



Possible link between anosmia and COVID-19: sniffing out the truth

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Dear Editor,

Coronavirus disease 2019 (COVID-19) is a new respiratory disease that is spreading widely and rapidly throughout the world [1]. The most common clinical presentations of COVID-19 are now well known and include fever, cough, fatigue, headache, gastrointestinal discomfort, dyspnoea and muscle ache [2]. However, we are increasingly observing two additional symptoms in infected patients: anosmia and ageusia. Numerous reports, telephone calls, emails and direct olfactory complaints from concerned collaborators have reached us during the last weeks and our clinical impression is that these symptoms seem to appear late in the course of disease (second–third week) and eventually coincide with healing in patients experiencing mild symptoms. A questionnaire study conducted in several European countries seems to confirm that both olfactory and gustatory dysfunctions are significant symptoms in COVID-19 [3]. Despite similarities between the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and SARS-CoV in sequence, pathogenesis, cellular entry and clinical features [4], anosmia has never been described in SARS.

Anosmia, the inability to smell, is estimated to afflict 3–20% of the population [5, 6] and can result from many underlying diseases. Olfactory impairment after upper respiratory tract infection is well-known and a frequent cause of consultation in specialized smell and taste outpatient clinics [7]. However, the exact location of the damage in post-upper respiratory infections remains unknown, even though

biopsies have suggested a direct damage of the olfactory epithelium [8]. A recent study demonstrated that nasal epithelial cells display a very high angiotensin converting 2 (ACE2) expression in SARS-CoV-2 infection, thus allowing wide viral entry [9]. Consequently, peripheral nerve injury might occur causing anosmia, frequently observed in infected patients in our clinical practice.

In light of the striking increase of reports of anosmia in association with the classically reported COVID-19 infection symptoms, we would like to propose the following assumptions:

- Smell and/or taste loss may be a consistent accompanying symptom of SARS-CoV-2 infection. Most observations suggest transient anosmia with recovery after days to weeks, but it remains open in how many cases this impairment remains irreversible.
- It raises the question to what extent the olfactory epithelium could serve as a nose–brain entry path, as this has been suggested in other diseases with accompanying olfactory impairment [10]. Although Li et al. [11] reported that some patients with COVID-19 showed neurological signs, such as headache, nausea and vomiting, it remains unclear if SARS-CoV-2 induces short- or long-term neurological manifestations.
- It remains to be seen if anosmia could predict acute respiratory failure in patients with COVID-19 as awareness of the presence of this impairment may have a guiding significance for the prevention and treatment of SARS-CoV-2-induced respiratory failure.

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Of note, anecdotal reports of this symptom have been recognized as sufficiently serious by otolaryngology societies in France, the United Kingdom and the USA and their members are actively recommended to look for it and to consider any new, unexplained anosmia as a potential COVID-19 case and to take all the necessary precautions. In conclusion, we believe that the scientific community should focus on this accompanying symptom to clarify the role of anosmia in

COVID-19, instead of leaving this field to the social media. Many questions need to be addressed and patients should probably be tested for olfaction when this is possible. Only a serious follow-up of this clinical observation will help us to understand the sudden rise of anosmia in parallel to the SARS-CoV-2 outbreak.

Compliance with ethical standards

Conflict of interest None declared.

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