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Oral candidiasis (oral thrush)

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Abstract:

Background: Oral Candidiasis is **one of the recurrent fungal infection** affecting the oral mucosa. It is a commensal organism of **normal oral flora** which is **capable of** opportunistic infections. Candida albicans are recovered from 60% of dentate **patients** mouth over the age of 60 years. There are **three** general **factors** which **allows** the Candida albicans **contamination** to develop **inside the patient's body includes** Immune **status** of the patient, oral mucosal environment, and **strain** of Candida albicans . Early **sign** of host **protection** breakdown is neutropenia whereas **risk** factors include: antibiotics, immunosuppression, diabetes, HIV, steroids, **nutritional** deficiency, Radiation/Chemotherapy.

Introduction:

Oral candidiasis is recurrent infections of the oral cavity caused by an uncontrolled growth of *Candida* species, fungi are free-living, eukaryotic organisms that exist as yeasts (round fungi), moulds (filamentous fungi), or both (dimorphic fungi). *Candida* normally lives on the skin and inside the body, in places like the mouth, throat, gut, and vagina, without causing any problems. Oral candidiasis is a significant source of morbidity, as it can cause chronic pain or discomfort upon mastication, limiting nutrition intake in the elderly or immunodeficient patients.

Regional or systemic factors may be predisposing factors for oral candidiasis. For example, the local causes, salivary gland dysfunction, and saliva constituents such as histidine-rich polypeptides, lactoferrin, and lysozyme may be predisposed to oral candidiasis. (Scully et al., 1994; Ship & Turner, 2007).

Dental prostheses create a favorable micro-environment for the growth of *Candida* species. Around 65 per cent of full denture wearers are predisposed to *Candida* infection. (Martori et al., 2005; Ashman and Farah, 2014).

The use of topical or inhalational corticosteroids and overzealous use of antimicrobial mouthwashes may be another significant local factor that raises the risk of oral candidosis. We temporarily remove local immunity and induce changes in the oral flora (Scully et al., 1994; Jankittivong et al., 2007).

Some research indicate that smoking alone or in conjunction with other factors significantly affects the carriage of oral *Candida* while the possible reasons for promoting colonization of *Candida* include localized epithelial changes caused by smoking (Arendorf and Walker, 1980). Unbalanced dietary intake of refined sugars, carbohydrates, and dairy products (with a high lactose content) may be likely serve as Development enhances by reducing pH levels and thereby encouraging the production of *Candida* species (Martins et al., 2014).

The Systemic Factors such Extremes of age may predispose to candidiasis due to immature or weakened immunity (Weerasuriya and Snape, 2008). Among the nutritional deficiency states, iron has been the most common deficient essential micronutrient implicated in the colonization of candida (Paillaud et al., 2004; Martins et al., 2014).

Prolonged use of systemic drugs like broad-spectrum antibiotics, immune-suppressants and drugs with xerostomic side-effects, alter the local oral flora or disrupt mucosal surface or reduce the salivary flow, creating a favorable environment for candida to grow (Martins et al., 2014).

Various reports reveal that oral and invasive candidiasis are more prevalent in patients with endocrine dysfunctions such as diabetes and Cushing's syndrome (Graham and Tucker, 1984; Bakker et al., 1998; Sashikumar and Kannan, 2010). Immunodeficiency conditions such as AIDS and severe combined immunodeficiency syndrome (SCID) are also predisposing factors for candidiasis (Anil and Challacombe, 1997; Owotade and Patel, 2014).

The host defense mechanisms are compromised by chemotherapy and radiotherapy administered for the treatment of malignant conditions. The prevalence of oral candidiasis for all cancer treatments, according to a systematic review, was reported to be 7.5% pre-treatment, 39.1% during treatment and 32.6% post-cancer therapy (Scheffel et al., 2010).

Lastly, individuals affected by congenital conditions associated with defective immune system such as Di George's syndrome, hereditary myeloperoxidase deficiency and Chediak-Higashi syndrome are commonly predisposed to candida infections (Ashman and Farah, 2005).

Aim of the study:

The aim of this study to determine who is at risk of oral thrush by their medical conditions. Brief demonstrating for pathogenesis of this infection.

Materials and Methods:

All information of this research collected from available sources on Internet.

Discussion:

Candida species need environmental sources of fixed carbon for growth. Filamentous growth and apical extension of the filament and formation of lateral branches are seen with hyphae and mycelium, and single cellular division is related to yeasts. Several studies have demonstrated that infection with candida is related to certain pathogenic variables. Adhesion of candida to epithelial cell walls, a very important step in initiation of infection, is promoted by certain fungal cell membrane components like mannose, C3d receptors, mannoprotein, and saccharin. The degree of hydrophobicity and its ability to bind to host fibronectin is vital within the initial stages of infection. Other factors implicated are germ tube formation, presence of mycelia, persistence within epithelial cells, endotoxins, induction of tumor necrosis factor, and proteinases. Phenotypic switching which is that the ability of certain strains of *Candida albicans* to alter between different morphologic phenotypes has also been implicated. Impaired salivary glands function can result in oral candidiasis. Secretion of saliva causes a dilutional effect and removes organisms from the mucosa. Antimicrobial proteins within the saliva like lactoferrin, sialoperoxidase, lysozyme, histidine-rich polypeptides, and specific anticandidal antibodies, interact with the oral mucosa and stop overgrowth of candida. Therefore, conditions like Sjögren's syndrome, radiotherapy of the head and neck, or drugs that reduce salivary secretions can result in an increased risk of oral candidiasis. Drugs like inhaled steroids are shown to extend the chance of oral candidiasis by possibly suppressing cellular immunity and phagocytosis. The local mucosal immunity reverts to normal on discontinuation of the inhaled steroids. Dentures predispose to infection with candida in as many as 65% of elderly people wearing full upper dentures. Wearing of dentures produces a microenvironment conducive to the expansion of candida with low oxygen, low pH, and an anaerobic environment. This might ensue to enhanced adherence of *Candida* spp to acrylic, reduced saliva flow under the surfaces of the denture fittings, improperly fitted dentures, or poor oral hygiene. Other factors are oral cancer/leukoplakia

and a high carbohydrate diet. Growth of candida in saliva is enhanced by the presence of glucose and its adherence to oral epithelial cells is enhanced by a high carbohydrate diet. Extremes of life predispose to infection due to reduced immunity. Drugs like broad spectrum antibiotics alter the local oral flora creating an acceptable environment for candida to proliferate. the conventional oral flora is restored once the antibiotics are discontinued. Immunosuppressive drugs like the antineoplastic agents are shown in several studies to predispose to oral candidiasis by altering the oral flora, disrupting the mucosal surface and altering the character of the saliva. Other factors are smoking, diabetes, Cushing's syndrome, immunosuppressive conditions like HIV infection, malignancies like leukemia, and nutritional deficiencies—vitamin B deficiencies are particularly implicated. Ninane found that 15%–60% of individuals with malignancies will develop oral candidiasis while they're immunosuppressed. In those with HIV infection rates of between 7% to 48% are quoted and over 90% has been reported in those with advanced disease. Relapse rates are between 30% and 50% on completion of antifungal treatment in severe immune-suppression. [3]

Conclusion:

Oral thrush most usually as a result of fungal infection. (Oral candidiasis) Candida species are common members of the commensal oral microflora of humans, they are opportunistic pathogens that under situations of host debilitation can motivate oral infection. Putative virulence factor of Candida surrounds the ability to stick to host surfaces, produce filamentous growth forms, and release hydrolytic enzymes able to inducing damage to host cells. Conditions that weaken immune system, including leukemia and HIV boosts the hazard of developing oral thrush.

Oral thrush is a habitual opportunistic infection in human beings with HIV. Diabetes can make contributions to oral thrush as well. Uncontrolled diabetes weakens immune system and causes excessive blood sugar levels. This creates favorable conditions for Candida to grow. In the past few decades great clinical statistics has been recorded on oral candidiasis with respect to its arrival with the various immunocompromised conditions. With the growing incidence of oral thrush there may be a continual requirement in research for newer powerful agents. One such prospect is improvement of vaccine in opposition to candida organisms particularly for aged and

immune-compromised patients. Various experimental techniques have been employed for developing one of these vaccines, but scientific trials are still a far vision.



References:

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