Drug-induced Oral Candidiasis: A Case Report

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Oral candidiasis is a broad term which describes the fungal infections mainly caused by the yeasts belonging to the genus Candida. In developing countries, it is the third most common presenting complaint of the HIV-infected patients. Varied incidences have been observed depending on age and predisposing factors. Oropharyngeal candidiasis and dysphonia are among the local side effects of the use of several different topical steroids for the treatment of asthma. Long-term use of inhaled steroids renders oropharyngeal mucosa to opportunistic fungal infections by their local immunosuppressive actions. Here, we report a case of a 55-year-old male chronic asthmatic patient, who was on a steroid inhaler and presented with oral candidiasis.

Keywords: Bronchial asthma, Inhaled corticosteroids, Oral thrush

INTRODUCTION

An opportunistic fungal infection of the oral cavity by an increased growth of Candida species is termed oral candidiasis. The most common species being Candida albicans and the other species include Candida tropicalis, Candida glabrata, Candida pseudotropicalis, Candida guilliermondii, Candida parapsilosis, and Candida krusei.1 Oral candidiasis is also known as oral candidosis, oral thrush, moniliasis, oral mycosis, oral yeast infection, or Candidal stomatitis. Candidal species are relatively common inhabitant of the oral cavity, gastrointestinal tract, and vagina of clinically normal persons. The mere presence of the fungus is not sufficient to produce disease. There must be actual penetration of the tissues, although such invasion is usually superficial and occurs only under certain circumstances. Conventionally, oral candidiasis is divided into acute or chronic candidiasis. The modified classification was given by Samarnayake and Yacoob, Holmstrup and Axel in 1990 as primary oral candidiasis (the condition is confined to the mouth) and secondary oral candidiasis (occurs secondary to thymic aplasia and candidosis endocrinopathy syndrome).2 Incidence of mucosal candidiasis is high in patients with immunocompromised state. This lesion is reported equally in both the genders worldwide, except in places where males with HIV infection outnumber females. Predominantly, it is seen in the middle or older age group people.3 Inhaled corticosteroids (ICS) being one of the predisposing factors for oral candidiasis, causes disturbed oral ecology, or marked changes in the oral microbial flora resulting in oral thrush. The management of oral thrush includes topical antifungal applications containing the polyene drugs like Nystatin and Amphotericin or azole group drugs like Clotrimazole, Fluconazole, and Ketoconazole.

CASE REPORT

A 55-year-old male patient visited the Department of Oral Medicine and Radiology with the complaint of itching and burning sensation in his mouth since one and a half month. Burning sensation increased on taking spicy food. A medical history revealed that he was hypertensive and was asthmatic since 6 years. He was treated for asthma with bronchodilator (Salbutamol with Ipratropium bromide) as a reliever. Because of increased frequencies of asthmatic exacerbations his physician prescribed him (ICS beclomethasone 400 μg) which the patient was using for about 3 months. On intraoral examination, diffuse curdy white patches were seen on his right and left buccal vestibules and mucosa, as well as on his hard palate and soft palatal region (Figures 1 and 2).

Lesions were scrapable and left diffuse erythematosous areas on scraping. Smear made from scrapings of lesions were sent for cytological examination which confirmed the presence of candidal hyphae (Figure 3).
To rule out any underlying systemic cause’s complete hemogram and rapid test for HIV was done which revealed all values within the normal range and nonreactive status for HIV. Based on history, clinical presentation and cytological report, final diagnosis of drug-induced pseudomembranous candidiasis was made. The patient was advised to follow strict oral hygiene measures and he was also asked to use spacer along with metered dose inhaler (MDI) while using steroid inhaler with topical application of clotrimazole 1% mouth paint around 4-5 times per day for about 2 weeks. The patient was reviewed after 15 days where he presented with complete remission of the lesions (Figures 4 and 5).

**DISCUSSION**

Fungal infections in humans caused by various *Candida* species range from certain inconsequential condition like oral or genital candidiasis to super-infections in patients with systemically immunocompromised conditions. Carriage rates of Candidal species in the general population have been reported to range from 20% to 75% without any symptoms. The incidence rates of *C. albicans* in the oral cavity of neonates, healthy children and healthy adults have been reported to be between 45-65% and 30-45%, respectively. 50-65% of people who wear removable dentures, 65-88% in those residing in acute and long-term care facilities, 90% of patients with acute leukemia undergoing chemotherapy and 95% of patients with HIV. Candidal species are considered...
among the normal commensal of the mouth.\textsuperscript{1} Certain factors that predispose the host to oral candidiasis are physiologic like old age, infancy and pregnancy with altered immunity, local trauma, poor denture hygiene, malnutrition, usage of broad-spectrum antibiotics, corticosteroids, immune defects like in HIV infection, thymic aplasia, endocrine disorders, malignancies like leukemia, agranulocytosis, hyposalivation due to autoimmune diseases or head and neck radiation, certain cytotoxic medications.\textsuperscript{2} Candidal overgrowth due to predisposing factors, can lead to local discomfort, an altered taste sensation, dysphagia from oesophageal overgrowth. These can lead to malnutrition, delayed recovery, and long-term hospital stay. Systemic candidiasis is associated with a mortality rate of 71% to 79%.\textsuperscript{3}

Traditionally, the most commonly used classification of oral candidiasis divides the infection into four types including (1) acute pseudomembranous candidosis (thrush), (2) acute atrophic (erythematous) candidosis, (3) chronic hyperplastic candidosis, and (4) chronic atrophic (erythematous) candidosis. Chronic hyperplastic type is further divided into subtypes based on localisation pattern, they are (a) Chronic oral candidosis (candidal leukoplakia), (b) endocrine candidosis syndrome, (c) Chronic localised mucocutaneous candidosis, and (d) Chronic diffuse candidosis.\textsuperscript{4} Different presentations of oral candidiasis (either primary or secondary) are (1) pseudomembranous variant, (2) erythematous variant, and (3) hyperplastic variant.\textsuperscript{2} Pseudomembranous candidosis (oral thrush) presents as creamy white lesions on the oral mucosa and a diagnostic feature of this infection is that these plaques can be removed by gentle scraping leaving behind an underlying erythematous mucosal surface. Histological examination of recovered pseudomembranes reveals desquamated epithelial cells together with yeast and filamentous forms of Candida. The infection has, traditionally, been regarded as an acute condition often affecting newborn babies where there is an immature immune system. In older individuals, acute pseudomembranous candidosis often occurs when there is a nutritional limitation, local immune suppression (e.g. steroid inhaler administration for the treatment of asthma), or an underlying disease most notably HIV infection and AIDS.\textsuperscript{5}

Bronchial asthma is a chronic inflammatory disease of the respiratory system which is characterized by dyspnea, shortness of breath, coughing, and wheezing due to the narrowing of the bronchial airways by muscle spasm, mucosal swelling or nasal and bronchial secretions. An immune complex allergic reaction is suggested to be the etiological factor.\textsuperscript{6}

Bronchial asthma itself will not cause any oral lesions but indirect effects of asthma drug therapy can induce clinical lesions. Patients most prone to develop oral manifestations are chronic asthmatics who use corticosteroid inhalants since these are the mainstay therapeutic agents in the management of bronchial asthma.\textsuperscript{7} Repeated contact of steroid inhalant on the oral mucosa can result in the development of acute pseudomembranous candidiasis (oral thrush) because of fungal overgrowth in an area of localized immunosuppression.\textsuperscript{7} According to Salzman \textit{et al.} increased concentration of glucose in saliva resulting from the effect of deposited corticosteroids may be responsible for oral candidiasis.\textsuperscript{8} A study done in 2013 showed that a relative risk is the highest in the first 3 months of ICS usage, but remain increased up to at least 1 year after ICS initiation.\textsuperscript{9} This steroid-induced infection consists of \textit{C. albicans} colonies that appear as curdy white lesions located commonly on the soft palate and oropharynx. Eventually, the white precipitates peel off leaving behind an intensely erythematous and raw-looking area.

In this reported case, along with a proper history and clinical evaluation, patient was also analysed for underlying systemic causes. Once the final diagnosis was arrived, appropriate treatment was considered by the use of spacer along with metered dose steroid inhaler and topical application of antifungal agent clotrimazole 1% mouth paint for 2 weeks. It was effective enough in healing the lesions. Measures like rinsing the mouth with water after MDI use can also prevent the occurrence of oral candidiasis.\textsuperscript{10} When the patient was re-evaluated during follow-up visit, he presented with complete remission of the lesions.

**CONCLUSION**

Diagnosing oral fungal lesions along with appropriate management measures are the prime responsibilities of any dental professional. Carefully recording the medical history is important in identifying this clinical problem. Predisposing factors should be treated or eliminated where feasible. Since topical anti-candidal therapy is efficacious in the management of oropharyngeal candidiasis, it alone is not sufficient in asthmatic patients who continue to use steroid inhalers. The effective measure is either to change the medication to a non-steroid inhaler after consulting the patient’s physician or to use a spacer along with MDI so that less medication gets deposited in the mouth or throat and then concomitantly instituting anti-candidal therapy. The prognosis is good for oral candidiasis with appropriate and effective treatment.

**REFERENCES**


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