

Oral Cues In Covid 19: Primary Or Secondary Challenge

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ABSTRACT- *The oral manifestations of COVID 19 can attribute to the early sign for diagnosis. It could be a primary hint to the complication of condition of THROMBOCYTOPENIA with the number of petechiae and ulcers in the oral cavity. In certain conditions the oral ulcers and opportunistic infections develop secondary to the presenting illness of covid 19. There are circumstances of spontaneous remission of the lesions also. The oral changes provide a great insight in to developing illness and prove a guide to the severity of the disease and its progression. Immune dysregulation paves way for a number of opportunistic infections and may pose a hint in the progression in the COVID 19. Loss of smell, taste, xerostomia, ulcers, blisters all must be taken in to consideration in the diagnosis of covid 19 and further lesions should be managed symptomatically. Oral hygiene plays a pivotal role in the healthy oral flora and maintaining the balance of entry of pathogens.*

KEYWORDS: *COVID -19, ORAL MANIFESTATIONS, Hyperinflammation, Petechiae, Thrombocytopenia, Ulcers, Fungal infections, Aphthous ulcers, Cytokine Storm, Herpetic lesions, Parotitis, Anosmia, Dysgeusia, Xerostomia*

INTRODUCTION:

Novel Corona virus disease 2019 (COVID 19) outbreak has shook this entire world and lashed a great challenge among the people as well as the health care workers world over. It is an infectious zoonotic disease believed to have originated from **BATS** and **PANGOLINS**. BAT CORONAVIRUS has the highest potential to transmit the infection to the human race that is posing a great threat to the human population. Every segment and strata of population among all the age group has been prone and exposed to this dangerous infectious disease. Rather than the manifestations of the disease the varying indefinite treatment protocol and the severity of the disease, with the rapid mortality rate has crippled the normal life and has engraved the minds with anxiety and great panic. This disease is highly transmitted by the respiratory droplets from the affected individual. These droplets are expected to stay even for hours to days in different surfaces. These droplets are carried in the air through the wind up to several feet without losing the structure and the virulence of the virus. These infected respiratory droplets enter the human beings through the nasal cavity, oral cavity and the eyes. The virus infects the host and starts with the immune dysregulation.

So with the great threat revolving around the corner, it is very important to know the symptoms and signs that aid in early diagnosis and curb the contagious factors that contribute to the treatment and reduce the mortality rate. Looking in to the severity and the emerging death rates, the WORLD HEALTH ORGANISATION (WHO) has declared COVID 19 A GLOBAL PANDEMIC.

Oral changes has been reported in many cases that may be an early non invasive diagnostic criteria. Loss of sensation of taste and smell has been the early signs and even the only presenting sign other than other flu manifestations in certain COVID 19 cases that are reported worldwide.

ABOUT THE VIRUS:

The CORONAVIRUS genera has the main constituent as ALPHACORONAVIRUS and BETACORONAVIRUS, the potent infecting species that has high transmission rate to the mammals. BATS are seen as a primary gene source of the MERS-CoV

(MIDDLE EAST RESPIRATORY SYNDROME) & SARS- CoV

(SEVERE ACUTE RESPIRATORY SYNDROME)¹. Symptoms can start appearing from 3rd to 14th day. The symptoms can aggravate rapidly without any major noticeable indication and could be fatal. A lot of asymptomatic cases of COVID 19 are also in the scenario who could be silent carriers. Even though literature denies the potent virulence of corona virus of infecting other human beings, certain cases affected from the asymptomatic cases are seen here and there round the world. Oxygen saturation is a clear indicator of the severity of disease. Major prognosis criteria is drawn and attributed to the oxygen saturation of the affected individual.

EARLY SYMPTOMS OF COVID 19:

Myalgia, Pyrexia, common cold, Flu like symptoms may be the early symptoms. It begins with variations of cough, could be dry cough to productive cough. Cannot be specific as both dry cough and productive cough with or without RHINORRHEA are reported. A sore throat could also be an early warning sign. Adding to initial symptoms the HEAD ACHE may also be a presenting symptom. Mild to severe rash is present in any part of the body as the disease progresses.

ADVANCED SERIOUS SYMPTOMS:

Pneumonia is a serious respiratory complication that arises due to the COVID 19. It involves the inflammation of the AIRSACS of the lung. It a progressive complication that could be ACUTE or CHRONIC. Either one or both lungs are involved. The air sacs could be filled with an infected fluid too (pus). It could be an early symptom or a secondary symptom. Pneumonia could develop as a secondary symptom due to the increasing VIRAL LOAD too. It preliminarily starts as a CONGESTION of chest but rapidly progresses in to the breathlessness after HEPATIZATION. This completely makes the LUNG FIBROSED. BREATHLESSNESS is an important symptom that necessitates immediate treatment. Hospitalisation is required when the symptoms progresses to the LOWER RESPIRATORY TRACT². Acute parotitis^{3,4} that involves severe painful swelling of the PAROTID GLANDS. Huge impact on the salivary glands harbouring the reservoir of the corona virus has been a reason for the parotid gland swelling. Otolaryngologists have stated the symptoms involving the ear, nose and throat in acute covid cases. Acute parotitis has also been reported in severe cases of COVID 19. ACUTE PATOTITIS has been an emerging complication of ASCENDING INFECTION FROM THE ORAL CAVITY that plays a serious threat in the prognosis of the patient. An unusual ERYTHEMATOUS swelling begins after the few days of infection , present around the AURICULAR AREAS. It could be warm with an INDURATION too in some cases. SWELLING OF NECK and the SEPTICEMIA could be a great signs to ponder and a clear indication about the rapid progression of the disease.

ORAL MANIFESTATIONS OF COVID 19:

Though a person affected with NOVEL COVID 19 manifests a lot of early signs and symptoms, oral changes has been noticed as either primary or as secondary manifestation to the outbreak of the disease.

Loss of sensation of taste and smell can be the only presenting symptom or along with other symptoms^{5,6}. The initial symptoms may be cough, taste dysfunction, high temperature, muscle and joint pain. Cough and myalgia are reported in almost all the cases at a higher degree than other symptoms. Xerostomia, Dysguesia, Anosmia can also be the presenting key symptoms.⁷ Nasal congestion, Taste changes, Rhinorrhea, Facial pain attributes to the symptoms of THE NOVEL CORONA DISEASE 2019.

Swollen palate, plaque on the tongue are correlated to the changes in the SENSATION OF THE TONGUE. COVID 19 does not directly damage the TASTE BUDS, it is an indirect event affecting the inflammation of

the disease. The infection due to the VIRAL LOAD in the UPPER RESPIRATORY TRACT contributes to the OLFACTORY DYSFUNCTION^{8,9}. Xerostomia was seen secondary to taste dysfunction as salivary stimulation is mainly accomplished by taste perception. And with the loss of sensation of smell, the indirect stimulation is also absent to salivation. In certain cases the oral mucosal lesions present as primary symptoms in some cases and as secondary symptoms in some cases. GEOGRAPHIC TONGUE was also reported in some cases. Severity index of the presenting GEOGRAPHIC INDEX was scaled in accordance to the publication of PICCIANI et al, 2020¹⁰ Inflammatory reactions are seen in the tongue and the salivary glands are also related to the

ANGIOTENSIN – CONVERTING ENZYME 2 (ACE 2) RECEPTORS¹¹.

Opportunistic FUNGAL INFECTIONS and HERPES SIMPLEX VIRUS -1(HSV 1) are seen in association with COVID 19¹². Drug eruptions secondary to the medications in the treatment of COVID 19 and ulcerations are seen in the oral mucous membrane. Immune Dysregulation plays an important role in the manifestation of the disease. Co morbid conditions contributes greatly to the prognosis of SARS- CoV -2 . Herpetic lesions can also arise due to the emotional stress during the course of the pandemic.¹³

Ulcers and Blisters are seen occurring more as primary symptoms rather than secondary symptoms that aid in the primary diagnosis. Melanin Hyperpigmentation are seen in the oral mucosa mainly in the gingival tissues¹⁴. CANKER SORES, PETECHIAE are seen in the oral cavity , but a lot of times goes unnoticed as they are painless in the preliminary stage, but as days go by they become painful especially the APTHOUS ULCERS¹⁵.

ULCERS

that are irregular in shape are a common finding in the tongue¹⁶ and the buccal mucosa of COVID 19 patients. The vasculitis may also arise and an ERYTHEMATOUS MACULA can arise . These are asymptomatic after a few days and even heals without scarring. Intervention with oral swishing of antimicrobial mouth rinses. The tongue papilla also is a very vulnerable part of the oral cavity that is highly affected by the inflammation in the COVID 19. A lot of oral symptoms have been reported as early manifestations of COVID 19. A lot of these oral mucous membrane changes could be attributed to the inflammation in the course of the disease.

ORAL CANDID

A has become an integral part of the oral microbiome and manifests as ORAL CANDIDIASIS at a higher degree in a systemically compromised host¹⁷. Covid 19 completely dysregulates the immune system there by increases the opportunistic infections that mainly manifests in the oral cavity¹⁸. PETECHIA seen in the oral cavity could be a great contributing factor to THROMBOCYTOPENIA due to SARS-CoV-2¹⁹. Cervicofacial lymphadenopathy is also seen in some cases. With the increasing viral load in the COVID19, DETORINATION begins as days progresses with the hyperinflammation^{20,21}. The presenting CYTOKINE STORM seen in the COVID 19 patients is a great challenge to address as it makes the individual an immunocompromised²². A state of ASTHENIA that involves abnormal physical weakness and depletion of energy is observed precipitating lack of energy. Intervention with the interleukin antagonist therapy and immunoglobulins intravenously has been indicated in such conditions. Careful monitoring and follow up plays an important role in the treatment protocol. Conclusion: Though COVID 19 has mild to severe symptoms and high mortality rate. Early diagnosis and intervention can play a main role in curbing mortality and saving the life. Oral manifestations could be a primary symptom or secondary to the presenting illness COVID 19. Treating the symptoms will aid in alleviating the pain and providing better relief to the condition. The oral cues can be taken as a main manifestation and dealt appropriately. Emphasis to be laid on the oral hygiene and careful examination of early symptoms. Prevention of any lesion associated is good oral hygiene and prophylaxis. Careful monitoring and management of symptoms could be of great help in dealing with the current pandemic and emerging as a covid free individual and country.

REFERENCES

1. Ben Hu, Xingyi Ge et al. Bat origin of human coronavirus. *Virology Journal*, (2015) 12: 221
DOI 10.1186/s12985-015-0422-1
2. Medscape Drugs & Diseases. Symptoms and Management of Coronavirus Disease 2019 (COVID -19).
Drugs and diseases, Infectious Diseases.July 1,2020.
3. Capaccio, P,Pignataro, L, Corbellino, M,Dutruit,SP,Torretta,S. Acute parotitis: a possible precocious
clinical manifestation of SARS-CoV-2 INFECTION?Otolaryngol HeadNeck Surg.
Doi:10.1177/0194599820926992
4. Lechien,JR,Chetrit, A, Chekkoury-Idrissi, Y, et al. Parotitis- like symptoms associated with COVID-19,
France, March-April 2020. *Emerg Infect Dis*. 2020;26(9)
5. Gautier JF, Ravussin Y. A new symptom of COVID -19 : loss of taste and smile. *Obesity (Silver Spring)* .
2020; 28(5) : 848.
6. There's an unexpected loss of smell and taste in coronavirus patients. Accessed April 7, 2020-10-09
<https://www.forbes.com/sites/judystone/2020/03/20/there-an-unexpected-loss-of-smell-and-taste-in-coronavirus-patients/#29964a3ef5101>
7. Ameen Biadsee, MD, Zeev Ormianer, DMD . Olfactory and Oral Manifestations of COVID-19: Sex related
Symptoms - A potential Pathway to Early Diagnosis. *Otolaryngology- Head and Neck Surgery*.2020 Jun 16:
doi: 10.1177/0194599820934380
8. Heikkinen T, Jarvinen A. The common cold. *Lancet*.2003; 361(9351): 51-59
9. Seiden AM. Postviral olfactory loss. *Otolaryngol Clin North Am*. 2004;37(6) : 1159- 1166
10. Picciani BLS, Santos LR, Teixeira- Souza T, Dick TNA, Carneiro S, Pinto JMN et al. Geographic tongue
severityindex: a new and clinical scoring system. *Oral Surg Oral Med Oral Pathol Oral Radiol*. 2020;129:
330-338
<https://doi.org/10.1016/j.ooo.2019.12.007>
11. Zou X, Chen K, Zou J, Han P, Hao J, Han Z et al. Single -cell RNA- seq data analysis on the receptor
ACE2 expression reveals the potential risk of different human organs vulnerable to 2019-n CoV infection.
Front Med.2020; 14: 185- 192
<https://doi.org/10.1007/s11684-020-0754-0>
12. Dzedzic A, Wojtyczka R. The impact of coronavirus infectious disease 19 (COVID 19) on oral health.
Oral Dis. 2020 ; (Accepted author manuscript)
<https://doi.org/10.1111/odi.13359>
13. Aceil Al- Khatib et al. Oral manifestations in COVID -19 patients; Wiley Online Library; 2020, 10 june.
<https://doi.org/10.1111/odi.13477>
14. Jairo Corchuelo, Francisco Chavier Ulloa. Oral Manifestations in a patient with a history of asymptomatic
COVID-19: CASE REPORT. *International Journal of Infectious Diseases*; volume 100, November 2020,154-
157

<https://doi.org/10.1016/j.ijid.2020.08.071>

15. D J Zegarelli. Fungal infections the oral cavity; Otolaryngol Clin North Am,26(6) (1993),pp.1069-1089
16. Anne- Gaele Chaux- Bodard, Sophie Deneuve and Aline Desoutter. Oral manifestation of Covid-19 as an inaugural symptom? Journal of Oral Medicine Oral Surgery:(2020) volume 26: number 2

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17. dos Santos et al, 2020. JA dos Santos, AGC Normando ,RLC da Silva, RM De Paula, AC Cembranel, AR Santos- Silva, et al. Oral mucosal lesions in a Covid -19 patient: new signs or secondary manifestations? Int J Infect Dis (2020), 10.1016/j.ijid.2020.06.012 Google scholar

18. Ciccarese et al.,2020 G. Ciccarese, F.Drago, M.Boatti, A.Porro, S.I.Muzic, A. Parodi. Oral erosions and petechiae during SARS-CoV-2 infections. J Med Virol (2020)

19. Sabine Revuz, Nathaline Vernier et al.Immune Thrombocytopenic Purpura in patients with COVID 19. European Journal of case reports in internal medicine (EJCRIM) 2020; 7:doi: 12890/2020_ 0017751.

20. Y.Pan, D.Zhang, P.Yang, L.L.M.Poon, Q.Wang.Viral load of SARS-CoV-2 in clinical samples. Lancet Infect Dis, 20(4) (2020), pp. 411- 412 ; doi 10.1016/S1473-3099(20)30113-4

21. L.Zou, F. Ruan, M. Huang, L.Liang, H.Huang, Z.Hong, et al. SARS-CoV-2 viral load in upper respiratory specimens of infected patients; N Engl J Med, 382(2020), pp. 1177-1179

10.1056/NEJMc2001737

22. Kathryn Haigh, Libuse Ratcliffe. Hyperinflammation with COVID-19: The key to patient deterioration? Science Direct .Clinical Infection in Practice: volume 7-8, October 2020, 100033

<https://doi.org/10.1016/j.clinpr.2020.100033>