Review Article

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Oral Manifestations of Covid-19: A Critical Review

Abstract: The COVID-19 (SARS-CoV-2) pandemic has proven to be an immense public health concern affecting various parts of the human biologic systems. The baffling disparities pertaining to the symptoms experienced by each afflicted individual present a difficult challenge to the medical community. The oral cavity is certainly not an exception. The oral effects noted could be either direct effects of the virus itself or the result of an indirect effect of the virus. Although the virus is still of utmost concern around the world, the study of its effects on the human body, including the oral cavity, unquestionably remains a work in progress. COVID-19 has caused a pandemic and it still going quite strong. This disease has many general or constitutional manifestations, among which oral manifestations can also be present. These manifestations are often non-specific and can occur in any viral infections as well. Hence, they have to be recognized distinctly by the dentist as well as Laboratory personnel. So here we have tried to collect available data regarding this, in the form of a review.

Key words: COVID-19; Oral; aphthous; tongue

Introduction:

Novel Coronavirus infections have caused a pandemic. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), the agent, is a single-clain RNA vrius that is the cause of novel coronavirus disease known as COVID-19. The most common clinical symptoms seen are fever, headache, sore throat, shortness of breath, dry cough, abdominal pain, vomiting and diarrhea(1). Ath the start of the COVID-19 pandemic, it was assumed that lack of oral involvement is a distinguishi saliva can be a more sensitive test in comparison with nasopharyngeal swab testing[1]. Also, now many newer manifestations are reported in these infections, and oral lesions are also commonly seen.

Viruses that can affect the oral cavity:

In general, a wide range of viral diseases has been determined to affect the oral structures. These include herpes simplex virus (i.e., primary herpetic gingivostomatitis, secondary herpes labialis), varicella zoster (chicken pox), Coxsackievirus (herpangina), human papillomavirus (focal epithelial hyperplasia; Heck's disease), squamous cell papilloma, verruca vulgaris, measles, oral hairy leukoplakia, and Kaposi's sarcoma. COVID-19 has recently been added to the list of viruses that can affect the oral cavity in various ways.

Dysgeusia:

Since the onset of the current pandemic, the literature suggests that COVID-19 patients can present with a diverse group of oral signs and symptoms. For example, the angiotensin-converting enzyme 2 (ACE2) receptor, which SARS-CoV-2

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binds to in infecting the host cells, is undeniably present in the epithelial cells of the tongue. Based on this finding, dysgeusia (an altered or impaired sense of taste) could be considered the first oral manifestation as a direct consequence of the SARS-CoV-2 infection.[2] This interesting finding is of practical significance, possibly allowing easier identification of presymptomatic or asymptomatic patients.[3] Dysgeusia may occur with or without anosmia (loss of the sense of smell), appears to affect older adults more often than younger ones, and can affect women more often than men.[4]

Oral lesions:

There is also evidence in the current literature regarding painful inflamed lesions in the mouth related to the COVID-19 virus. In addition to the previously mentioned relationship between the ACE2 receptor and the SARS-CoV-2 virus, it is suggested that if SARS-CoV-2 can replicate and infect in the oral epidermal cells (keratinocytes) and fibroblasts (primary cells of connective tissue), it can cause superficial necrosis and oral ulcerations. One such report that followed eight COVID-19 cases in Brazil reported that the respective patients presented with oral necrotic and aphthous-like ulcerations. The lesions developed early in the course of disease after the development of dysgeusia and affected the tongue, lips, palate, and oropharynx.[5] However, there continues to be a suspicion that the observed oral lesions could have been due to a secondary infection related to the patient's compromised immune system rather than directly to the coronavirus itself.[5,6]

Problems associated with salivary glands:

The oral cavity has been proven to be a vigorous site for the COVID-19 infection and also for spread of the disease. The infection can infiltrate the salivary glands and infect the saliva, which can then spread to the gastrointestinal area or enter the lungs and cause pneumonia in some patients with the active disease.[7] The literature also identifies cases of sialadenitis (inflammation and enlargement of the salivary glands) specifically involving the submandibular gland and parotitis (inflammation and infection of the parotid gland) in COVID-19 patients.[8]

It is now believed that because of saliva's ability to harbor infectious organisms as biomarkers for early detection, it can be employed as an alternative test for the presence of the coronavirus. The saliva test is easy, safe, and noninvasive with valuable potential for self-administration. The earlier a patient is diagnosed, the better the prognosis in reducing the severity of the disease and possibly preventing serious complications.[9]

Xerostomia:

The World Health Organization lists the common symptoms of the coronavirus as acute respiratory distress, coughing, and fever. Some additional symptoms, including xerostomia (dry mouth syndrome), are not as obvious as the common symptoms but have occurred among people who have contracted the virus. There are several general factors as to why a person may have a dry mouth, including mouth breathing, side effects of certain medications, dehydration, or anxiety.[10]

Recently, xerostomia has been linked with COVID-19 as a sign of dehydration that can occur as a secondary manifestation of an underlying illness, as is the case with some COVID-19 patients.[11] The cause of dry mouth in COVID-19 patients could also be a combination of any of the previously mentioned factors.

Xerostomia has been identified in health-care professionals who are now mandated to wear N95 masks and face shields as respiratory personal protective equipment. The masks make breathing and drinking water difficult, which can result in xerostomia. A dry mouth puts the host's oral cavity at risk for erosion, fungal infections, and dental caries.[12]

Other dental concerns:

Following the hiatus brought on by the COVID-19 pandemic, upon reopening their practices, dental professionals are seeing an increase in tooth fractures and patients' complaints of sensitive teeth, pain in the jaws, aching cheeks, and migraines. All of these signs and symptoms indicate that patients are clenching and grinding their teeth more often due to the pandemic and the multiple stressors that accompany it.[13] Furthermore, because people have remained indoors for months, they are lacking adequate sun exposure, which could aid in vitamin D formation. Vitamin D is important for healthy

bones, teeth, and muscles.[14] Additionally, current data suggests that patients with COVID-19 have inadequate levels of vitamin D in their blood; those with adequate vitamin D levels tend toward a favorable prognosis. It is agreed, however, that these hypotheses warrant further investigation.[15]

Conclusion:

Dental professionals should be aware of potential oral manifestations of COVID-19 and ensure that they perform thorough intra- and extraoral examinations on their patients, maintain a high level of infection control procedures while seeing patients, stay current in their knowledge of the disease, and uphold all current recommendations to prevent the spread of this immense public health concern.

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