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Review Article

COVID-19 and oral lesions: A review

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ABSTRACT

A new coronavirus (Sars-CoV-2) was detected in China at the end of 2019 and has since caused a worldwide pandemic. This virus is responsible for an acute respiratory syndrome (COVID-19), distinguished by a potentially lethal interstitial bilateral pneumonia. As Sars-CoV-2 is highly infective through airborne contamination, the high infection risk in the dental environment is a serious problem for both professional practitioners and patients. This literature overview at analyzing various reports available on oral symptoms along with possible causation, their relationship to the time of occurrence of clinical symptoms of this global pandemic.

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1. Introduction

The first occurrence of a severe pulmonary illness of an unknown aetiology was reported in the city of Wuhan, China. The unfamiliar pathogen very soon progressed far and wide in Europe and then all over the world. The World health Organisation (WHO) in March 2020 formally announced a pandemic alert.^{1,2}

1.1. The virus

Initially, the virus was named as 2019-nCoV. It was later called as Sars-CoV-2, along with the severe acute respiratory syndrome (SARS-CoV) and the Middle East respiratory syndrome (MERS-CoV) viruses.³ It was seen that this virus resides to the coronaviridae family. The term “coronavirus” is derivational of the Latin word CORONA meaning “Crown” due to its structural resemblance to a Crown with Multiple Spikes when were seen under an electron microscope.^{4,5} SARS-CoV-2 (Severe acute respiratory syndrome coronavirus 2) is a single-chain RNA

virus; the cause of novel coronavirus disease hence it was named as COVID-19 by International Committee on Taxonomy of viruses (ICTV) on 11 February 2020. WHO also announced “COVID-19” as the name of this new disease on 11 February 2020.¹

1.2. Transmission of virus and its manifestations

In general, the incubation period of Covid-19 ranges from 3 - 14 days. An incubation period of as long as 24-days has also been noted.⁶ Direct contact and air borne infections are the main infection pathways. Droplets discharged by coughing, speech, exhalation or sneezing results in airborne infections. Direct contact on the contaminated areas and then touching mouth, nose or eyes results in direct contact infections of Covid-19.

Covid-19 diagnosis is established on the basis of clinical symptoms and epidemiological conditions. This includes patients who had history of any earlier contact with probably infected persons or who have travel history into the areas which have high number of Covid-19 infected individuals in the last 2 weeks before the onset of symptoms.⁶ After the infection, the most commonly seen symptoms

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are dry cough, tiredness and fever. The symptoms which are comparatively less common are:-body aches and pain, headache, diarrhoea, sore throat, loss of sense of smell or taste, conjunctivitis or discoloration of fingers and toes or a rash on the skin. The relatively less common and severe symptoms are:- shortness of breath or difficulty in breathing, chest pressure or pain and very rarely loss of speech or movement.^{7,8} Anosmia (loss of smell) and/or ageusia (loss of taste) has been seen commonly in Covid – 19 infected individuals.

1.3. Oral manifestations

The patients who reported to dental office even at the pre-symptomatic stage presented with following symptoms: -hyposalivation, loss of taste and/or loss of smell (ageusia and/oranosmia). Other prevalent symptoms seen were:-erosion, macule, bulla, ulcer, pustule, plaque, depapillated tongue, papule, vesicle, halitosis, necrosis, whitish lesions, petechiae, erythema, spontaneous bleeding and haemorrhagic crust. In the descending order, the sites where the symptoms were seen were most commonly seen on tongue (38%), labial mucosa (26%), palate (22%), gingiva (8%), buccal mucosa (5%), oropharynx (4%), and least likely on tonsil (1%).

For the reported lesions; advocated diagnoses were candidiasis, aphthous stomatitis, vasculitis, drug eruption, Melkerson Rosenthal syndrome, herpetiform lesions, angina bullosa lesions, Kawasaki-like, Erythema multiforme like lesions, atypical sweet syndrome, angular cheilitis and necrotizing periodontal disease.⁹

1.4. Aphthous stomatitis

These lesions are commonly seen on the poorly, nonkeratinized and loosely attached areas of oral cavity. They mainly arise as multiple shallow ulcers with yellow-white pseudomembranous and with erythematous halos. In younger patients these lesions were observed without necrosis; whereas in older patients with immunosuppression and severe infection these lesions presented with necrosis and haemorrhagic crusts. Healing of the lesions was seen between 5 – 15 days.¹⁰ The possible explanation for development of these lesions could be due to increased level of tumor necrosis factor (TNF)- α which can lead to chemotaxis of neutrophils to oral mucosa in Covid-19 patients. Other possible explanations for appearance of such lesions could be stress and immunosuppression secondary to COVID-19 infected individuals.¹¹

1.5. Herpetiform/zosteriform lesions

These lesions are seen on both keratinized and nonkeratinized mucosae. These lesions present as multiple round yellowish-grey ulcers with an erythematous rim. These are usually unilateral and painful. The possible

explanation for appearance of secondary herpetic gingivostomatitis is stress and immunosuppression associated with COVID-19 cases.^{9,11}

1.6. Ulcerative or erosive lesions

Such lesions are painful with irregularity in border which can be found on tongue, hard palate and labial mucoas. Covid-19 patients can develop ulcerative and erosive lesions due to drug eruption, vasculitis or thrombotic vasculopathy.^{9,11–14}

1.7. Red and white patches or plaques

In Covid-19 patients, red and white plaques were seen on palate, dorsum of tongue and gingiva. The possible explanation for the appearance of these patches could be candidiasis due to long antibiotic treatment, deterioration of general status and oral hygiene.^{9,14}

1.8. Erythema multiforme like lesions

Such lesions comprise of erythematous macules, erosions, desquamative gingivitis, blisters and painful cheilitis with target lesions present in the extremities with haemorrhagic crust. The origin of these lesions comes in appearance on seventh day and remains up to twenty fourth day.^{9,15,16}

1.9. Angina bullosa lesions

These lesions are usually asymptomatic and are often seen on hard palate and tongue. They appear as purple blisters without any random bleeding in them.

1.10. Melkerson rosenthal syndrome

It presents itself with lip swellings which are unilateral, tongue fissures, malaise and facial paralysis. The investigative data shows an increase CRP levels and ground glass like opacities are seen in lungs during a CT scan. Once the treatment of Covid-19 is concluded, these symptoms are completely resolved.¹⁷

1.11. Kawasaki - like illness

Glossitis, swollen and erythematous tongue presented as red strawberry tongue and cheilitis are the oral lesions seen in COVID-19 patients with Kawasaki like disease. It is seen that a long period of intermission exists between onset of general symptoms (gastrointestinal or respiratory) and appearance of oral lesions. The possible reason could be attributed to a deferred hyperactive response of the immune system and secondary release of acute inflammatory cytokines instead of virus effecting directly on oral mucosa and skin.^{18–23}

1.12. Necrotizing periodontal disease

As per the case report of a lady of 35 years of age who presented with halitosis, fever, oral lesions and submandibular lymphadenopathy, it was doubtful that she was covid – 19 positive. On intraoral examination lesions inside the mouth were diffuse and painful, gums were oedematous and inter papillary areas were necrosed. All the signs were indicative of necrotizing periodontal disease which occurred due to bacterial coinfections existing along with covid 19 disease. These lesions were seen to recover after 5 days.²⁴

1.13. Vesicles and pustules

A 51-year-old man had dry cough and anosmia, fatigue, fever, dysgeusia and covid-19 positive serology. Diffuse erythema was seen on the hard palate and oropharynx after 10 days, pustules were observed on the soft palate border. The diagnosis put forward was enanthema because of covid -19 and these lesions healed within days.²⁵

1.14. Petechiae

Lower lip, palate and oro-pharynx mucosa were the noted sites for petechiae as reported in some studies. Petechiae were seen earlier as compared to macular lesions in patients exhibiting both these lesions. The suggested reason for Petechiae in COVID – 19 patients could be thrombocytopenia and the prescribed drugs.²⁵

1.15. Nonspecific lesions (mucositis)

A number of studies noted Erythematous-violaceous plaques, papules, patches and macules on the tongue, lip mucosa, oropharynx and hard palate. The possible explanation for mucositis in COVID – 19 patients was thrombotic vasculopathy and vasculitis.^{25–27}

1.16. Prevalence of taste disorders

The problems linked to the sense of smell and/or taste (anosmia and dysgeusia) are known as chemosensory disorders. Classification of taste disorders include qualitative or quantitative problems, of which dysgeusia (qualitative distortion of taste perception), hypogeusia (decreased sense of taste) and ageusia (absence of a sense of taste) are seen in covid-19 patients.²⁸

A number of theories have been highlighted with respect to taste disorder pathogenesis in patients with COVID -19. In 2020, Finsterer and Stollberger²⁹ observed a localized inflammatory response originating from rhinitis. This response could hinder the normal functioning of taste buds; also due to nasal mucosal inflammation, the signs and symptoms observed do not necessarily indicate taste impairment in covid-19 cases. Many studies showed an increase in occurrence of taste disorders as compared to

rhinorrhoea.

In another study performed in 2020 by Vaira, Salzano, Fois, et al.,³⁰ stated that olfactory disorders associated with abnormal taste sensation may be detrimental for covid-19 patients.

2. Conclusion

In Covid-19 cases, oral symptoms are not very common. However taste alteration is one of the most common manifestation as observed by a small number of studies conducted till date. There is little proof regarding the etiopathogenesis and occurrence of oral lesions in Covid-19 cases. Covid-19 features a number of clinical conditions like immunity, impairment, coinfection and adverse reactions rather than fundamental oral mucosa infections. General practitioners are familiar with all the manifestations of SARS CoV-2 as these might be the sole symptoms present when the patients pay a visit to a dental clinic. The dental surgeon should follow all the prevailing preventive regulations; since they are in close contact with the patients which make them more prone to the dangerous Covid-19 infection.

3. Conflict of Interest

The authors declare that there are no conflicts of interest in this paper.

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None.

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