red circle). [Dinolite AM413ZT; 20X; Polarising]. (c) Mucoscopy showing white-to-pink color structureless areas with corrugations and normal surrounding lingual mucosa. [Dinolite AM413ZT; 20X; Polarising]

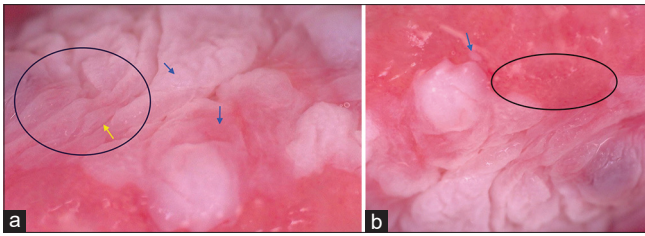


Figure 3: (a) Mucoscopy showing white-to-pink-colored structureless areas (blue arrow), surface corrugations (black circle), and pink lines (yellow arrow). [Dinolite AM413ZT; 20X; Polarising]. (b) Mucoscopy of the margin of the patch showing white clods (blue arrow) and dotted vessels (black oval area). [Dinolite AM413ZT; 20X; Polarizing]

The differential diagnoses of leukoplakia on tongue includes oral lichen planus, oral hairy leukoplakia, and candidiasis. Hairy leukoplakia is caused by Epstein-Barr virus (EBV) infection and is seen in immunocompromised individuals. It is characterized by painless white plaques, typically on the lateral border of the tongue, and often bilateral in distribution. We could not find any report on mucoscopy of hairy leukoplakia to the best of our literature search. Candidiasis on tongue can present as white patch which can easily scrapped off or as black hairy tongue. Mucoscopy of black hairy tongue secondary to candida albicans shows brownish hair like elongation of filiform papillae along with white lingual papillae.^[2] Mucoscopy of oral lichen planus shows white reticular lines/Wickham striae (compact orthokeratosis above zones of wedge-shaped hypergranulosis) over a pink or violaceous background.^[2] Lesion over the tongue shows white reticular (or crossing) lines, erythematous background, and curved vessels. It has also been reported that patients of darker skin phototype shows white areas, brown and reddish areas (tricolor background).^[11] In addition, blunted papillae, tiny erosions, interspersed clods, and a polymorphic vascular pattern have also been described.^[2,11]

In conclusion, our case series shows interesting muoscopic features in leukoplakia. A knowledge of these features will be useful for dermatologists to ascertain the diagnosis of leukoplakia.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest

There are no conflicts of interest.

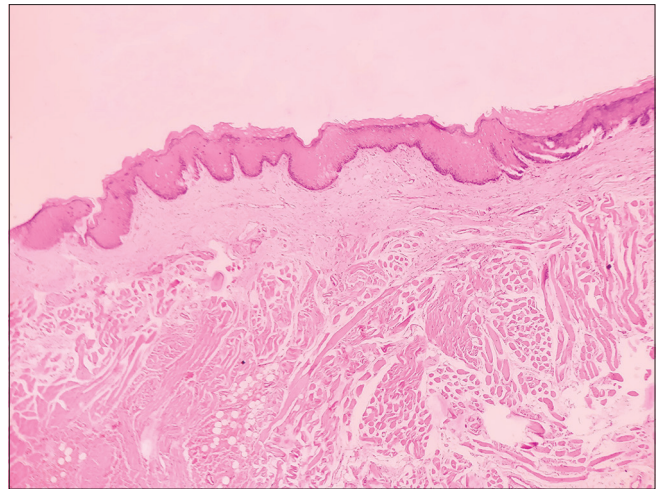


Figure 4: Histology showing stratified squamous epithelium with loss of polarity and nuclear hyperchromasia in the lower most epithelial layer. The epidermis is showing acanthosis and hyper-para-orthokeratosis. Note the fibrocollagenous and muscular tissue, lympho-plasmocytic infiltration, congested and dilated blood vessels in the subepithelium. [H&E; 40X]

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