WHITE LESIONS OF ORAL MUCOSA - A DIAGNOSTIC DILEMMA

ABSTRACT
White lesions of the oral cavity are commonly encountered in routine clinical dental practice. Some common conditions like Fordyce's granules may cause diagnostic confusion. White lesions are usually painless but can be focal, multifocal, striated or diffuse. Detection and early identification of these lesions is extremely important, as some of these lesions may represent early stage of malignancy. Clinical diagnostic skills and good judgment forms the key to successful diagnosis and management of white lesions of the oral cavity. This review lists the white lesions affecting the oral mucosa ranging from those that are genetically determined to those that are neoplastic and also highlights the specific features of each of these lesions.

Key words: White lesions of the oral cavity, leukoplakia, oral lichen planus.

INTRODUCTION:
White lesions of the oral cavity are commonly encountered during clinical dental practice. Although some benign physiologic entities may present as white lesions, systemic conditions, infections, and malignancies may also present as white oral lesions. This emphasizes the need for an efficient chair-side work up to find out whether a particular white lesion can turn problematic in future. It is required to categorize the lesion and determine whether it belongs to the commonly seen reactive group or to the more dangerous precancerous group.

White lesions of the oral mucosa obtain their characteristic appearance because of a thickened layer of keratin (hyperkeratosis), superficial debris on oral mucosa, blanching caused by reduced vascularity and loss of pigmentation due to acquired causes. The treatment ranges from reassurance from the clinician for lesions that are harmless to medicinal and surgery.

CLASSIFICATION OF WHITE LESIONS:
1. Hereditary/Developmental:
   (a) Leukoedema
   (b) White spongy nevus
   (c) Hereditary benign intraepithelial dyskeratosis
   (d) Pachyonychia congenita
   (e) Dyskeratosis congenita
2. Reactive:
   (a) Frictional keratosis
   (b) Morsicatio buccarum
   (c) Nicotine stomatitis
   (d) Tobacco pouch keratosis
   (e) Chemical burn
3. Immunologic:
   (a) Lichen planus
   (b) Lichenoid mucositis
   (c) Discoid lupus erythematosus
   (d) Graft-versus-host disease
4. Bacterial/Viral/Fungal:
   (a) Candidiasis
   (b) Mucous patches in secondary syphilis
   (c) Oral hairy leukoplakia
5. Systemic disease:
   (a) Uremic stomatitis
6. Potentially malignant disorders: 
   (a) Leukoplakia
   (b) Actinic cheilitis
7. Neoplastic:
   (a) Squamous cell carcinoma

HEREDITARY/DEVELOPMENTAL:
Leukoedema:
Leukoedema represents a variation of a normal condition. It is characterized by a diffuse, grayish white opalescent appearance, occurring bilaterally on the buccal mucosa (Picture 1). The surface appears folded, resulting in wrinkling of the mucosa. It cannot be scraped off and it disappears or fades upon stretching the mucosa. Leukoedema is a benign condition and no treatment is required.

White Spongy Nevus:
White spongy nevus is inherited as an autosomal dominant trait. The lesions appears at birth or in early childhood and presents as asymptomatic, symmetrical, white corrugated or velvety diffuse plaques on the buccal mucosa bilaterally (Picture 2). Other intra oral site like ventral tongue, labial mucosa, soft palate, floor of the mouth and extra oral sites like nasal, pharyngeal and anogenital mucosa may also be involved.
Nicotina stomatitis (Picture 3)

Tobacco Pouch Keratosis:
The habitual chewing of tobacco results in the development of white mucosal lesion in the area of contact called tobacco pouch keratosis. The most common areas of involvement are the anterior mandibular vestibule and buccal sulcus. The lesion is a thin grayish white translucent plaque that is soft on palpation. On stretching of the mucosa there is a distinct “pouch” caused by flaccidity in chronically stretched tissues in the area of tobacco placement (Picture 4). Habit cessation results in normal mucosal appearance within 2 weeks in most of the lesions.

Pachyonychia Congenita:

Pachyonychia congenita is an autosomal dominant condition where all the patients have tabular configuration of the nails due to accumulation of keratinaceous material in the nail beds. Thick, callous-like thickenings and hyperhidrosis are noted in the palms and soles. Oral lesions are seen only in type I pachyonychia congenita in the form of thickened white plaques on the dorsum and lateral margins of the tongue. Oral lesions do not require treatment, but the quality of life is affected due to nail loss and continuous removal of excess keratin on the soles and palms.3

Dyskeratosis Congenita:

Dyskeratosis congenita is a rare condition inherited as X-linked trait, resulting in a striking male predilection. The oral lesions start before the age of 10 years as bullae on the tongue and buccal mucosa and are followed by erosions and later turning to squamous cell carcinoma. The oral changes are associated with dystrophic nails and hyper-pigmentation of the skin of the face and neck. The oral lesions are managed symptomatically and periodic recall to check for malignant transformation.

REACTIVE:

Frictional Keratosis:
Frictional keratosis refers to a white lesion with a rough surface and is related to an identifiable source of mechanical irritation and is reversible on elimination of the irritant. This lesion is frequently associated with rough dentures or sharp cusps. On removal of the offending agent, the lesion should resolve within 2 weeks. Biopsies should be performed on lesions that do not heal to rule out a dysplastic lesion.

Morsicatio Buccarum:
White lesions of buccal mucosa may arise from chronic irritation due to sucking, nibbling or chewing. Check chewing is most commonly seen in people who are under stress or who exhibit psychological conditions. The lesions are found bilaterally on the anterior buccal mucosa along the plane of occlusion. Patients often complain of small tags of tissue that they tear free from the surface. The lesions are thickened, shredded white area that may be intermixed with areas of erythema and ulceration. In some cases an oral acrylic shield may be constructed for treatment.

Nicotine Stomatitis:
Nicotine stomatitis refers to a white lesion that develops on the palate in heavy cigarette, pipe and cigar smokers in response to heat of tobacco smoke. The palatal mucosa becomes diffusely gray or white. Numerous elevated white papules with red centers representing inflamed ductal orifices are noted (Picture 3). The condition is reversible, usually within to 2 weeks of smoking cessation.
Lichenoid Reaction:
Lichenoid reaction has lesions clinically and histologically similar to lichen planus, but is associated with administration of a drug or contact with metal (Picture 6). The lesions resolve when the drug or other factors are eliminated.

Lichen planus (Picture 5)

Lichenoid reaction (Picture 6)

Discoid Lupus Erythematosus:
Discoid lupus erythematosus (DLE) is a chronic autoimmune disease affecting the skin and oral mucosa. The oral lesions are characterized by erythematosus central zone, surrounded by white radiating striae or hyperkeratotic plaques on the buccal mucosa, palate and tongue. Unlike lichen planus, the distribution of DLE lesions is usually asymmetric, peripheral striae are subtle and the oral lesions seldom occur in the absence of skin lesions. The diagnosis is based on the coexistence of skin lesions, histopathology and immunofluorescent studies. Topical steroids are used in treating the skin and oral lesions of DLE. Graft-Versus-Host Disease (GVHD): GVHD is an immunologically mediated disease occurring in recipients of allogeneic bone marrow transplantation, where the grafted cells of donor destroy the normal cells of the host. The intra oral lesions are extensive and involve the cheeks, tongue, lips and gingiva. In most patients, there is a fine reticular network of white striae resembling lichen planus, although a diffuse pattern of white papules has also been described. Topical steroids or tacrolimus are effective in the management of oral lesions.

4. BACTERIAL/VIRAL/FUNGAL:
(A) Candidiasis: Candidiasis is the most common oral fungal infection caused by candida albicans. The pseudomembranous and hyperplastic type of candidiasis present as white lesions of the oral cavity. Pseudomembranous candidiasis has white plaques resembling curdled milk (Picture 7). Scraping the white lesion can remove the plaques. The hyperplastic candidiasis or candidal leukoplakia presents as non-scrapable white patch usually located on the anterior buccal mucosa. The diagnosis is confirmed by the presence of candidal hyphae in the lesions. There is resolution of the lesion after antifungal therapy.

Candidiasis (Picture 7)

(B) Mucous Patches in Secondary Syphilis:
The lesions of secondary syphilis in oral cavity are characterized by multiple painless grayish-white plaques overlying an ulcerated necrotic surface. The lesions occur on the tongue, gingiva, palate and buccal mucosa. The associated systemic features include fever, sore throat, malaise and headache. The lesions are highly infective, but resolve within few weeks.

Oral leukoplakia (Picture 8)

Oral Hairy Leukoplakia (OHL): OHL is a white lesion seen commonly in severe immunodeficient patient and is caused by Epstein Barr virus (EBV). OHL clinically presents as white vertical streaks or thickened, furrowed white areas on the lateral borders of the tongue. The definitive diagnosis is made by demonstration of EBV within the lesion using in situ hybridization, PCR, Southern blot or electron microscopy.

5. SYSTEMIC DISEASE:
Uremic Stomatitis: Uremic stomatitis is a complication of renal failure. The onset is abrupt, with white plaques present predominantly on the buccal mucosa, tongue and floor of the mouth. The clinician may detect an odor of ammonia or urine on the patient’s breath.

6. POTENTIALLY MALIGNANT DISORDERS:
Leukoplakia: Leukoplakia is defined as “white patch or plaque that cannot be characterized clinically or pathologically as any other disease”. The term is strictly clinical. The habit of tobacco is closely associated with leukoplakia development. Leukoplakia is divided into two clinical types, homogeneous and non-homogeneous types. Homogeneous lesions are slightly elevated grayish white non-scrapable plaques, which may appear fissured or wrinkled. Non-homogeneous varieties include:

a) Speckled: mixed white and red lesions, but retaining predominantly white color (Picture 8)
b) Nodular: small polypoid outgrowths
c) Verrucous: corrugated surface appearance
d) Proliferative verrucous leukoplakia (PVL): multiple keratotic plaques with roughened surface projections.

Leukoplakia is a potentially malignant disorder with a malignant transformation rate ranging from 4% to 47%. Habit cessation is recommended along with clinical evaluation for every 6 months.

Actinic Cheilitis: Actinic cheilitis is a potentially malignant disorder found on the vermilion border of the lower lip and is directly related to long-term sun exposure. It appears as a white plaque, oval or linear in shape, usually measuring less than 1 cm in size.

7. NEOPLASTIC:
Oral Squamous Cell Carcinoma (OSCC): OSCC can present clinically as a white patch resembling leukoplakia. In such cases biopsy is mandatory to know if the dysplastic features are limited to the epithelium or if true invasion into the underlying connective tissue has occurred.

CONCLUSION:
White lesions of the oral cavity can range from genetic disorders like white spongy nevus to neoplastic lesions like oral squamous cell carcinoma. Proper diagnosis is important because the corresponding treatment varies. A careful observant eye and sensible judgement can add to the diagnostic skills of the clinician and are considered important for proper patient care.

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