Case Report

Post-COVID-19 Candidiasis of the Tongue in an 18-year Old Male

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Abstract

Fungal infection in the oral cavity is considered a marker of immunosuppression in certain chronic conditions such as cancer patients on immunosuppression medications and human immunodeficiency virus infections. Currently, coronavirus disease-2019 (COVID-19) pandemic is causing immunocompromised conditions of patients and inviting superadded infections such as local Candida infections such as oral candidiasis and invasive fungal infections. The role of opportunistic fungal infections in the morbidity and mortality of COVID-19 infections remains less established. Overuse of antibiotics for the treatment of COVID-19 infections is also thought to hamper normal flora in the oral cavity which is also an important risk factor for aggravating opportunistic fungal infection in the body. Here, an 18-year-old immunocompetent male presented with a white patch on the dorsal surface of the tongue, which developed 1 week after relieved from COVID-19 infection. The microbiological test of the whitish patch over the tongue confirmed candidiasis.

Keywords: Antibiotic, coronavirus disease-2019 infection, oral candidiasis, tongue

Introduction

The coronavirus disease-2019 (COVID-19) pandemic emerged in Wuhan, China in late 2019.[1] COVID-19 infection is caused by severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2), single-stranded RNA betacoronavirus of the family Coronaviridae.[1] COVID-19 posed a global threat to health care and economic conditions.[2] COVID-19 patients have a high risk of getting opportunistic fungal infections in case of acute respiratory distress syndrome (ARDS), longer stay in the intensive care unit, getting broad-spectrum antibiotics, corticosteroids, or immunosuppressants, and supported by invasive or noninvasive ventilation.[3] During the COVID-19 infection, there was an overuse of antibiotics for controlling the symptoms. The use of a broad spectrum of antibiotics, either empirically or targeted therapy for super-infection in patients with severe COVID-19 raises the odds of fungal infections due to endogenous fungi such as Candida species.[4] Although approximately 11% of the COVID-19 patients had a diagnosis of total candidiasis in the body, only 1.5% of patients were diagnosed with oral candidiasis.[5] COVID-19 patients are more likely to develop pulmonary aspergillosis, whereas oral candidiasis particularly candida glossitis is very rarely documented in the medical literature.[6] Candida is the most common etiology for opportunistic fungus worldwide.[7] It is a frequent colonizer of the mucous membrane and skin of the human.[8] The purpose of this case report is to present a patient with mild COVID-19 infections hospitalized 1 week back and now presented with fungal glossitis in an immunocompetent young adult which is rarely reported in the literature.

Case Report

An 18-year-old boy attended the outpatient department with complaints of a burning sensation in the throat and odynophagia for 1 week. Twenty days ago, he was diagnosed with COVID-19 infection and hospitalized for 10 days with

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features of fever, throat pain, dry cough, anosmia, and ageusia. The diagnosis of SARS-CoV-2 infection was confirmed by performing polymerase chain reaction (PCR) testing. During his 10 days hospital stay, the patient was given azithromycin, paracetamol, and corticosteroids. There was also the history of self-medication of antibiotics (over the counter) by the patient for throat pain and body ache before diagnosis of COVID-19 infection. Once the patient was symptoms free, he was discharged from the hospital and sent for isolation, although his PCR result remained positive. Seven days after release from the hospital, the patient presented with pain in the tongue and a whitish patch over the tongue [Figure 1]. On clinical examinations, the whitish patch was spread over the whole tongue with normal bilateral buccal mucosa. Scrape cytology from the whitish patch over the tongue and microbiological examination (potassium hydroxide [KOH]-Calcofluor fluorescent stain) confirmed the *Candida albicans*. HiCrome agar media showed smooth green-colored colonies of *Candida albicans* [Figure 2]. The patient was started with a topical antifungal, nystatin (mycostatin), three times a day and a local mouthwash with 0.2% chlorhexidine thrice daily. He was also taking systemic antifungal fluconazole for 10 days. His oral symptoms were resolved completely within 10 days.

Discussion

The outbreak of COVID-19 infection leads to an acute respiratory illness by the infections of the novel coronavirus SARS-CoV-2.[9] The global attention is still on the infected patients of COVID-19. The clinical manifestations of COVID-19 infections include asymptomatic or paucisymptomatic-to-severe respiratory failure which needs mechanical ventilation and requires the support of an intensive care unit for sepsis, septic shock, and multiorgan dysfunction syndromes.[10] Although a majority of the patients present with flu-like symptoms, the superadded infections due to prolonged medications/antibiotics or corticosteroids are sometimes unnoticed but careful assessment help in early diagnosis and treatment.[9] Oral candidiasis is a common opportunistic infection of the oral cavity caused by the overgrowth of Candida species, the most common type being the *Candida albicans*.[11] The genus Candida belongs to the yeasts.[11] These lesions of the oral cavity are usually associated with immunocompromised patients and the elderly age. The direct involvement of the SARS-CoV-2 virus in fungal infections in the oral cavity is uncertain.[12] The risk factors for oral candidiasis are impaired salivary gland function, drugs, dentures, high carbohydrate diet, smoking, diabetes mellitus, malignancies, and immunosuppressive conditions. In this case, there was a risk factor of prolonged antibiotics taken during hospitalization for COVID-19 infection.

Patients with candida infections of the tongue or oral cavity often present with a burning sensation and dysphagia or odynophagia as in this case.[13] Patients of oral candidiasis often present with discrete, raised white- or cream-colored but occasionally red lesions.[8] These lesions are found on the buccal mucosa, palate, or dorsum of the tongue. Other than the oral cavity, candidiasis infection can occur in the vaginal, pulmonary, and other mucocutaneous areas. The total candida infection of the body is more prevalent in females than in males due to vaginal candidiasis, which is easily diagnosed by oral candidiasis and often missed by clinicians as they are not well familiar with different oral presentations of oral candidiasis. There are three broad types consisting of acute candidiasis, chronic candidiasis, and angular cheilitis.[14] COVID-19 patients are at a higher risk for opportunistic fungal infections in the elderly age group, those with ARDS, prolonged hospital stays, taking a prolonged period of corticosteroids, or immunosuppressive and prolonged periods of broad-spectrum antibiotics.[15] Hence, SARS-CoV-2-infected patients are most likely to develop pulmonary aspergillosis, oral candidiasis, or pneumocystis pneumonia. In this case, a mild type of COVID-19 patient with fewer mild symptoms and treated with antibiotics and corticosteroids for a longer period during hospitalization. In one study, the usage rate of antibiotics and antifungal agents

Figure 1: Patient showing whitish coat over the dorsum of the tongue

Figure 2: HiCrome agar media showing smooth green-colored colonies of *Candida albicans*

in patients with a severe infection of COVID-19 was 100% and 39%, respectively.[4]

The diagnosis of oral candidiasis is done by exfoliative cytology, culture, and tissue biopsy. Exfoliative cytology is done by scraping superficial cells into samples. KOH preparation of the specimen shows nonpigmented septate hyphae with characteristic dichotomous branching.[16] In KOH-calcofluor fluorescent stain, there are hyphae, yeast cells, and other fungal elements that will fluoresce.[16] A smear should be taken from the site of the lesion and fixed to microscope slides. Then, this is stained either by gram stain or by periodic acid-Schiff (PAS) technique. In these methods, candida hyphae and yeasts appear either dark blue (gram stain) or red/purple (PAS).[5] HiCrome agar media shows smooth green-colored colonies of *Candida albican*s in this case.

A swab culture should be taken from the lesions. Management of oral candidiasis involves proper history taking, clinical examination, microbiological analysis of the samples from the oral cavity, and appropriate antifungal treatment. Antifungal treatment is used for the treatment of oral candidiasis. Before starting the antifungal agents, advice the patient to gargle with a physiological saline solution helps to reduce the oral fungal counts and so soothe the associated symptoms. The pharmacological treatment for oral candidiasis should be tailored to the individual patient as per their present medical condition and the severity of the infection.[17] Antifungal medications are available in different forms such as ointment, gels, creams, suspensions, lozenges, and tablets.[14] Topical antifungal treatment is the recommended first-line treatment for uncomplicated oral candidiasis. If systemic antifungal treatment starts, the topical therapy should continue as this decrease the dose and duration of the systemic treatment.[18] In this case, the patient was treated with a topical antifungal, a local mouthwash with 0.2% chlorhexidine thrice daily. He was also taking systemic antifungal fluconazole for 10 days and his symptoms resolved completely within 10 days.

Conclusion

Fungal infection of the tongue is rare in mild COVID-19 infections. This infection may be recorded in severely affected with COVID-19 infections, especially the ones with predisposing comorbidities and prolonged use of antibiotics or corticosteroids. In our case, the patient gives an account of the possibility of a potentially life-threatening opportunistic oral infection by the *Candida albicans* that has been caused by empirical prolonged antibiotics in COVID-19 infection. Accurate diagnosis of opportunistic fungal infections in the oral cavity in COVID-19 patients remains challenging in resource-poor settings. Oral candidiasis is a morbid clinical entity in COVID-19 patients, especially the ones with predisposing comorbidities and antibiotics intake, either justified or unjustified.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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