



Impact of Covid-19 Treatment on Oral Cavity

Saurabh Prakash and Veena Naik*

Department of Oral Medicine and Maxillofacial Radiology, AIMST University, Malaysia

*Corresponding Author: Veena Naik, Department of Oral Medicine and Maxillofacial Radiology, AIMST University, Malaysia.

DOI: 10.31080/ASDS.2022.06.1498

Received: October 03, 2022

Published: October 18, 2022

© All rights are reserved by

Kritika P Suroliyaa, et al.

Abstract

Severe infectious disease Coronavirus disease 2019 (COVID-19) led to worldwide pandemic. Starting with mild flu to attacking the respiratory system or even death are the symptoms of this disease. Dentists are regarded to be the highest risk group of healthcare workers for contracting COVID-19, due to the nature of their work. It becomes mandatory for the dentists to be aware of the oral side effects caused by the medications used in prolonged treatment of COVID-19. We have discussed few of the medications used in treating Covid-19, that leads to changes in the oral cavity. Hence, we should not underestimate the effects of intense and complex pharmacotherapy while evaluating patient's oral health. Therefore, Oral medicine and pathology facilities should take a call in detecting and managing these lesions.

Keywords: Coronavirus Disease 2019 (COVID-19); Dental/Oral Problems; Drugs used in Treating Covid-19; Oral Medicine and Pathology Specialists

Introduction

As we are acquainted that, Coronavirus disease 2019 (COVID-19) led to worldwide pandemic, is caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) [1]. The definition includes a range of viruses, that present with mild to severe manifestations and lead to respiratory failure. In Latin the name "corona" is suggestive of ("crown") and microscopic appearance of the virus, is characterized by the presence of pointed structures on the surface [2].

Fever, cough, and acute respiratory disease are the common symptoms of COVID-19 infection, later the infection leads to pneumonia, kidney failure, and even death [3]. Because the SARS-CoV-2 was identified in saliva of infected patients, it became significantly challenging for dentistry and dental schools, in all affected countries. Measures taken and protocols followed to reduce the spread

of infection were impeccable and varied in different countries. Routine dental treatments were stopped in January 2020. Only emergency dental care was provided with advice on strict personal protection. Measures to reduce droplets and aerosols production, use of high-volume aspiration, and others, were avoided as recommended during the earlier SARS outbreak [4,5].

According to an analysis by the O*Net Bureau of Labour Statistics of the USA, Dentists are regarded to be the highest risk group of healthcare workers for contracting COVID-19, due to the nature of their work that demands close contact with their patients during dental treatment. Along with this risk, it becomes mandatory for the dentists to be aware of the oral side effects caused by the medications used in prolonged treatment of COVID-19 [6].

As a consequence of strong pharmacotherapy, some patients even after full recovery from COVID-19 may suffer from dental/

oral problems related to soft tissues, saliva production, neurological-based oral sensations, etc. As specific treatment protocol for COVID-19 still goes indeterminate, some of the recommended medications includes, analgesics, remdesivir, chloroquine/hydroxychloroquine, azithromycin, combined lopinavir and ritonavir, interferon- β and steroids [7,8].

Following are the medicines in concern to dentistry

- **Azithromycin:** As there is a shift in the dental services towards the provision of emergency treatment only, increases the possibility of antibiotic prescriptions for severe orofacial infections in penicillin-allergic patients. *In vitro* studies have shown that azithromycin is able to prevent severe respiratory tract infections when administered to patients suffering with COVID-19 infection. In that case, the use of azithromycin in dentistry should be monitored, since unavailability could be possible plus there can be over usage of the drug. Hence, alternative antibiotics such as amoxicillin or clindamycin (in penicillin-allergic patients) should be considered for indicated cases. Dentists and physicians treating emergency dental cases should be attentive in prescribing antibiotics only for indicated cases and must consider the use of analgesic alternatives to control dental pain. The main goal of treatment should be avoiding the chance of side effects and antibiotic resistance.
- **Remdesivir and Chloroquine:** It should be noted that these drugs are sometimes prescribed in active rheumatoid arthritis, as well as systemic and discoid lupus erythematosus. These systemic diseases also cause oral manifestations [9]. The combination of antiviral drugs, such as remdesivir and chloroquine, has been considered highly effective and has been suggested in the treatment of Covid-19 due to its safety profile. Dentists have to be aware that shortages of chloroquine may influence their patients who are dependent on this drug especially SLE and patients with Sjogren's syndrome who have oral manifestations. They also should be conscious about the oral complications like melanotic pigmentation and lichenoid reaction, due to the drugs [10,11].
- **Other anti-viral treatment:** lopinavir and ritonavir [12], considered to reduce the viral load and the interferon alfa/beta, is well known for its anti-viral activity, in reducing the severity of COVID-19 disease. These drugs may be responsible for side effects (<2%) affecting oral cavity leading to stomatitis, mouth ulcers and dry mouth. It has been reported that

Interferon's more common side effect is dry mouth, which can result in frequent cases of oral thrush.

- **Ibuprofen and NSAIDs:** Mild to moderate cases of COVID-19 are treated using supportive analgesic, antipyretic therapy. There was a cautionary against the use of ibuprofen in the treatment of COVID-19 due to the increased expression of angiotensin-converting enzyme-2, which is the binding receptor of the virus to the cells [13]. Interaction of SARS-CoV-2 with angiotensin converting enzyme 2 (ACE2) receptor, explains the cause of taste and smell disorder in these cases, and this receptor is widely expressed on the epithelial cells of oral mucosa and the brain [14]. In fact, expression of ACE2 was found to be higher in tongue, where the taste buds are most abundant, than gingiva or buccal mucosa. Dentists should be aware of this symptom as they may happen to see patients with dysgeusia or burning mouth syndrome [15]. This could be significant, as these symptoms precede the onset of respiratory manifestations of the disease. However, reporting of this symptom should be interpreted with caution if known patients are to be of the old age group who are already susceptible to taste and smell disorders.

Dentists should be updated for any further information emerging on the topic and should ponder on damage due to prescribing analgesics for patients with dental pain. Paracetamol can be used as a first line analgesic, however, if it is not effective, they can prescribe ibuprofen or other NSAIDs unless there is a contraindication.

- **Salivary expression:** Since the infection can be transmitted through saliva, even non-aerosol procedures in dental clinics can be a source of infection. Another aspect of this finding is that dentists should educate their smoker patients and patients who have social sharing of tobacco smoking instruments namely the electronic cigarettes and waterpipe, about the possibility of salivary virus transmission [16].
- **Steroids:** Mucormycosis (black fungus) is triggered by the use of steroids, a life-saving treatment for severe and critically ill Covid-19 patients. They reduce immunity and push up blood sugar levels in both diabetic and non-diabetic covid-19 patients, thereby helping the spread of black fungus. Diabetes lowers the body's immune defences, coronavirus

exacerbates it, and then steroids which help fight Covid-19 and worsen the condition [17]. Patients should maintain strict oral hygiene, especially those who are recuperating from a covid-19 infection.

Conclusion

Expecting that the new drugs will be recommended for COVID-19 in the nearest future, we should not neglect or underestimate the effects of intense and complex pharmacotherapy while evaluating patient's oral health.

Oral medicine and pathology facilities should take a call in detecting and managing 'early oral lesions/cancer', plus provide secondary care for patients with existing oral diseases, regardless of their COVID-19 negative/positive status. Besides that, the dentists should be in forefront, cautiously managing the emergency dental pain.

Bibliography

- Hui DS., et al. "The continuing 2019-nCoV epidemic threat of novel coronaviruses to global health - The latest 2019 novel coronavirus outbreak in Wuhan, China". *International Journal of Infectious Diseases* 91 (2020): 264-266.
- Yang Y., et al. "The deadly coronaviruses: the 2003 SARS pandemic and the 2020 novel coronavirus epidemic in China". *Journal of Autoimmunity* 109 (2020): 102434.
- R S-Silva., et al. "Coronavirus COVID-19 impacts to dentistry and potential salivary diagnosis". *Clinical Oral Investigations* 24.4 (2020): 1619-1621.
- Izzetti M Nisi., et al. "COVID-19 Transmission in Dental Practice: Brief Review of Preventive Measures in Italy". *Journal of Dental Research* (2020): 1-9.
- To KK., et al. "Consistent detection of 2019 novel coronavirus in saliva". *Clinical Infectious Diseases* 71.15 (2020): 841-843.
- American Dental Association. "ADA calls on dentists to postpone elective procedures" (2020).
- Mahase E. "Covid-19: What treatments are being investigated?" *BMJ* 368 (2020): 1252.
- Sayburn A. "Covid-19: Trials of four potential treatments to generate "robust data" of what works". *BMJ* 368 (2020): 1206.
- Gao J., et al. "Breakthrough: Chloroquine phosphate has shown apparent efficacy in treatment of COVID-19 associated pneumonia in clinical studies". *BioScience Trends* 14.1 (2020): 72-73.
- Horta-Baas G. "Chloroquine-induced oral mucosal hyperpigmentation and nail dyschromia". *Reumatología Clínica* 14 (2018): 177-178.
- Moraes PC., et al. "Pigmented lichenoid drug eruption secondary to chloroquine therapy: An unusual presentation in lower lip". *Minerva Stomatologica* 60 (2011): 327-332.
- Chu CM., et al. HKU/UCH SARS Study Group. "Role of lopinavir/ritonavir in the treatment of SARS: Initial virological and clinical findings". *Thorax* 59 (2004): 252-256.
- NHS England. "Acute Use of Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) in People with or at Risk of COVID-19 (RPS2001)" (2020).
- Xu H., et al. "High expression of ACE2 receptor of 2019-nCoV on the epithelial cells of oral mucosa". *International Journal of Oral Science* 12 (2020): 1-5.
- Van Riel D., et al. "The olfactory nerve: a shortcut for influenza and other viral diseases into the central nervous system". *The Journal of Pathology* 235 (2020): 277-287.
- Baboor AS., et al. "Unconventional materials and substances used in water pipe (narghile) by smokers in central western region, Saudi Arabia". *Saudi Medical Journal* 35 (2020): 890-893.
- Castrejon-Perez A., et al. "Cutaneous Mucormycosis". *Brasileiros De Dermatologia* 92 (2017): 304-311.