

LETTER TO THE EDITOR

Oral and dermatologic lesions observed in mild COVID-19 patients infected after 3rd vaccine dose

Dear Editor,

During the COVID-19 era, several cases of oral lesions associated with the novel coronavirus infection have been reported, beyond those caused secondarily after application of the vaccine as a result of immune response (Amorim Dos Santos et al., 2021; Troeltzsch et al., 2021). Despite satisfactory results, no immunizer is completely effective against new variants of SARS-CoV-2 infection. In addition, it is expected that vaccines protection could be compromised due to the fast-spreading of the Omicron variant (B.1.1.529) and its large number of mutations in the spike protein. Here, we report the occurrence of oral and dermal lesions in COVID-19 patients infected after a complete vaccination schedule, including the booster dose.

In January 2022, three members of the same family tested positive for SARS-CoV-2, confirmed through the RT-PCR test. In general, the symptoms were mild, with the predominance of persistent cough, headache, sore throat, and sneezing (Table S1). Myalgia, anosmia, ageusia, and fever was also reported by at least one of the patients. It was prescribed azithromycin 500 mg, dipyrone 500 mg,

and prednisolone 20 mg for 5 days and monitored under home quarantine for 10 days. Curiously, 8 days following the onset of COVID-19 symptoms, the patients showed alterations in the tongue dorsum, with papillary inflammation, foci of depapillation, and fissures. Herpetic eruptions in the neck and petechiae scattered on the dorsum and trunk were also observed in the female and one male, respectively (Figure 1).

Although less frequently reported than cutaneous lesions, oral manifestations associated with COVID-19 include dry mouth, ulcers, oral vesiculobullous lesions, and tongue alterations (Martín Carreras-Presas et al., 2021; Nuño González et al., 2021). Regarding these alterations, some authors have postulated the likelihood of associated infections, with SARS-CoV-2 possibly being the trigger for the appearance of opportunistic infections (de Carvalho et al., 2021). Particularly, we do not discard the hypothesis of occurrence of the co-infections, such as described here. The symptoms remission did not allow enough time to conduct specific tests due to treatment effectiveness. However, the presence of a skin vesiculobullous lesion

FIGURE 1 Aspects of oral lesions and dermatologic alterations observed in patients with COVID-19 after 3rd vaccine dose. (a) Presence of petechiae and urticaria scattered throughout the dorsal region; (b) Transient U-shaped anterior lingual papillitis (head arrow); (c) Reduction of inflammation of the papillae's tongue (30 days after initial infection); (d) Vesiculobullous lesions of herpetic origin in neck, isolated (black arrows) and clustered (circle); (e) Focal papillitis in the anterior region of the tongue and areas of depapillation (black arrows); (f) Discreet reduction focal papillitis and absence of areas of depapillation (30 days after initial infection); (g) Fissures presence in tongue dorsum (black arrows); (h) Absence of fissures and reduction of the inflammation of the papillae's tongue (30 days after initial infection)



in one of the patients with a previous medical history of Herpes simplex with exacerbation after COVID-19 infection points to the likelihood of co-infection.

In this study conducted by Nuño González et al. (2021), they have found that 25.7% of the 666 COVID-19 patients investigated had oral manifestations, and 3.9% of them presented U form depapillation areas named "COVID tongue." This is probably caused by the SARS-CoV-2 linkage for ACE-2 receptors present on the epithelial cell of the tongue dorsum (Marques et al., 2021). Nevertheless, the presence of the virus can cause cytological alterations in these cells, especially the reduction of cellular and nuclear diameters (Marques et al., 2021).

Immunologically, recurrent cases of COVID-19 or symptom variability in the individuals may be explained by the lack of effective SARS-CoV-2-specific T-cell immune response, as observed in monozygotic twins (de Castro et al., 2022). Possibly, this mechanism may occur in vaccinated patients favoring the development of symptoms, including oral lesions, as reported here. Although most vaccines do not completely prevent infection, they do prevent the risk of aggravating a patient's health, as described in our case series. Additionally, human genomics has been considered to affect disease susceptibility and severity of COVID-19 (Asgari & Pousaz, 2021; Hou et al., 2020). Alongside, Hou et al. (2020) found unique genetic susceptibility for COVID-19 across different populations, specifically due to the existence of ACE2 and TMPRSS2 polymorphisms. This finding is of great clinical relevance since these polymorphisms could guide the development of effective therapies.

Finally, these observations might help to understand the SARS-CoV-2 infection underlying mechanisms and to explain why even some fully vaccinated patients may present unexpected symptoms, including cutaneous and oral manifestations.

KEYWORDS

COVID-19, immune response, oral cavity, SARS-CoV-2, vaccine

AUTHOR CONTRIBUTIONS

Lucas Alves da Mota Santana: Conceptualization; Data curation; Formal analysis; Investigation; Methodology; Writing – original draft. **Gabriela Araújo da Costa:** Data curation; Investigation; Writing – original draft. **Rani Iani Costa Gonçalves:** Data curation; Formal analysis; Investigation; Methodology; Writing – original draft. **Wilton Mitsunari Takeshita:** Supervision; Validation; Visualization; Writing – review & editing. **Lucyene Miguita:** Supervision; Validation; Visualization; Writing – review & editing.

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