In Response to *Clinical Features of Parosmia Associated with COVID-19 Infection*

Key Words: anosmia, coronavirus, COVID-19, olfactory dysfunction, olfactory function, parosmia, SARS-CoV-2, smell.
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Dear Editor:

We have read with interest the recent article by Lerner et al.,[1] which analyzed the clinical features of parosmia following coronavirus disease 2019 (COVID-19). Congratulating the authors for the quality of their study, we would like to discuss some important points regarding pathogenetic hypotheses and the epidemiological implications emerging from their results. COVID-19 qualitative olfactory dysfunctions (ODs) represent a relatively recent topic that emerged along with persistent olfactory dysfunctions (POD). To date, research studies were mainly limited to the study of OD in the course of infection, which are mostly quantitative. The most recent theories emerging from histopathological studies on animal models[2–4] and humans[5,6] correlate these disorders to damage to the olfactory neuroepithelium (ONE) without involvement of the olfactory bulb.[2] In the same way, the recovery of the olfactory function may occur through the regeneration of the ONE, which takes place starting from the basal cells[5] and takes about 30 days.[7] The regeneration of the olfactory neurons is fundamental for the quantitative recovery of the olfactory function, but it is not sufficient for this perception to be qualitatively normal. In fact, part of the axonal regeneration starting from the new olfactory receptors can be disordered, leading to a misguided signal conduction to the higher olfactory centers and therefore to parosmia.[8,9]

Such evidences fit with the results detected by Lerner et al.[1] and may explain the fact that the onset of parosmia is not generally immediate and may be associated with a quantitatively normal olfactory function. Precisely, it is important to underline the importance of this latest finding. Persistent quantitative ODs are proving to be one of the most frequent symptoms of long-COVID-19.[10,11] The study by Lerner et al. stresses the possibility that all these studies published so far, although based on solid psychophysical tests, may underestimate the prevalence of residual OD through the lack of detection of the purely qualitative disorders that can occur in patients with normal psychophysical scores. Unfortunately, a specific psychophysical test for parosmia has only recently been proposed[12] and it is not yet available in clinical practice. In the future, it will be appropriate to deepen the threshold-discriminative-identification assessment with the evaluation of qualitative perception so as to identify patients with parosmia, which is a fundamental determinant in the reduction of the quality of life of patients with POD, even more than purely quantitative disorders.[1,13]

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