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Case Series

Oral Candidiasis a common manifestation of xerostomia and chronic renal failure: A report of two case series

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ABSTRACT

Candida species is a natural commensal in the oral cavity in around 53% of the population· However, it becomes opportunistic in immune compromised situations and inpatients taking certain medications. The evaluation of risk variables is critical in the management of candidal infection. It is critical to precisely record medical history of the patient in order to know the exact underlying cause. This case report will highlight two candidiasis cases in patients with chronic renal disease and patient on antidepressant therapy.

1. Introduction

Oral candidiasis, often known as "thrush," is an opportunistic fungal infection that mostly affects the oral mucosa. Candida albicans, the principal causative agent, is a very versatile commensal organism well adapted to its human host: yet, alterations in the host micro environment might encourage the switch from commensalism to pathogen.[1] This transformation is largely reliant on a diverse set of virulence factors, most notably cell surface adhesions, proteolytic enzymes, morphologic shifting, and drug resistance development. Even if it is not in close proximity to the oral cavity, the oral cavity may provide a clue to underlying illness such as renal failure with changed salivary composition and periodontal disorders. The prevalence of renal disorders such as chronic kidney disease (CKD) and end-stage renal disease (ESRD) is increasing nowadays, most likely due to improved health awareness and the availability of easy laboratory tests to identify renal failure CKD and ESRD weaken the immune system, increasing the risk of Candida infection.[2] Patient taking antidepressant medications like tricyclic antidepressantsand Monoamineoxidase inhibitor (MAO inhibitors), Selective serotonin reuptake inhibitors (SSRIs) cause dry mouth which secondarily leads to candidiasis.[3]

2. Case Report 1

A 27-year-old male patient came to the department of oral and maxillofacial pathology and forensic odontology at the Himachal Institute of Dental Sciences in paonta sahib with a chief complaint of discomfort and burning sensation on the tongue that had been present for two months. The discomfort began abruptly and got worse by eating hot, spicy, and savoury foods. It was persistent and did not resolve on its own. The patient's medical history revealed a history of chronic renal failure. Intraoral examination revealed a white plaque extending from the anterior 2/3rd to the posterior 1/3rd of the tongue, encompassing the fauces bilaterally but sparing the uvula. On clinical examination the lesion was found to be non-tender and scrapable. Based on the relevant medical history, oral thrush was suggested as a

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probable diagnosis. A cytological swab was obtained to rule out leukoplakia.

The Histopathological report of the Hematoxylin and Eosin (H&E) stained section showed epithelial hyperplasia with focal keratosis, surface inflammatory exudates and the underlying subepithelial stroma with scattered chronic inflammatory infiltrate. Candida colonizing the mucosal surface andcandidalhyphe were also evident, which issuggestive of acutepseuodomembranous candidiasis.

Figure 1: Clinical presentation of candidiasis in patient with chronic renal failure.

3. Case-Report 2

A 32-year-old male patient presented to the department of oral and maxillofacial pathology and forensic odontology at Himachal Institute of Dental Sciences, Paonta Sahib with a chief complaint of the appearance of white patches and small reddish elevations on the upper surface of the tongue since past year. The patient showed a contributing prior medical history of neuropathic pain in the left hand extending up to the wrist from two years and dust allergy from six years. A detailed history revealed that the patient had been using Amitriptyline 10mg 1 tablet at night for the last 2 years and was also taking levocetirizine 10mg once day from 5 years. On intraoral inspection, a white patch was visible on the dorsal surface of the tongue, as well as isolated regions of depapilation on the lateral borders of the tongue. The lesion was painful while scraping off. An initial clinical diagnosis of oral thrush was established based on the medical history and clinical examination.

Figure 2: Clinical presentation of tongue after scrapping with cotton

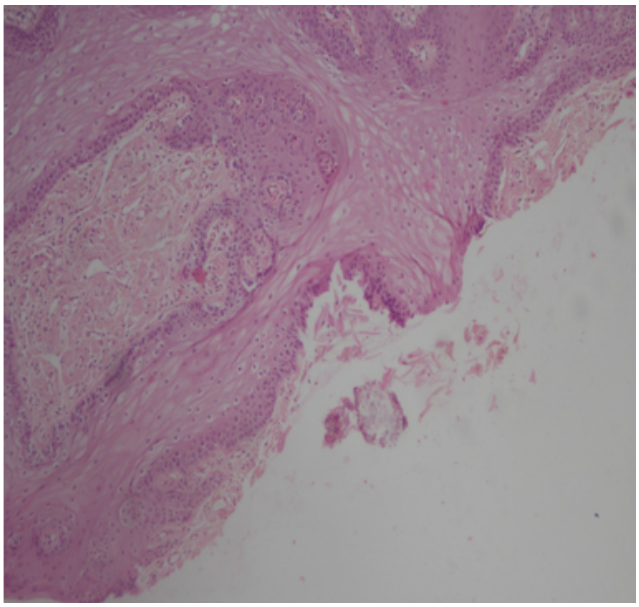

Figure 3: Histopathological slide of candidiasis showing candidal hyphae. (at40x)

The Histopathological evaluation, by using the Hematoxylin & Eosin (H&E) stain revealed, Epithelial hyperplasia with anucleated and nucleated squames along with keratinous flakes. Many candidalspores, candida hyphae were also detected in the microscopic inspection, confirming acute pseusomembraneous candidiasis.

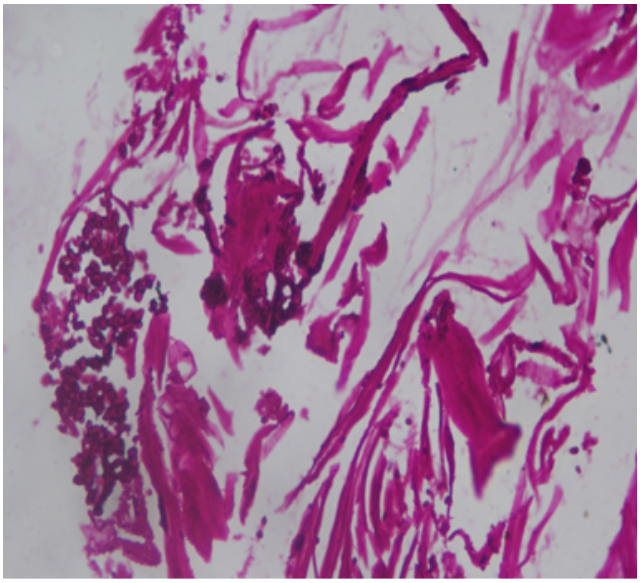

Figure 4: Histopathological slide of Candidiasis showing candidal hyphae (at 400x)

Figure 5: Candidiasis on dorsal surface of tongue in patient with xerostomia

Figure 6: Clinical presentation of tongue after scrapping with cotton

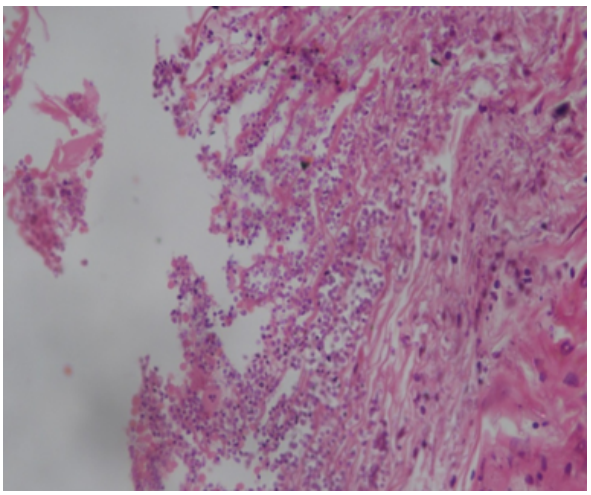

Figure 7: Histopathological slide showing candidal spores & candidal hyphae. (at100x)

4. Discussion

Candidiasis, often known as oral thrush, is the most common mucocutaneous mycosis of the mouth. It is generated by the genus Candida, which is present as a common commensal bacterium in the oral cavity of 53% of the general population. Candida albicans can colonize the oral cavity alone or in collaboration with other species. The transition from commensal to pathogenic organism is dependent on the intervention of various predisposing factors that alter the microenvironment of the oral cavity and favors the appearance of opportunistic.[4] Conditions such as renal failure and xerostomia act as perfect nidus for these organisms.

Chronic renal failure is defined as the presence of kidney impairment or an estimated glomerular filtration rate (eGFR) of less than 60 ml/min per 1.73 square meters that lasts for three months or longer. It is a gradual decline of kidney function that eventually necessitates renal replacement treatment (dialysis or transplantation). The most common oral manifestation of chronic renal disease is candidiasis.[5] Symptoms of patients suffering from this condition usually range from being completely asymptomatic to burning mouth syndrome which was the presenting complaint of the patient in the first case report. The significance of oral health care in the management of individuals with systemic disorders, such as chronic kidney disease (CKD), has been established.

Many CKD patients have oral lesions; yet, oral health care has received little attention, particularly

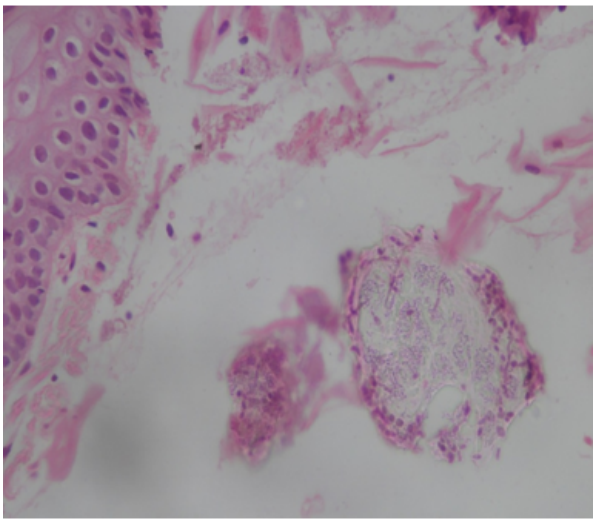

Figure 8: Histopathological slide showing candidal spores and candidal hyphae (at 400x)

in poorer nations with a greater prevalence of renal illness.ElijahO,Oyetola, Foluso J et al .in their study found out that the patients suffering from CKD had around 96.5% of candidiasis when compaired with the control group.[6] Other significant findings were xerostomia, burning mouth ,abnormal taste,abnormal lip hyperpigmentation.[6]

A cross-sectional research was conducted on 66 patients, who were separated into two groups: group A (33 patients), RT patients, and group B (33 patients), CRF patients. Data on demographics, therapy type and duration, clinical laboratory findings for blood leucocytes, oral hygiene, and oral candidiasis diagnosis were obtained. Candida-related risk factors were investigated. Among the 66 patients, 21 had microbiologic evidence of oral candidiasis, including 12 from the RT group and 9 from the CRF group. Patients with renal impairment (RT and CRF) had an oral candidiasis frequency of 31.82 percent, with no difference between study groups. C. albicans was the most common species isolated from RT and CRF patients. The duration of therapy and oral hygiene were the variables associated with the presence of oral candidiasis.[7]

The term "xerostomia" refers to dry mouth. Patients typically complain of diminished or changed taste, tongue dryness, oral burning, and trouble swallowing. Xerostomia is most frequentlyseen as side effect of various drugs, head & neck radiation therapy ,also due some autoimmune diseases especially Sjogren syndrome (SS).[8] A variety of medication types have been linked to xerostomiasuch as Antidepressants (amitriptyline,nortriptyline),Antihistamines (astemizole, loratadine, levocitrizine.),Anticholinergic agents (atropine, belladonna), Diuretics (furosemide, chlorothiazide,)Sedative and anxiolytic agents(alprazolam, diazepam, triazolam),Muscle relaxants (tizanidine, cyclobenzaprine, orphenadrine), Analgesic agents(opioids and NSAIDs), Antihistamines (astemizole ,loratadine, brompheniramine).[8]

Medication that causes xerostomia may act on the central nervous system (CNS) or at the neuroglandular junction. Muscarinic M1 and M3 receptors, alpha1 and beta1-adrenergic receptors, and particular peptidergic receptors that begin salivary secretion deliver nerve supply to salivary gland secretory cells. Medicine-induced xerostomia occurs when a medication either directly inhibits the CNS's production of ACh or occupies the muscarinic/adrenergic receptors.[8] Several studies revealed that hyposalivation was related with a greater prevalence of oral Candida colonisation and oral candidiasis, and despite this association, no prior systematic review was undertaken to investigate this relationship in depth.[9]A meta analysisincludinga total of 429 studies were identified by searching the databases, of which nine studies were included for qualitative and quantitative data synthesis. The analysis included xerostomic patients and controls subgrouped into two categories: Candida growth and oral candidiasis The Candida growth subgroup analysis shows that the xerostomic patients are at higher risk (95%) for oral Candida growth than controls and the oral candidiasis subgroup analysis yields that xerostomic patients are at higher risk for developing manifest oral candidiasis than controls.The same oral symptoms was present in the second case that was diagnosed as acute pseudomembranous candidiasis associated with tricyclic antidepressant (Amitriptyline 10mg), Antihistamine (levocitrizine10 mg).

5. Conclusion

Candida species have been found in 53 percent of healthy persons and the majority of the elderly. This seemingly easy shift is similar to the disease-causing features of a microbe. Chronic renal failure, an immunocompromised condition, and long-term use of antidepressant and antihistamine medications can lead to the development of acute pseudo membranous candidiasis due to fungal overgrowth. Maintaining oral hygiene and detecting infections early are critical. Oral candidiasis therapy requires the elimination of any recognized predisposing factors as well as the delivery of an antifungal pharmaceutical agent.

6. Source of Funding

None.

7. Conflict of Interest

None.

References

1. Nagaraj T, Kongbrailatpam S. Oral erythematous candidiasis. A case report. *Int J Med Drnt Case Rep*. 2020;7(1):1–4.

2. Ayinampudi ABK, Rao C. Oral Candida colonization in renal disease patients between diabetes and non-diabetes; a comparative study. *Immunopathol Persa*. 2018;4(1):1–5.
3. Daly C. Oral and dental effects of antidepressants. *Aust Prescr*. 2016;39(3):84. doi:10.18773/austprescr.2016.035.
4. Castellote LC. J Yolanda et al clinical microbiology diagnosis of oral candidiasis. *J Clin Exp Dent*. 2013;5(5):279–86.
5. Vaidya SR, Aeddula NR. Chronic Kidney Disease. and others, editor; 2021.
6. Oyetola EO, Foluso J, Gbemisola A. Oral findings in chronic kidney disease: implications for management in developing countries. *BMC Oral Health*. 2015;15(24):1–8.
7. Olivas E, Ruiz V. Prevalence of oral candidiasis in Chronic Renal Failure and Renal Treatment pediatric patients. *J Clin Pediatr Dent*. 2008;3(24):313–30.
8. Talha B, Swarnkar A. National library of medicine; 2021. Available from: https://www.nlm.nih.gov/.
9. Molek M, Florenly F. Xerostomia and hyposalivation in association with oral candidiasis: a systematic review and meta-analysis. *Evid Based Dent*. 2022;p. 1–7.

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