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LETTER ARTICLE

Prevention of COVID-19 Infection in the Medical Population: Possible Help from Anosmia?

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In December 2019, in Wuhan city, the capital of Hubei province in China, was reported the appearance of patients with pneumonia of unknown cause [1]. The Chinese scientists described a novel coronavirus (CoV) in bronchoalveolar-lavage samples of patients affected by severe pneumonia. Next-generation sequencing analysis indicated that the unknown genome showed more than 85% identity with those from a bat SARS-like CoV (bat-SL-CoVZC45, MG772933.1) [2]. In January, the Chinese authorities shared the full sequence of the novel coronavirus genome (GenBank: MN988668), making data available worldwide. This novel coronavirus was later designated as Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) and the disease was named by the World Health Organization, as Coronavirus disease 2019 (COVID-19) in February 2020 [3]. The other two well-known beta coronaviruses able to induce severe disease in humans are the Severe Acute Respiratory Syndrome Coronavirus, SARS-CoV, and the Middle East Respiratory Syndrome Coronavirus, MERS-CoV [4]. SARS-CoV-2 made use of the spike glycoprotein S, and the envelope-anchored surface, to mediates entry into host cells. The receptor-binding domain of SARS-CoV spikes protein S that recognizes the angiotensin-converting enzyme 2 (ACE2) as host receptor [5-7], likely SARS-CoV [8]. The transmission from human-to-human is believed to occur through respiratory aerosol, droplets from coughing, and sneezing. The patient clinical features mostly resembled those observed for SARS-CoV and MERS-CoV infections. Most patients presented with fever, dry cough, dyspnoea, and bilateral ground-glass opacities on chest CT scans, SARS-CoV-2 patients rarely developed intestinal signs and symptoms (for example, diarrhea) [9, 10].

As infection is spreading globally, clinical characteristics of COVID-19 remain unclear. It is the uncertainty of the clinical characteristics of these patients that the asymptomatic cases increase the risks of disease dissemination with an even higher risk for physicians, given the shortage of protective equipment [11].

There are ever-growing information and reports that come from Colleagues, nationally and internationally. They arrive more quickly than the indications that literature can provide. In these reports, the frequent finding of anosmia or hyposmia emerges even in the absence of other typical symptoms of COVID-19 and or nasal findings.

Otolaryngologists and Audiologists based in the various Italian Regions were quickly consulted, that confirmed these findings. In Bergamo, a city in the north part of Italy, the epicentre of COVID-19 epidemy, anosmia resulted as a frequent initial symptom. This epidemiological trend was confirmed by our Colleagues in few Italian regions, in particular in Marche (cities of Ancona, Macerata, Ascoli Piceno), Tuscany (cities of Empoli, Prato and Florence), Lombardia (city of Rozzano), and Lazio (city of Fondi). All of them are observing an increased number of cases of anosmia in otherwise healthy patients, compared to the usual epidemiological trend. International confirmations arrived from the United States, Germany, France, Korea, and China. In South Korea, where testing is widely performed, about 30% of patients experienced anosmia as the main symptom, in a rather mild clinical picture.

The pathophysiology of other coronaviruses (CoVs) might help clarify this finding. The neurotropic and neuroinvasive capabilities of different CoVs are described in several of their hosts, including humans [12, 13]. A possible route for neuroinvasion is the retrograde transport along axons of olfactory neurons [14]. The olfactory nerve is in communication with the nasal epithelium and with the olfactory bulb, which has direct contact with the CNS and is an immunoeffector organ [14, 15].

We don't have the time and the tools to further investigate. However, our data, supported by similar observations by French colleagues and British Rhinological Society, leads to the following consideration: anosmic/hyposmic subjects,

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usually presenting without obstructive nasal conditions, should be regarded as potential COVID-19 cases. Therefore, we should avoid nasal treatments (*i.e.* nasal washing, spray, invasive maneuvers, *etc.*) that amplify the virus dissemination. Viral shedding from nasal secretions, sneezing, coughing, and sputum can be continuous up to six weeks, which builds concerns that asymptomatic individuals could also transmit the infection to others [16]. All healthcare personnel, especially practitioners in Otolaryngology, Audiology, and Phoniatrics, are hence the most exposed to infection risk, in addition to Wuhan's documented risks for ENT and Ophthalmologists.

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CONFLICT OF INTEREST

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