

Oral manifestations of COVID-19: are they early markers for the disease process

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Short communication

Recent research has advocated that the salivary transmission of coronavirus is being established. The dryness of the oral cavity, vesiculobullous lesions, aphthous-like ulcerations, dysgeusia or altered taste sensation and anosmia are frequently reported oral signs. There has been limited research that has given the description of the oral manifestations of COVID-19; with most of the research having focus on the taste impairment. The most commonly reported and one of the first and commonest symptom of COVID-19 is Dysgeusia which has been reported among 38% patients, with majority of the population in North Americans and Europeans, female gender, and patients having disease of mild-moderate severity.¹

In covid-19 patients, the frequently affected sites in the oral cavity are tongue (38.0%), labial mucosa (26.0%), and palatal mucosa (22.0%). There was not much gender differences in the occurrence of the oral lesions with 49.0% females and 51.0% males reporting oral lesions.²

Biadsee and colleagues in their research showed that about 7% patients having positive RT-PCR test results had plaque-like changes occurring on the dorsum of their tongue. Along with this, the swelling in palatal, lingual, and gingiva was reported among 8% patients. The oral lesions appeared alongside the loss of taste and smell sensation among COVID-19 patients and additionally, they also found that there was more severity and dissemination of the oral lesions among geriatric age group and patient with severe COVID-19.³ Other research also established that enanthema occurred among 29% having confirmation of COVID-19 along with cutaneous exanthema.⁴

As for the etiology of the oral lesions, many hypotheses are under discussion. It has been under focus of debate that the oral lesions might have typical association with or as a promoter of COVID-19. The currently established tropism of SARS-COV-2 for the tongue and epithelium of the salivary glands is indicative that the target for the virus might be the mucous membrane of the oral cavity.^[5] Also, the resolution of the oral lesions generally follows Covid-19 resolution establishing a definite link of the virus infection, oral manifestations and subsequently their resolution.⁵

There is debate and insufficient evidence for the oral damage being contributed to the SARS-COV-2 alone. Acute COVID-19 infection, along with the therapeutic measures, might trigger the oral mucosal alterations, which contribute to many opportunistic fungal infections, recurrent herpes simplex virus infection of the oral cavity, non-specific oral ulcerations, dysgeusia, drug-associated eruptions, xerostomia due to the reduction in the secretion of the saliva, ulcerations, and gingival inflammation. Additionally, many of the patients had the presentation of the injury of the oral mucosa at the time of hospital stay, further in support of the hypothesis regarding the contribution of co-infections, impaired immune response, or side effects of the therapeutic interventions.^{6,7}

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It has been suggested that, among the probable causes of oral lesions, that they could be secondary to the deterioration of the immune system or due to disease treatments. The drug related development of eruptions can occur during the latency period of recovery from COVID-19. Drug hypersensitivity and urticaria have been reported by several patients can be related to the COVID-19-induced cytokine storm.⁸

Gustatory dysfunction has established its relation with the time of onset and also the severity of disease, making it an established symptom for diagnosis COVID-19 at an earlier stage and among asymptomatic patients. Due to earlier onset and appearance before any other symptoms, xerostomia along with gustatory dysfunction is becoming a valuable tool for detecting and diagnosing the COVID-19. The role of dentists and allied professionals can be instrumental in preventing the pre, intra, and peri-operative transmission of SARS-CoV-2 infection.⁹

The prediction of the COVID-19 with gustatory and olfactory symptoms has an established sensitivity and specificity of 70.0% and 73.0-90.3% respectively. However, the use of sucrose and sodium chloride solutions, with ageusia for sweet and/or salty taste has established the much higher accuracy as a diagnostic test having specificity and sensitivity values of 100.0% and 34.0% respectively.⁹

The specificity of the oral symptoms associated with the COVID-19 highlights the relevance the dental speciality has in relation to COVID-19. The oral health care professional such as dentists and dental hygienists which are the first ones to have awareness regarding the taste alteration, dryness of oral cavity and mucosal lesions could carefully look out for such symptoms and conduct a detailed examination of the mouth for early identification of the COVID-19 patients. *Ren et al.* suggested that having greater understanding of the oral symptoms, dental professionals could play

a more active role along with significant contribution can be done for managing the patients with COVID-19.¹⁰

In conclusion, frequently reported oral findings among Covid-19 patients are ulcerations, necrotising lesions of the gingiva, co-infections by opportunistic organisms such as bacteria, fungi or other viruses, alterations of the salivary gland secretions, various lesions of oral mucosa and gustatory dysfunction. Gradually appearing evidence has established the virus is present in the oral cavity, including the secretions of the salivary gland and even the periodontal tissues. As the symptoms associated with the SARS-COV-2 are increasingly studied, it is showing to be a disorder which affects the various organ systems simultaneously and it is difficult to establish sequence though the oral symptoms are becoming increasingly important markers of disease. So, the role of the oral health professionals can be additionally beneficial as a part of the multidisciplinary team for diagnosing and treating this condition.

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Conflict of interest

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