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Oral candidiasis as rare complication of COVID-19: A case series

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ABSTRACT

Ever since its emergence the Severe Acute Respiratory Syndrome Corona Virus 2 (SARS-CoV-2) has puzzled the physicians across the globe with its wide spectrum of presentation. The oral hygiene and its complications seem to be under reported due to the increasing load on the healthcare sector. It is important to diagnosis and treats oral candidiasis to prevent its further complications like candidemia, malnourishment or sepsis. We report a case series of two patients who presented with the chief complaint of dysphagia and turned out to be a case of COVID-19 upon investigations.

Keywords: COVID-19, Oral Candidiasis, SARS CoV2

1. INTRODUCTION

Severe Acute Respiratory Syndrome Corona Virus 2 (SARS-CoV-2) causes dysregulation of the immunity system which might be the reason behind increasing incidence of oral candidiasis in COVID-19 patients among other oral manifestations (Hockova et al., 2020). Most commonly encountered opportunistic infection of the oral mucosa is oral candidiasis caused due to overgrowth of *Candida Albicans*. *Candida Albicans* is a regularly found inhabitant in the oral mucosa of various individuals. It is yeast like fungus. Dysfunction of the immunity leads to proliferation and infection by this opportunistic inhabitant which otherwise seems to an innocent resident of the oral flora (Paradowska-Stolarz, 2021). Oral Candidiasis manifests as white colored patch in the oral mucosa which disappears on starting antifungal therapy. Other investigations that can be used are fungal smear preparation or biopsy. Oral candidiasis can be further classified into acute candidiasis, chronic candidiasis and angular cheilitis. Predisposing conditions for candida are Diabetes, malignancy, ingestion of chemotherapeutic drugs or long term ingestion of steroids. HIV infection and Cytomegalovirus infections may also predispose the individual to develop candidiasis. Salivary gland infections, dentures, increased carbohydrate diet and smoking are other risk factors for oral candidiasis (Amorim et al., 2020). Resolution by antifungal therapy is the diagnostic confirmation for oral candidiasis. Hyper-pigmentation of mucosa might also be associated with candidiasis which is due to immunoinflammatory responses. There is recommended anti-fungal

prophylaxis in individuals taking immunosuppressants. Prognosis of oral candidiasis is usually favorable however in rare cases it might cause serious complications. Though symptoms like anosmia and ageusia are well established symptoms of COVID-19, dysphagia is a rare symptom for its presentation. There can be a wide range of causes of dysphagia such as esophageal tumour, esophageal web, pharyngitis or tonsillar abscess. The objective of this case series is to highlight the oral manifestation as candidiasis leading to dysphagia in otherwise asymptomatic COVID-19 patients.

2. CASE SERIES

Case 1

A 44-Year-old female presented to the outpatient department with the chief complaint of dysphasia since 4 days. She also reported a white patch on her oral mucosa which she removed and it grew again spontaneously. She had no prior history of Diabetes Mellitus or Hypertension or any other chronic illness. There was no history of malignancy or ingestion of any immunosuppressants. On general examination her pulse was 84/min, regular in rhythm, blood pressure was 120/70 mm Hg in right arm supine position and spo2 was 99 percent on room air. There was presence of white colored patches in her palate and tongue (Figure 1). On systemic examination bilateral chest was clear, normal heart sounds were heard, patient was conscious and oriented and abdomen was soft, non tender with no organomegaly. Patient was admitted in medicine ward and started on anti fungal and other supportive measures. Nasopharyngeal swab was sent for COVID-19 which came out to be positive. An HRCT Chest was done which revealed bilateral lower lobe ground glass opacities with a CT Severity score of 12/25 and CORADS- 6 (Figure 3a).

Lab investigations revealed increased inflammatory markers and tests for HIV were negative (Table 1). Patient was managed with antiviral, anti-fungal and other supportive measures. During the course of hospital stay patient improved clinically and hence was discharged in entirely stable condition. She is doing well on follow up.

Figure 1 Showing oral lesions of case 1

Case 2

A 35 year old male presented with the chief complaint of dysphagia and whitish patch on the back of the tongue since six days. He had no prior history of diabetes mellitus or hypertension. Patient denied history of fever, chestpain, breathlessness or cough. On examination his pulse was 70 beats per minutre, regular in rhythm, blood pressure was 110/74 mm hg in right arm supine position, spo2 was 96 percent on room air and there were no signs of respiratory distress. There was presence of whitish patch in his oral mucosa upon local examination (Figure 2). On systemic examination chest was bilaterally clear on auscultation, heart sounds were normal, patient was conscious and oriented and abdomen was soft and non tender with no hepatosplenomegaly. Patient was admitted and started on oral fluconazole and a nasopharyngeal swab for COVID-19 was done which came out to be positive.

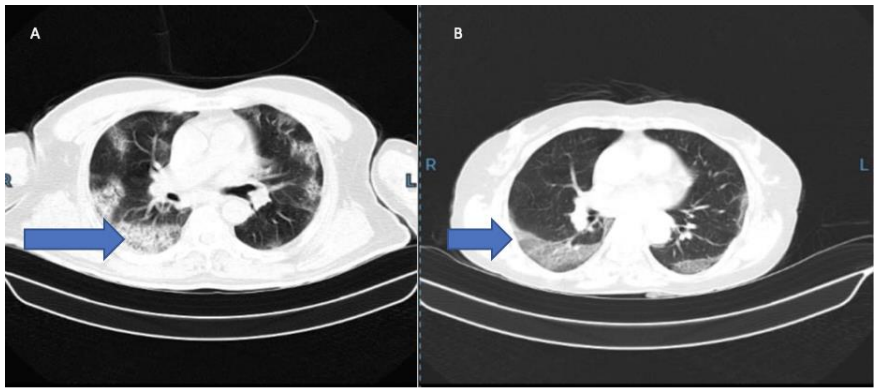
HRCT Chest was done which revealed bilateral ground glass opacity with CT severity score of 10/25 and CORAD 6 (figure 3b). Lab investigations are mentioned in table 1. Patient was started on Remdesavir and other supportive measures and antifungal was continued. Patient improved clinically and was discharged on 6th day in stable condition.

Figure 2 showing oral lesions of CASE 2

Table 1 Showing lab investigations of case 1 and 2

Lab Paramteter	Case 1 AGE-44 Years SEX-FEMALE	Case 2 AGE-35 Years SEX-MALE
CBC	Hb-11.9gm/dl MCV-83fl Platelet count-190000/dl WBC Count-4940/dl	Hb11.6gm/dl, MCV:82fl, Platelet count 1.53/dl, WBC Count 5560/dl
LFT	Total Protein-6.2gm/dl, Albumin3.0gm/dl, Globulin3.2gm/dl, aspartate aminotransferase 22 units/l , alanine aminotransferase 24 units/l,	Total Protein-6.6gm/dl, Albumin3.3gm/dl, Globulin3.3gm/dl, aspartate aminotransferase 28 units/l , alanine aminotransferase 39 units/l ,AlkanlinePhophatase103IU/l,

	AlkanlinePhophatase88 IU/l, Total Bilirubin :1.3mg/	Total Bilirubin :1.1mg
KFT	Creatinine:0.6mg/dl, Urea39mg. /dl, Sodium132mmol/l, Potassium -4.0mmol/l	Creatinine:0.7mg/dl, Urea32mg/dl, Sodium134mmol/l, Potassium – 4.3mmol/l
CRP	63.0mg/dl	74.0mg/dl
D-Dimer	0.76	1.12
Serum Ferritin	525ng/ml	645ng/ml
HRCT Score CORAD	12/25 6	10/25 6



HRCT of Case 1(figure 3a) and case 2(figure 3b) showing Ground Glass Opacity

Figure 3 Showing HRCT of Case 1 and 2

3. DISCUSSION

The oral manifestation of COVID-19 seems to be on the rise post its spread in 2020. The lack of oral hygiene along with dryness of mouth (xerostomia), use of multiple antibiotics and profound inflammation may be the cause of increasing number of patients presenting with oral candidiasis with COVID-19. Profound use of steroids causing immunosuppression might also predispose the individual to develop oral candidiasis. Lymphopenia and over activation of the T cell leading to an overall reduction in the effective cellular and humoral immunity is evident in COVID-19 (Cantini et al., 2020). This might promote the growth of *Candida Albicans* which is otherwise a non-harmful inhabitant of the oral mucosa. There is increased affinity for ACE-2 receptors in the SARS-CoV-2 which exerts its effect by modulating the expression of this receptor.

These ACE-2receptors exists in the oral mucosa thus making the oral mucosa as a portal for the virus entry. ACE-2 receptors are proven to be found in the epithelial cells of the salivary glands hence leading to dry mouth or xerostomia. This xerostomia might predispose the individual to develop oral infections including oral candidiasis. Indiscriminate use of higher antibiotics may lead to over growth of fungal inhabitants. Additionally, use of high dose steroids is shown to cause immunodeficiency leading to a predisposed state for fungal growth. All the above factors may lead to a growth of *candida albicans* in the oral mucosa leading to manifestation of oral candidiasis such as in our case.

It is important to note that our both patients did not have history of Diabetes Mellitus and their HbA1c level were within normal range thus ruling out diabetes to be a predisposing condition. Also, there was no history of malignancies or use of chemotherapeutic agents in the past, nor were there history of use of steroid or any other immunosuppressants in both the cases. In the view of above facts it is reasonable to conclude that COVID-19 was the cause of Oral Candidiasis in our case series which lead to dysphagia. Though Xerostomia, Anosmia and ageusia are commonly reported symptoms of COVID-19, dysphagia is an uncommon

symptom which was the presenting complaint in our patients. An HRCT revealed ground glass which is classical finding of COVID-19 in the bilateral lower lobes of the lung (Jain et al., 2020). With the growing spread of COVID-19 there has been emergence of rare manifestations which should be kept in mind while treating COVID-19 (Talwar et al., 2021).

Hence we suggest routine testing for COVID-19 to all physicians encountering candidiasis to rule out COVID-19 as an important differential. This shall not only lead to early diagnosis and management but shall also help in stopping the preventable spread of COVID-19 in undiagnosed patients who arrive with atypical presentations thus challenge the already thin strained health care professionals.

4. CONCLUSION

In the ongoing lethal pandemic there is an alarming increase in the oral manifestations of the COVID-19 which are tend to be marked nonessential due to the coinciding deadly presentations of COVID-19 such as respiratory distress. We highlight the fact that though testing for COVID-19 might seem unnecessary in patients with oral candidiasis, it tends to be beneficial not only for a early diagnosis and management but also to put a stop to the chain of transmission. Hence, we recommend the physicians for routine screening for COVID-19 in patients with oral candidiasis.

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Conflict of interest

The Authors have no conflicts of interest that are directly relevant to the content of this clinic-pathological case

Financial Resources

There are no financial resources to fund this study

Informed Consent

Informed Consent was obtained from the patient.

Author's Contribution

All the authors contributed equally to the case report.

Data and materials availability

All data associated with this study are present in the paper.

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