Original Article

Covid -19 aoosciated with Oral Mucosal Manifestation : A Review Article

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Abstract

The novel coronavirus disease 2019 is highly contagious disorder cause severe illness in form of fever, myalgia, fatigue, altered smell and taste sensation .The oral cavity manifestations has been discovered in Covid 19 patients.

Studies shows that SARS-COV -2 affect respiratory track along with other organs those who have Angiotensin coverting enzyme 2 (ACE 2) receptors.

ACE 2 Receptors are found in numerous amount in the oral cavity tissue which are more prone for SARS-COV-2 infections.

There are various types of oral lesion associated with covid -19 patients such as ulcers in oral cavity, candidiasis, recurrent herpes simplex, geographical tongue ,mucositis and petechiae.

It affects oral cavity as well as salivary glands. This review article discusses the major neglected clinical entity such as oral cavity lesion in Covid -19 patients.

Keywords : COVID-19 SARS-CoV-2, Oral Cavity Aphthous uclear, Dysgeusia

INTRODUCTION

Corona virus disease 2019 is an infectious and life threating disease[1]. It was first found in huge number in Wuhan, China[2]. Corona virus dieases caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) respiratory disorder[3]. SARS-CoV-2 not only lung diseases but also affect the other body organs[3]. It leads to respiratory failure, sepsis, acute cardic injuries, acute kidney injuries, hypoxic encephalopathy[4]. It leads to spread by direct and indirect contact with oral, nasal cavity & eye mucous membrane.

EPIDEMIOLOGY

Covid-19 can be spread by oral route[1]. It leads various oral dysfunction as:

1. Dysgeusia – Alteration of taste[5]
2. Anosmia – With or without olfactory involvement[5]

ETIOPATHLOGY

The etiology is a multifactorial phenomenon[6]. SARS-CoV2 attacks human cells via ACE-2 receptors (angiotensim converting enzyme) it act as a primary host receptor for virus binds to ACE-2 with help of spike like protein on its surface and this ACE-2 receptors acts as a cellular portal for entry of virus and result in spreading of infection to various body parts[7]. High viral load in saliva act as a etiopathogenic factor for development of oral lesion in oral cavity due to Covid-19[8].

CLINCAL MANFIFESTATIONS

Covid-19 patients with oral cavity lesions complains of[9]:

1. Ulcer and erosion
2. Herpetiform lesions
3. Apthous-like lesions
4. White/red plaques
5. Angina bullosa-like lesions
6. Vesicles and pustules
7. Necrotizing periodonotal disease
8. Post-inflammatory pigmentation
9. Mucositis [9]

COVID-19 induced taste and smell loss

Taste is a special sensation of human oral cavity which plays an important role in detection of nutrients and regulation of food intake human are capable of recognizing five main tastes, Sweet, Sour, Salt, Bitter & Umami. Taste stimulating specialized cells are called as taste receptors cells (TRCs) which contain taste signal transaction proteins[10]. The main reasons for loss of taste in covid-19 might be due to increase number of ACE-2 receptors on tongue keratinocytes and the keratinocyte cell death and block the taste bud which badly affect the taste perception[11].

Decrease smell function is a major marker to SARS-CoV-2 infection[12]

COVID-19 Induced low salivary flow

Human saliva is a major body fluid of oral cavity, it is a hypotonic solution of salivary acini, gingival crevicular fluid and oral mucosal exudates[13]. High amount of viral particles in gingival sulcus and crevicular fluid are suspected to provide favourable conditions for virus replications. COVID-19 impaired salivary gland secretion lead to xerostomia[14]. Xerpstomia occurs when there is insufficient saliva to keep the mouth moist[15]. Dry mouth may be early symptom of COVID-19[15].

COVID-19 Induced oral ulcer

Patient with COVID-19 infection also complains of blisters or ulcers of oral cavity which could be associated with keratinized and non-keratinized tissues of oral cavity[1]. Lesions of oral cavity are basically found on palate, lip, buccal mucosa and tongue[16].

Aphthous like lesions is most common in oral cavity of COVID-19 patients. It appear as multiple shallow ulcers with erythematous halos and yellowish to whitish pseudo membrane on oral cavity. Whitish and redish patches scene on dorsum of tongue, gingiva and palate of COVID-19 patients[17].

COVID-19 patients present with lip swelling, fissured tongue and facial nerve paralysis called as Melkersson-Rosenthal syndrome[18]. COVID-19 patients also complains of halitosis submandibular gland lymphadenopathy[19]. Immunosuppression and stress are also associated with COVID-19 infection which leads to appearance of herpetic gingivostomatitis[17].

Figure 1: COVID-19 patient showing multiple aphthous ulcers in the oral cavity[1]

Figure 2: COVID-19 patient showing diffuse erythematous lesions on palate.[1]

Figure 3: COVID-19 patient presenting with ulcerations on lips[1]

Clinical manifestations of COVID-19 are very diverse and symptoms ranges from mild to severe[20]. Inflammation of mouth difficulty in swallowing and burning sensation have also been found[21].

GINGIVAL INFLAMMATION

Bleeding and inflammation in oral tissue have been found as a generalized increased in cytokines and interleukins initiated by SARS-CoV-2 virus[22].

CRACK TEETH

Fracture of teeth is most common due to stress in COVID-19 patients[23].

DIAGNOSIS

Biopsy is done from the ulcerative lesions of oral cavity with hematoxylin & eosin (H&E) staining. The histopathology shows tissue diffuse edema with mucosal desquamation along with ulceration and granulations under the mucosal lining with invasions of the mononuclear cells with large and glassy nuclei[13].

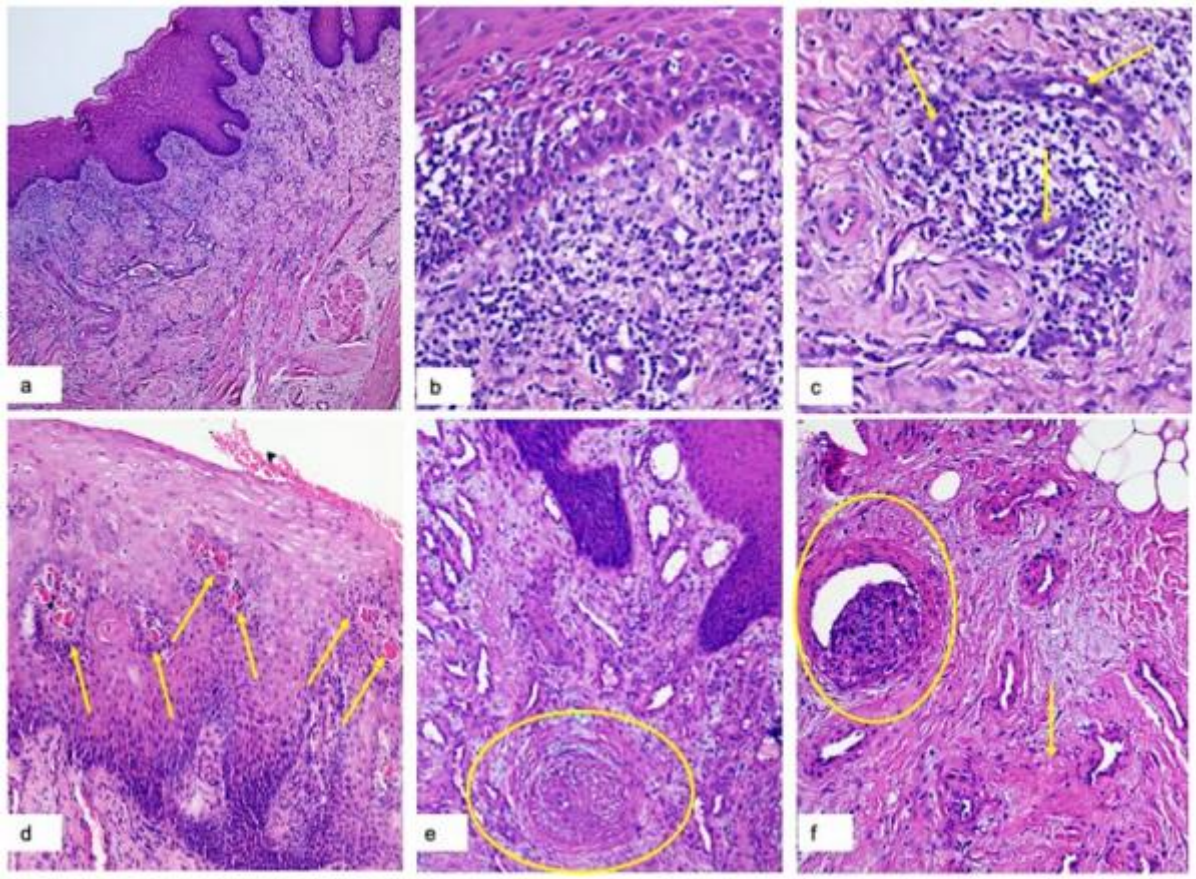

Figure 4. H&E Magnification 40×: superficial band-like lichenoid appearance of the inflammatory infiltrate with prominent vascular hyperplasia (a); H&E Magnification 150×: lympho-monocytes sub-epithelial infiltrate and edema, keratinocyte necrosis, and activation of Langerhans cells (b); H&E Magnification 180×: lympho-monocellular perivascular infiltration (c); H&E magnification 100×: Presence of multiple micro-thrombi (yellow arrows) of sub-epithelial small vessels (d); H&E Magnification 120×: total occlusion of a middle-size sub-epithelial vessel with initial organization of the thrombus (e); H&E Magnification 140×: partial occlusion of a deep vessel (yellow circle) and perivascular secondary fibrosis (f)[13].

TREATMENT

Topical medicines like mixture of dexamethasone, diphenhydramine, teteracycline and lidocaine are used to cure the oral symptoms. Local antiseptics like hydrogen peroxide based suspension are important choice to reduce viral load[24]. As stress is an important factor for triggering the oral ulcers, psychological counselling is helpful for healing these types of ulcers in oral cavity[25].

CONCLUSION

COVID-19 can cause different oral lesions. These patients require proper oral examinations and its management as it could result from improper medication use, weakened immunity, vascular damage, local and systemic inflammation & poor oral hygiene of patient during COVID-19 treatment. Clinicians should be have proper knowledge about SARS-CoV-2 biology and better understanding of oral pathophysiology of COVID-19 to establish specific protocols to prevent its transmission and other clinical consequences.

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