

LETTER TO THE EDITOR

Emergency measures for acute oral mucosa diseases during the outbreak of COVID-19

Dear Editor,

Since the first case of novel coronavirus pneumonia was diagnosed in Wuhan, China, in December 2019, the disease has broken out all over the world, and the number of worldwide confirmed cases has exceeded 640,000 up to March 30, 2020. On January 30, 2020, WHO upgraded the outbreak of the novel coronavirus disease 2019 (COVID-19) to a public health emergency of international concern (PHEIC). More than two months passed, given that there are still a few new confirmed cases in China every day, and the number of new cases in Italy, Spain, United States of America and Iran (Islamic Republic of) has increased rapidly in recently, the complete control of the outbreak on a global scale remains a difficult process.

At present, human-to-human transmission among close contacts has been confirmed, mainly including respiratory droplet transmission mode and contact transmission mode (Chan et al., 2020; Li et al., 2020). The former means that the infection is due to direct inhalation of the patient's sneezing, coughing and talking droplets; the latter means that a person can be infected by touching a surface or object that has the virus on it and then touching their own mouth, nose or possibly eyes. The dental papers show that aerosol transmission is a possible transmission routes in dental clinic, because many dental procedures produce aerosol and droplets that are contaminated with virus (Peng et al., 2020; Wei & Li, 2016). Because of the extremely high possibility of producing a large number of aerosols and diffusing into the surrounding air during the dental procedures, the Chinese governments have introduced a series of policies to guide the work of oral clinic, as the key of cross-infection protection. At present in China, most oral medical institutions only retain oral emergency services, mainly to deal with oral and maxillofacial trauma, acute pulpitis, oral bleeding and other emergencies (Zhang & Jiang, 2020).

The aetiology of most oral mucosa diseases is closely related to infection factors, immune factors or psychosocial factors. During the COVID-19 epidemic, due to changes in social-life environment and increased work pressure, it is possible to cause disorders of the body's immune function, leading to the acute attack of oral mucosa disease, or the acute recurrence of some chronic oral mucosa disease (Society of Oral Mucosal Diseases & Chinese Stomatological Association, 2020). Common acute oral mucosa disease mainly refers to the performance of large areas of erosion and ulceration,

difficult to self-healing, severe pain, seriously affecting the normal life of patients, and even life threatening, such as allergic diseases, infectious diseases, erosive oral lichen planus (EOLP), major/herpetiform aphthous ulcers, pemphigus, and so on. Some of the acute diseases above often accompanied by fever and some systemic symptoms, which is difficult to identify with COVID-19 just through the consultation. This also poses an unprecedented challenge to oral medicine physician. Hence, we summarize the treatment measures and suggestions for acute oral mucosal disease during the outbreak, for reference by oral emergency physician and patients (Figure 1).

1 | IDENTIFICATION BETWEEN COVID-19 AND ACUTE ORAL MUCOSAL DISEASES WITH FEVER

Oral medicine department should strengthen on the three-level pre-check triage system before the treatment of emergency patients (Meng, Hua, & Bian, 2020; Stomatological Healthcare Service Branch of Chinese Stomatological Association, 2020). According to the guidelines of the Chinese Stomatological Association, we recommend that the guidance nurses should first conduct a temperature test and epidemiological investigation of patient and record the patient's detailed personal information, including name, age, occupation, telephone number and residential address; for patients with a body temperature above 37.3°C, it should be guided to a fever clinic for screening. According to the patient's epidemiological history, blood analysis, chest CT and other examinations, for those who can be excluded the COVID-19 infection, should be issued a medical certificate confirming that it is suitable to continue to visit the oral clinic, and then specialized diagnosis and treatment of oral mucosal disease can continue. For those patients who are highly suspected or cannot rule out COVID-19 infection should be isolated immediately and treated for emergency according to the three-level protection standard after the patient's condition is stable.

2 | DIAGNOSIS AND TREATMENT MEASURES

The doctors should pay attention to personal protection during oral mucosal examination, recommend clinical diagnosis of patients and

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Type	Disease name	Fever characteristics	Identified with COVID-19	Proposed examination	Proposed treatment	Matters need attention
Infectious disease	Acute herpes gingivostomatitis	Moderate to high fever	Yes	Oral mucosal examination	Systemic antiviral drugs; topical drugs	① The doctor should do a good job of protection; ② Try to avoid the generation of droplets during examination, avoid microbiological examinations such as bacterial smears and invasive examination methods such as histopathological biopsy, direct immunofluorescence examination; ③ The blood test is decided according to the patient's condition and treatment needs. ④ Can be appropriately used for diagnostic and empirical medicine; ⑤ Avoid invasive and aerosol-generating treatment methods, such as oral mucosal substrate closure treatment and ultrasonic nebulization inhalation.
	Herpes zoster	Low fever		Oral mucosal examination	Systemic antibacterial drugs; topical drugs	
	Coccigenic stomatitis	Low to moderate fever				
	Necrotic ulcerative gingiva-stomatitis	Low fever				
Allergic disease	Allergic medicamentous stomatitis	Low fever during prodromal period	Yes	Oral mucosal examination	Antihistamine; Low-dose glucocorticoids; topical drugs	
	Erythema mutiforme					
Erosive and ulcerative disease	Erosive oral lichen planus	Not accompanied	No	Oral mucosal examination	Immunosuppressant; Low-dose glucocorticoids; topical drugs	
	Major aphthous ulcer	May be low fever	When needed	Oral mucosal examination		
	Herpetiform ulcers					
Bullous disease	Pemphigus vulgaris	Low fever on secondary infection	When needed	Oral mucosal examination, Indirect immunofluorescence	moderate-dose glucocorticoids; Immunosuppressant; topical drugs	

FIGURE 1 Diagnosis and treatment of acute oral mucosa diseases during the COVID-19 epidemic situation

try to avoid high-exposure risks examination (Meng et al., 2020). For patients with bacterial infection, microbiological examination should be avoided as much as possible, such as smears and bacterial culture examination. For the patients who are highly suspected of being pemphigus, we proposed that clinical diagnosis be made based on the typical clinical manifestations and detailed clinical examination, including Nikolsky positive, probing test positive and sliding off epithelium positive; combine with indirect immunofluorescence to improve the success rate of diagnosis and help to determine the severity of the disease (Kershenovich, Hodak, & Mimouni, 2014; Melchionda & Harman, 2019), biopsy of histopathology and direct immunofluorescence may be carried out at a later stage after the outbreak is controlled.

In terms of treatment, empirical medication is proposed. According to the patient's condition, the systemic antibacterial drugs, antiviral drugs, antihistamines, immunosuppressants, low or medium doses of glucocorticoids (0.5–1.0 mg/kg × d) can be given, which is generally safe and effective (Kayani & Aslam, 2017; La Placa & Chessa, 2018; Yang et al., 2016). In addition, the topical drugs, such as anti-inflammatory gargle and ointment, compound chlorhexidine gargle, povidone-iodine solution, local glucocorticoid preparations, can be given to reduce the pain and promote erosion healing (Society of Oral Mucosal Diseases & Chinese Stomatological Association, 2020). For those patients with severe illness and skin damage, it may be advised to refer to dermatology department for hospital treatment to receive a high dose of glucocorticoid therapy, in order to observe the patients' condition and reduce frequent subsequent visit during the outbreak. Avoid invasive and aerosol-generating treatment methods, including submucosal local injection, ultrasonic atomization inhalation (Meng et al., 2020).

3 | THE DEVELOPMENT OF ONLINE TREATMENT AND THE GUIDANCE OF PATIENT HEALTH CARE

Oral mucosa disease is mostly a chronic disease, which needs regular visit and long-term monitoring; therefore, we suggested carrying out online diagnosis and treatment projects to meet the needs of oral mucosa patients during the outbreak. For non-emergency patients, online consultation can be carried out according to the patient's self-described symptoms and photographs provided by themselves; for patients with acute, online follow-up, medication guidance, efficacy observation was necessary.

At the same time, we strongly suggested that oral mucosa patients should pay attention to the following points: (a) to maintain an optimistic mood, ensure the quality of sleep, work and rest rules compliance; (b) reasonable diet, balanced nutrition, avoid spicy stimulation and over-hot, hard food, chew carefully and swallow slowly; (c) appropriate physical exercise, enhance the body's resistance; (d) quit smoking and alcohol, avoid chewing betel nut and other adverse stimuli; (e) follow the doctor's instructions, do not self-discontinuation or reduction. If there are some acute symptoms of oral mucosa disease, such as severe erosion, ulcers, pain, please consult a doctor without delay.


CONFLICT OF INTEREST

The authors declare that they have no competing interests.

AUTHOR CONTRIBUTIONS

Guo Y. and Wei C. have been involved in drafting the manuscript. Yuan C. revised it critically. All the authors have read and approved the final manuscript.



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REFERENCES

- Chan, J.-W., Yuan, S., Kok, K.-H., To, K.-W., Chu, H., Yang, J., ... Yuen, K.-Y. (2020). A familial cluster of pneumonia associated with the 2019 novel coronavirus indicating person-to-person transmission: A study of a family cluster. *Lancet*, 395(10223), 514–523. [https://doi.org/10.1016/S0140-6736\(20\)30154-9](https://doi.org/10.1016/S0140-6736(20)30154-9)
- Kayani, M., & Aslam, A. M. (2017). Bullous pemphigoid and pemphigus vulgaris. *BMJ*, 357, j2169. <https://doi.org/10.1136/bmj.j2169>
- Kershenovich, R., Hodak, E., & Mimouni, D. (2014). Diagnosis and classification of pemphigus and bullous pemphigoid. *Autoimmunity Reviews*, 13(4–5), 477–481. <https://doi.org/10.1016/j.autrev.2014.01.011>
- La Placa, M., & Chessa, M. A. (2018). Erythema multiforme major with swollen lips and crusted erosions. *Lancet*, 392(10147), 592. [https://doi.org/10.1016/S0140-6736\(18\)31770-7](https://doi.org/10.1016/S0140-6736(18)31770-7)
- Li, Q., Guan, X., Wu, P., Wang, X., Zhou, L., Tong, Y., ... Feng, Z. (2020). Early transmission dynamics in Wuhan, China, of novel coronavirus-infected pneumonia. *New England Journal of Medicine*, 382(13), 1199–1207. <https://doi.org/10.1056/NEJMoa2001316>. [Epub ahead of print]
- Melchionda, V., & Harman, K. E. (2019). *Pemphigus vulgaris* and *Pemphigus foliaceus*: An overview of the clinical presentation, investigations and management. *Clinical and Experimental Dermatology*, 44(7), 740–746. <https://doi.org/10.1111/ced.14041>
- Meng, L., Hua, F., & Bian, Z. (2020). Coronavirus Disease 2019 (COVID-19): Emerging and future challenges for dental and oral medicine. *Journal of Dental Research*, 99(5), 481–487. <https://doi.org/10.1177/0022034520914246>
- Peng, X., Xu, X., Li, Y., Cheng, L., Zhou, X., & Ren, B. (2020). (2020), Transmission routes of 2019-nCoV and controls in dental practice. *International Journal of Oral Science*, 12(1), 9. <https://doi.org/10.1038/s41368-020-0075-9>
- Society of Oral Mucosal Diseases, Chinese Stomatological Association. (2020) Expert recommendations for prevention, treatment and care of oral ulcers and other mucosal diseases during the outbreak of COVID-19. *Clinical Journal of Dental Research*, 23. Online March 3, 2020, Available at: <http://cjdr.cndent.com/uploads/media/200304/13-200304091500.pdf>
- Stomatological Healthcare Service Branch of Chinese Stomatological Association. (2020) The guidelines on prevention and disease control in dental practice during the outbreak of corona virus disease 2019. *Clinical Journal of Dental Research*, 23. Online March 4 2020, Available at: <http://cjdr.cndent.com/uploads/media/200304/13-200304092U5.pdf>.
- Wei, J., & Li, Y. (2016). Airborne spread of infectious agents in the indoor environment. *American Journal of Infection Control*, 44(9), S102–S108. <https://doi.org/10.1016/j.ajic.2016.06.003s>
- Yang, H., Wu, Y., Ma, H., Jiang, L. U., Zeng, X., Dan, H., ... Chen, Q. (2016). Possible alternative therapies for oral lichen planus cases refractory to steroid therapies. *Oral Surgery, Oral Medicine, Oral Pathology and Oral Radiology*, 121(5), 496–509. <https://doi.org/10.1016/j.oooo.2016.02.002>
- Zhang, W., & Jiang, X. (2020). Measures and suggestions for the prevention and control of the novel coronavirus in dental institutions. *Frontiers of Oral and Maxillofacial Medicine*, 2, 4. <https://doi.org/10.21037/fomm.2020.02.01>