**Dr. Rehab Faisal**

**CLASSIFICATION OF RED AND WHITE TISSUE REACTIONS:-**

**▼ INFECTIOUS DISEASES**

**Oral Candidiasis**

**Hairy Leukoplakia**

**▼ PREMALIGNANT LESIONS**

**Oral Leukoplakia and Erythroplakia**

**Oral Submucous Fibrosis**

**▼ IMMUNOPATHOLOGIC DISEASES**

**Oral Lichen Planus**

**Drug-Induced Lichenoid Reactions**

**Lichenoid reactions of Graft-versus-Host Disease**

**Lupus Erythematosus**

**▼ ALLERGIC REACTIONS**

**Lichenoid Contact Reactions**

**Reactions to Dentifrice and Chlorhexidine**

**▼ TOXIC REACTIONS**

**Reactions to Smokeless Tobacco Smoker’s Palate**

**▼ REACTIONS TO TRAUMA**

**Mechanical, chemical and thermal.**

**▼ OTHER RED AND WHITE LESIONS Benign Migratory Glossitis (Geographic Tongue) Leukoedema**

**White Sponge Nevus**

**Hairy Tongue**

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**White Lesions**

White lesions of the oral mucosa are a multifactorial group of disorders the color of which is produced by the scattering of the light through an altered epithelial surface. The diagnosis and differential diagnosis of oral white lesions should be made on the basis of the medical history, clinical features, and laboratory tests.

O Leukoplakia

O Hairy leukoplakia

O Lichen planus

O Lichenoid reactions

O Linea alba

O Nicotinic stomatitis

O Uremic stomatitis

O Chemical burn

O Candidiasis

O Chronic biting

O Geographic tongue

O Hairy tongue

O Furred tongue

O Materia Alba of the gingiva

O Fordyce’s granules

O Leukoedema

O White sponge nevus

O Papilloma

O Verrucous carcinoma

O Squamous-cell carcinoma

O Skin and mucosal grafts

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**Red Lesions**

Red lesions are a large, heterogeneous group of disorders of the oral mucosa. Traumatic lesions, infections, developmental anomalies, allergic reactions, immunologically mediated diseases, premalignant lesions, malignant neoplasms, and systemic diseases are included in this group.

O Traumatic erythema (ecchymosis or as hematoma)

O Thermal burn (due to contact with very hot foods, liquids, or hot metal objects)

O Radiation mucositis

O Geographic tongue

O Median rhomboid glossitis

O Denture stomatitis

O Erythematous candidiasis

O Squamous-cell carcinoma

O Erythroplakia

O Plasma-cell gingivitis

O Granulomatous gingivitis

O Desquamative gingivitis

O Linear gingival erythema (HIV)

O Hemangioma

O Lupus erythematosus

O Hereditary hemorrhagic telangiectasia

O Anemia

O Thrombocytopenic purpura

O Infectious mononucleosis

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**White & Red lesions of oral mucosa:-**

**A white appearance of the oral mucosa may be caused by a variety of factors.**

-Hyperkeratosis: an increased production of keratin.

-Keratosis: keratinization of epithelium that is not normally keratinized.

-Acanthosis: is a benign thickening of stratum spinosum.

-Intra and extracellular: accumulation of fluid in the epithelium may also result in clinical whitening.

- Necrosis: of the oral epithelium may occur when the oral mucosa is exposed to toxic chemicals, microbes (particularly fungi can produce whitish pseudomembranes consisting of sloughed epithelial cells) and neutrophils, which are loosely attached to the oral mucosa.

**• The term white patch**: is often used clinically to describe the appearance of lesion presenting as white areas on the oral mucosa without evidence of significant enlargement, erythema or ulceration.

E.g. Leukoplakia: is defined as a predominately white lesion that cannot be characterized as any other definable lesion. Two types:

- Homogenous leukoplakia.

- Non homogenous leukoplakia

**The White lesions appear white due to the following:**

-Hyperkeratosis (the ability of abnormal keratin to evenly reflect the visible light spectrum) because of hydration or water imbibtion in a manner similar to the reaction seen in the stratum corneum of epidermis following prolonged soaking in water.

-Superficial materials: necrosis of epithelium, food remnants, plaque & inflammatory exudates.

-Sub-mucosal changes which are diminished vascularity & covered by normal epith.

•**Erythroplakia (red lesion):** is defined as a red lesion of the oral mucosa that cannot be characterized as any other definable lesion. The lesion comprises an eroded red lesion that is frequently observed with a distinct demarcation against the normal-appearing mucosa.

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**Red lesions appear so due to:-**

-Thin epithelium (atrophy), so underlying vessels become closer to the surface.

-Loss of keratin layer.

-Increased no. or dilated blood vessels (inflamed).

-Change in the intrinsic nature of the epithelium Such as epithelium dysplasia.

**Note: atypia refers to cells while the dysplasia refers to tissue.**

**Cellular a typia**: cellular changes with cytologically characterized malignant and premalignant lesion.

**Epithelial dysplasia** is defined in general terms as a precancerous lesion of stratified squamous epithelium characterized by cellular atypia and loss of normal maturation short of carcinoma in situ.

**Carcinoma in situ** is defined as a lesion in which the full thickness of squamous epithelium shows the cellular features of carcinoma without stromal invasion.

**Criteria Used for Diagnosing Epithelial Dysplasia**

- Cellular and nuclear pleomorphism (different size and shape).

- Increased nuclear-cytoplasmic ratio.

- Loss of polarity of basal cells.

- Nuclear hyperchromatism and prominent nucleoli.

- Enlarged nuclei

- Basal cell hyperplasia.

- Drop-shaped rete ridges.

- Irregular epithelial stratification

- Increased and abnormal mitosis.

- Loss of intercellular adherence.

-Abnormal keratinization.

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•**Oral candidiasis:**

C. albicans, C. tropicalis, and yeast like fungus are comprised together over 80% of the species isolated from human Candida infections. It is opportunistic infection. The C. albicans is usually a weak pathogen, and candidiasis is said to affect the very young, the very old, and the very sick.

**Predisposing factors:-**

• **Local predisposing factors:**

- Denture wearing.

- Smoking.

- Topical and inhalation steroid.

- Xerostomia.

- Poor oral hygiene.

**\* General predisposing factors:**

- Immunosuppressive diseases.

- Immunosuppressive drugs.

- Chemotherapy.

- Endocrine disorder.

- Debilitated patients (diabetes mellitus, anemia, malnutrition, leukemia and bone marrow transplantation).

**Diagnosis:**

•On clinical appearance.

• Smear from the infected area, which comprises epithelial cells.

•Culture on Sabouraud agar medium.(More sensitive)

**Classification of oral candidiasis:**

**◼ Acute**:

\*Acute pseudo-membranous candidiasis (thrush).

\*Acute atrophic candidiasis (antibiotic sore-mouth).

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**◼ Chronic:**

Chronic Plaque-Type and Nodular Candidiasis (Candidal leukoplakia)(Chronic hyperplastic candidiasis).

**◼ Candida –associated lesions**:

\*Denture stomatitis

\*Angular cheilitis

\*Median rhomboid glossitis.

**Thrush:** It is a superficial infection of the upper layers of the mucosal epithelium and presents with loosely attached membranes comprising fungal organisms and cellular debris, which leaves an inflamed, sometimes bleeding area if the pseudomembrance is removed.

**Diagnosis:** by clinical appearance & confirmation by smear or culture.

**Acute atrophic candidiasis (antibiotic sore-mouth):**

An erythematous surface may not just reflect atrophy but can also be explained by increased vascularization. The lesion has a diffuse border. It is affect the dorsum of tongue and palate in patient who are using inhalation steroid, smoking and treatment with broad-spectrum antibiotics.

**Diagnosis**: by history and smear.

**Chronic plaque type (candidal leukoplakia):**

The typical clinical presentation is characterized by a white plaque, which may be indistinguishable from an oral leukoplakia. The chronic plaque type and nodular candidasis have been associated with malignant transformation.

**Candida –associated lesions:**

**\*Denture stomatitis:-** diffuse inflammation of the maxillary denture- bearing area, sometime with angular chelilitis.

The denture serves as a vehicle that protects the microorganisms from physical influences such as salivary flow.

Clinically appear as patchy red, thin surface with pain and burning.

**Angular cheilitis**:-

Its infected fissures of the commissures of the mouth often surrounded by erythema. The lesions are frequently coinfected with both Candida and Staphylococcus aureus.

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**Causes:**

- Decreased vertical dimension.

- Nutritional deficiency (iron, vit. B, folic acid)

- Diabetes.

-Co-existent denture stomatitis.

- Dry skin

**Clinically:** deep cracks, sometimes covered with a white membrane, develop at the corners of the mouth (commisures).

**Diagnosis:** history, clinical examine, blood investigation, smear and culture.

**Median Rhomboid Glossitis:-** clinically characterized by an erythematous lesion in the center of the posterior part of the dorsum of the tongue (immediately anterior to the circumvallate papillae). The lesion has an oval configuration, a symptomatic; erythema resulting from atrophy of the filiform papillae and the surface may be lobulated.

The lesion shows a mixed bacterial/fungal microflora. Smokers and denture-wearers have an increased risk of developing median rhomboid glossitis.

**Treatment of oral candidiasis:-**

Topical and systemic administration of antifungal like:

•Nystatin Cream, rinse or tablets (100.000 IU applies to affected area (3–4 times/ day).

-Pastille (100,000 IU) dissolves 1 pastille slowly after meals (4times/day), usually for 7 days.

-Oral suspension, apply after meals (4times/day) usually for 7 days and (100,000U) continue use for several days after post clinical healing.

•Amphotericin B (tab. 200mg orally four times daily) or:

-Amphotericin B Lozenge (10 mg slowly dissolved in mouth (3–4times/days) after meals (1✖4). or

- Oral suspension 100mg/ml) Placed in the mouth after food and retained near lesions (4times/day for 2weeks).

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The lesion will rapidly respond and will not recurrent provided the predisposing factors have also been eliminated

🌓 Cleaning of mucosal surfaces of the denture by brushing and soak it in a solution of ½ teaspoon of sodium hypochloride in 1 cup of water or in topical antimycotic agent for duration of the treatment.

•Miconazole (Oral gel) apply to the affected area (3–4 times daily).

•Miconazole Cream applies twice per day and continues for (10–14 days).

**It is the best antifungal to treat angular cheilitis.**

• **Hairy leukoplakia (HL):**

One of etiological factors of Leukoplakia is viruses; it is associated with HIV infection. The lesion is not pathognomonic for HIV since other immune deficiencies, such as immunosuppressive drugs and cancer chemotherapy, are also associated with HL.

HL is strongly associated with Epstein-Barr virus (EBV).

**Clinically:**

The typical clinical appearance is vertical white folds along the borders of the tongue. The lesions may also be displayed as white and somewhat elevated plaque, which cannot be scraped off. It also presents on (dorsum of tongue and in the buccal mucosa).

The diagnosis of HL is based on clinical characteristics and histopathologic examination.

▼**Premalignant lesions:**

Oral leukoplakia (LP): It is a clinical term implaying no particular histological changes or behavior, but there is no doubt that a small percentage are premalignant .Leukoplakia is more common in men (over the age of 50 and infrequently encountered below the age of 30), but recent studies show that now almost as many women are affected.

**Clinically:**

White, well- demarcated plaque. The surface texture can vary from a smooth thin surface to a leathery appearance with surface fissures sometimes referred to as “cracked mud.”

Oral leukoplakia may be found at all sites of the oral mucosa. The floor of the mouth and the lateral borders of the tongue are high-risk sites for malignant transformation.

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**Etiological factors**:

•Tobacco usage, either smoking or chewing.

•Alcohol.

•Viruses: Leukoplakia increase in AIDS (hairy leuk.), EBV, HPV16.

•Candida (candidal leukoplakia).

•Oral epithelium atrophy, there is a tendency for leukoplakia to develop in atrophic epith. Like Iron deficiency anemia.

**Oral erythroplakia (LP):** Oral erythroplakia is not as common as oral leukoplakia, and the prevalence has been estimated to be in the range of (0.02 to 0.1 %).

**Clinically:**

The lesion comprises an eroded red lesion that is frequently observed with a distinct demarcation against the normal-appearing mucosa. It is a symptomatic; some patients may experience a burning sensation in conjunction with food intake.

**Note:** Another type of oral leukoplakias are referred to as verrucous or verruciform leukoplakia where the white component is dominated by papillary projections, similar to oral papillomas. It is usually encountered in older women, and the lower gingiva is a predilection site. The malignant potential is very high.

**Management of leukoplakia**:

-Local irritants if present must be removed.

-If dysplasia present, treated by surgical excision, laser excision and topical application of vit. A may achieve remission.

-Follow up.

**Oral submucous Fibrosis:**

Is a chronic disease that affects the oral mucosa as well as the pharynx and the upper two-thirds of the esophagus. The etiology of submucous fibrosis is areca nuts.

**Clinically:** fibrotic bands located beneath an atrophic epithelium, loss of resilience, which interferes with speech, tongue mobility, and a decreased ability to open the mouth.

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