

Is gustatory impairment the first report of an oral manifestation in COVID-19?

Dear Editor,

More recently, researchers have reported about the chemosensory alterations observed in patients with COVID-19 (Giacomelli et al., 2020). The findings on changes in olfactory and gustatory sensations are enlightening and probably one of the preliminary reports in this context and may have been overlooked earlier, since it is challenging to diagnose and also due to the gravity of the major symptoms, being dealt with.

Disorders of the olfactory system have been implicated as the cause for 95% of the cases with taste disorders (Malaty & Malaty, 2013). Patients frequently have difficulty in delineating between smell and taste disturbances. Therefore, in patients reporting with both olfactory and taste disturbances in COVID-19, the possibility of an underlying olfactory disturbance should be considered as the primary aetiology. The perceived taste impairment could be secondary to this, rather than any actual disturbances with the gustatory system. Whereas, the patients who reported only with dysgeusia and ageusia, in the absence of any olfactory disorders, have to be highlighted, since this could be the first report of any oral manifestation associated with COVID-19. The taste buds containing the taste receptors are widely distributed in the oral cavity but are mainly concentrated in the papilla present on the dorsum of the tongue (Matsuo, 2000). This is of particular importance because the angiotensin-converting enzyme 2 (ACE2) receptor, to which the SARS-CoV-2 binds, in order to gain entry into the host cell, is highly expressed in the epithelial cells of especially the tongue, in comparison to the buccal or gingival tissues of the oral cavity (Xu et al., 2020). Hence, this could be a possible reason for the taste disturbance, observed in COVID-19 patients.

It was also suggested in a recent study that the Pennsylvania smell identification test can be used for assessing olfactory disturbances in COVID-19 cases (Giacomelli et al., 2020). Similarly, investigations like whole mouth test, spatial taste test (tongue mapping) can be employed to check taste disorders (Ambaldhage, Puttabuddi, Nunsavath, & Tummuru, 2014). Additionally, these tests can help to localize the areas of impairment and threshold sensitivity to a particular taste.

It is also well known that changes in the quantity and composition of saliva can contribute to taste disturbances (Matsuo, 2000).


It was earlier reported that ACE2 receptors in the epithelial cells of the salivary glands of rhesus macaques were an initial target for the SARS coronavirus (Liu et al., 2011). Considering the phylogenetic similarity between SARS-CoV and SARS-CoV-2 (Zhou et al., 2020), this can be a possible explanation for the gustatory disturbance in patients with COVID-19. Thus, the presence of xerostomia (hyposalivation) or other salivary alterations in COVID-19 needs to be evaluated. Therefore, future research should also be focused towards the study of taste disturbances, as well as the presence of any additional oral manifestations, amongst a bigger group of COVID-19 patients for better understanding of the course of this pandemic, infectious disease.

CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

AUTHOR CONTRIBUTIONS

Divya Vinayachandran: Conceptualization; Data curation; Validation; Writing-original draft. **SaravanaKarthikeyan Balasubramanian:** Conceptualization; Formal analysis; Writing-review & editing.

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