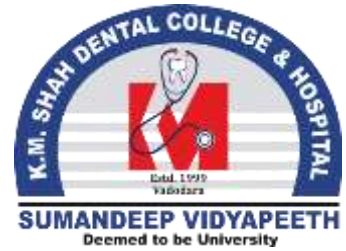

BDS Year 4 Regular batch

Academic Year 2023-2024

Subject: Oral Medicine

Topic: RED AND WHITE LESIONS- Part I

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Definitions:

- **White lesion-It is a nonspecific term used to describe any abnormal area of oral mucosa that on clinical examination appears whiter than surrounding tissue.**

- Red lesion- **It refers to area of reddened mucosa that may be smooth & atrophic looking or exhibit a granular or velvety structure.**

WHY WHITE LESIONS ARE WHITE?

- Increase in the **thickness** of the epithelium
  - Hyperkeratosis – increased production of keratin
  - Acanthosis – benign thickening of stratum spinosum
- Intra- and extracellular accumulation of **fluid** in the epithelium
- Reduced **vascularity** in the underlying lamina propria
- Surface ulcerations covered by **pseudomembrane** (sloughed epithelium, fungal mycelium & neutrophils)

WHY RED LESIONS ARE RED?

- **Atrophic** epithelium as a result of reduction in the number of epithelial cells
- Increased **vascularization**
  - Dilatation of vessels
  - Proliferation of vessels
- Ruptured **bullae**

CLASSIFICATION

- **Infectious diseases**
  - Oral candidiasis
  - Hairy leukoplakia
- **Premalignant lesions**
  - Oral leukoplakia & erythroplakia
  - Oral submucous fibrosis
- **Immunopathologic diseases**
  - Oral lichen planus
  - Drug induced lichenoid reaction
  - Lichenoid reaction of graft vs host disease
  - Lupus erythematosus
- **Allergic reactions**
  - Lichenoid contact reactions
  - Reactions to dentifrice and chlorhexidine

- **Toxic reactions**
  - Reactions to smokeless tobacco
  - Smokers palate
- **Reaction to mechanical trauma**
  - Morsicatio
- **Others**
  - Geographic tongue
  - Leukoedema
  - White spongy nevus
  - Hairy tongue

INFECTIOUS LESIONS

CANDIDIASIS

- **Synonym : Moniliasis, Thrush, Candidosis**
- **Most prevalent opportunistic infection**
- **Candida albicans, Candida tropicalis, Candida glabrata - 80% of cases**
- **Candida glabrata, and Candida krusei - in HIV patients**

Classification :

- Acute
  - Acute pseudomembranous oral candidiasis (Thrush)
  - Acute atrophic oral candidiasis
- Chronic
  - Chronic hyperplastic oral candidiasis
  - Chronic atrophic oral candidiasis
  - Chronic mucocutaneous candidiasis
    - (a) Chronic localized mucocutaneous candidiasis
    - (b) Chronic diffuse mucocutaneous candidiasis
    - (c) Chronic familial mucocutaneous candidiasis
    - (d) Chronic endocrinopathy syndrome

Modified by Axell et al -1997
Primary & secondary oral candidiasis

- Acute form
  - pseudomembranous
  - erythematous
- Chronic form
  - hyperplastic
    - nodular
    - plaque like
  - erythematous
  - pseudomembranous
- Candida associated lesions
  - denture stomatitis
  - angular cheilitis
  - median rhomboid glossitis
- Keratinized primary lesion superinfected with candida-
  - leukoplakia
  - lichen planus
  - lupus erythematosus

Secondary Candidiasis

- Oral manifestation of systemic mucocutaneous candidiasis as a result of diseases such as thymic aplasia & candidiasis endocrinopathy syndrome

Colonization and infection

- initial ability of the organism to adhere to host surfaces
- quality of the epithelial cells in patients (the cell's receptivity to Candida),
- salivary flow
- Severity and refractoriness of Candida infection to treatment possibly depend on the site of involvement and on the predisposing factors

Predisposing factors

- Poor oral hygiene
- Chronic local irritants (Dentures and orthodontic appliances, smoking)
- Marked changes in the oral microflora (Due to the use of antibiotics or antibacterial mouthwash or xerostomia)
- Administration of corticosteroids
- Pregnancy
- Immunologic deficiency/Debility (Malnutrition)
  - **Congenital or childhood Endocrinopathies**
  - **Acquired (Diabetes, leukemia, lymphomas, AIDS)**
  - **Iatrogenic (Bone marrow transplantation, chemotherapy, radiotherapy)**

Evidence

Authors	Worthington HV, Clarkson JE.
Title	Prevention of oral mucositis and oral candidiasis for patients with cancer treated with chemotherapy: Cochrane systematic review. J Dent Educ. 2002 Aug;66(8):903-11. Grade: ++++
Aim	The objectives of this study were to determine whether oral prophylactic agents are superior to placebo or no treatment on the incidence of oral mucositis and oral candidiasis for patients with cancer.
Results	Eleven studies were included in the meta-analysis for mucositis. Of the six prophylactic agents used for mucositis, only one--ice chips--was effective (relative risk 0.57, 95% CI 0.43 to 0.77). Fifteen studies were included in the meta-analysis for oral candidiasis. There is evidence that antifungal agents that are partially or fully absorbed from the gastrointestinal tract prevent oral candidiasis and that the partially absorbed agents may be more effective than the fully absorbed agents. The RR for partially absorbed agents was 0.13 (95% CI 0.06 to 0.27)
Interpretation	In conclusion, there is weak and unreliable evidence that ice chips prevent mucositis. There is evidence that prophylactic use of antifungal agents, which are absorbed or partially absorbed from the gastrointestinal tract, reduce the clinical signs of oral candidiasis.

- **Age/Sex : very young, the very old & the very sick**
- **Site : Posterior surface of the tongue, denture bearing area**

Acute pseudomembranous candidiasis

- Common in **neonates and young children,** patients receiving broad spectrum antibiotics, with immunodeficiencies
- **Prodromal symptoms** : A rapid onset of a bad taste and the loss of taste discrimination
- Patchy white plaques that can usually be wiped away with a gauze, leaving either a relatively normal appearing mucosa or an **erythematous area** or even shallow ulceration

❖ Acute atrophic candidiasis (Antibiotic sore mouth)

- ❖ Patients with chronic iron deficiency anemia, and patients on broad spectrum antibiotics
- ❖ A red patch of atrophic or erythematous and painful mucosa
- ❖ Burning sensation, bad taste or sore throat

Chronic atrophic candidiasis

- **Denture stomatitis** (Denture sore mouth)
  - It is a common form of oral candidiasis
  - Diffuse erythema & edema of the denture bearing areas and that is often associated with angular chelitis
  - Site : Under the maxillary denture

Clinical types of denture sore mouth

- Type 1- numerous palatal petechie
- Type 2- more diffuse erythema involving most of the denture covered mucosa
- Type 3- development of tissue granulation or nodularity

Treatment : Disinfection of the appliance, antifungal therapy. Photodynamic Therapy,
Note: Avoid using soft liners

Evidence

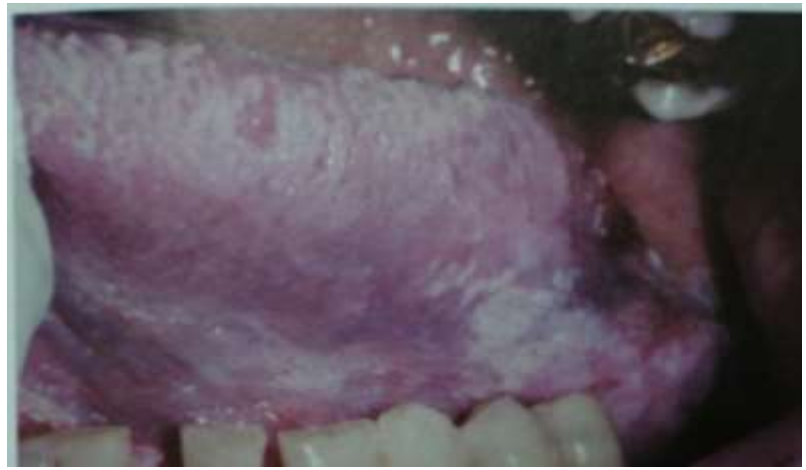
Authors	Mima EG, Vergani CE, Machado AL, Massucato EM, Colombo AL, Bagnato VS, Pavarina AC.
Title	Comparison of Photodynamic Therapy versus conventional antifungal therapy for the treatment of denture stomatitis: a randomized clinical trial. Clin Microbiol Infect. 2012 Oct;18(10):E380-8. Grade:++++
Aim	In this randomized clinical trial, the clinical and mycological efficacy of Photodynamic Therapy (PDT) was compared with that of topical antifungal therapy for the treatment of denture stomatitis (DS) and the prevalence of Candida species was identified.
Results	Patients were randomly assigned to one of two groups (n = 20 each); in the nystatin (NYT) group patients received topical treatment with nystatin (100,000 IU) four times daily for 15 days and in the PDT group the denture and palate of patients were sprayed with 500 mg/L of Photogem(®), and after 30 min of incubation, were illuminated by light emitting-diode light at 455 nm (37.5 and 122 J/cm(2), respectively) three times a week for 15 days. Mycological cultures taken from dentures and palates and standard photographs of the palates were taken at baseline (day 0), at the end of the treatment (day 15) and at the follow-up time intervals (days 30, 60 and 90). Colonies were quantified (CFU/mL) and identified by biochemical tests. Data were analysed by Fisher's exact test, analysis of variance and Turkey tests and κ test (α = 0.05)
Interpretation	Candida albicans was the most prevalent species identified. PDT was as effective as topical nystatin in the treatment of DS.

Angular cheilitis

- Term used for an infection involving the lip commissures
- Causative factors : Candidiasis, Low vertical dimension, Nutritional deficiency (Iron, vit B, folic acid), Habitual lip sucking, & rarely Diabetes, Neutropenia, AIDS, co-infection with Staphylococcus and beta hemolytic Streptococcus

Chronic hyperplastic candidiasis (CHC)

- Includes a variety of clinically recognized conditions in which mycelial invasion of the deeper layers of the mucosa and skin occurs, causing a proliferative response of host tissue



Chronic Plaque-type Candidiasis

- It is a chronic form of oral candidiasis
- firm white leathery plaques are detected on the cheeks, lips, palate, and tongue.
- Dysplastic or carcinomatous changes- more common in this type
- Differential diagnosis from other forms of leukoplakias : PAS positive hyphae in leukoplakic lesions0

Chronic mucocutaneous candidiasis (CMC)

- localized granulomas and adherent white plaques on affected mucous membranes are the prominent lesions

- Classification :
  - Syndrome associated CMC
    - Familial form (Candidiasis endocrinopathy syndrome)
    - Chronic form
  - Localized and diffuse CMC

- High recurrence rate

Treatment-

❖ Antifungal agents-

a) **Fluconazole- (tab. diflucan)- 200mg on 1day & 100mg 7-14days.**

b) **Itraconazole- (solu. Sporanox)- 100-200mg/10ml once a day.**

c) **Ketoconazole- (tab. nizoral)- 200-400mg/day.**

d) **Single dose topical use of Clotrimazole**

Median rhomboid glossitis

- Also known as Central Papillary Atrophy of tongue.
- Described classically as congenital anomaly occurring due to failure of tuberculum impar to retract or withdraw before fusion of the lateral half of the tongue.
- Hence the structure devoid of papillae is interposed between them.

- The possibility of candidal infection is suggested;
  - More common in diabetics
  - Hyphae demonstrated in some histologic sections
  - Lesion resolves on antifungals
- Prevalence is 2-3%. Three times more frequent in mentally retarded
- When MRG occurs with oral candidiasis in other sites – erythematous candidiasis – termed as Chronic multifocal candidiasis.

CLINICAL FEATURES:

- Ovoid, diamond or rhomboid shaped.
- Reddish patch or plaque like.
- Located on the dorsal surface of tongue immediately anterior to the circumvallate papillae.
- De-papillated (no filiform papillae).
- Obvious clinically, often asymptomatic.
- Smooth or lobulated.

Median rhomboid glossitis

Treatment :

- No specific treatment is required.

- Some lesions regress with or without antifungal treatment.

Oral candidiasis associated with HIV

Management

- Amphotericin B 10mg lozenge/100mg/ml oral suspension
- Nystatin cream / 100000 U oral suspension
- Clotrimazole cream/ solution
- Micanazole cream/oral gel
- Ketokonazole tablets
- Flucanazole capsules
- Itraconazole capsules

Evidence

Authors	Reddy RCJ[1], Jeelani S[2], Duraiselvi P[2], Kandasamy M[3], Kumar GS[4], Pandian RAV[2]
Title	Assessment of Effectiveness of Fluconazole and Clotrimazole in Treating Oral Candidiasis Patients: A Comparative Study. Grade:+++
Aim	to evaluate the effectiveness of fluconazole and clotrimazole in the treatment of patients suffering from candidiasis.
Results	For group I patients, the fungal eradication was 89.5%, whereas for group II patients, the fungal eradication was 86.7%. No significant results were obtained while comparing the mycological eradiation in patients of the two study groups.
Interpretation	Approximately similar effectiveness in terms of treatment was noted with fluconazole and clotrimazole in treating patients with candidiasis.

J Int Soc Prev Community Dent. 2017 Mar-Apr;7(2):90-94

Diagnosis and lab investigations

- Smear
- Swab
- Imprint culture
- Impression culture
- Oral rinse with phosphate buffered saline

Culture media- sabouraud agar

pagano levin agar

Stain- PAS

Method	Main Steps	Advantages	Disadvantages
Smear	Scraping, smearing directly onto slide	Simple and quick	Low sensitivity
Salivary culture	Patient expectorates 2 mL saliva into sterile container; vibration; culture on Sabouraud agar by spiral plating; counting	Quantifies actual counts against normal range Useful to monitor response to therapy	Longer chairside time; not useful for xerostomics Does not identify site of infection
Oral rinse	Subject rinses for 60 s with phosphate-buffered saline at pH 7.2, and returns it to the original container; cultured and counted as in previous methods	Simple method Sensitive Normal ranges available	Recommended in hyposalivation Does not identify site of infection
Impression culture	Maxillary and mandibular alginate impressions; casting in agar fortified with Sabouraud broth; incubation	Useful to determine relative distributions of yeasts on oral surfaces	Useful mostly as a research tool
Imprint culture	Sterile plastic foam pads moistened with Sabouraud broth, placed on lesion for 60 s; pad pressed on Sabouraud agar plate and incubated; colony counter used	Sensitive and reliable; can discriminate between infected and noninfected sites	Reading above 50 CFU/cm^2 can be inaccurate Useful mostly as a research tool

Source: Adapted from Sitheeque MA, Samaranayake LP. Chronic hyperplastic candidosis/candidiasis (candidal leukoplakia). *Crit Rev Oral Biol Med.* 2003;14(4):253–267.

ORAL HAIRY LEUKOPLAKIA

- Most common HIV associated lesion.
- The lesion is not pathognomonic for HIV
- Etiopathology :Epstein Barr Virus
- Sex : Men
- Site : The lateral borders of the tongue

Clinical features

- Vertical white folds oriented as a palisade along the borders of the tongue.
- Can not by scraped off.

Differential diagnosis:

The diagnosis is based on Clinical & histopathologic features (Chronic trauma, Morsicatio, Candidiasis)

- **Treatment : Anti-viral medications**

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MCQs

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1. White lesions appear white due to
   - A. Pseudomembrane
   - B. Keratinization
   - C. Fluid accumulation in the epithelium
   - D. Any of the above
2. The infectious white lesion of oral mucosa is:
   - A. Candidiasis
   - B. Leukoedema
   - C. Leukoplakia
   - D. OLP
3. The medium used to discriminate the candidal species is
   - A. Sabouraud agar
   - B. Nutrient agar
   - C. Pagano Levin agar
   - D. Blood agar

4. Chronic hyperplastic candidiasis is

A. White non-scrapable lesion
B. White scrapable lesion
C. Red & white lesion
D. Red lesion

5. The virus associated with oral hairy leukoplakia is

A. Hepatitis B Virus
B. Epstein Barr Virus
C. Herpes Simplex Virus
D. Vericella Zoster Virus

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THANK YOU