Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Hypogeusia was reported by 63 patients (24%), hyposmia by 51 patients (20%), both hypogeusia and hyposmia by 43 patients (17%), and ENT disorders by 82 patients (32%). Hypogeusia and hyposmia were strongly associated with COVID-19 diagnosis, separately and combined, in patients with and without a medical history of ENT disorders (appendix p 2). The best performance was obtained with the combination of hypogeusia and hyposmia in patients with no medical history of ENT disorders, with a sensitivity of 42% (95% CI 27–58) and a specificity of 95% (90–98; appendix p 2).

To our knowledge, this is the first report of discriminant clinical features that might be used for the diagnosis of COVID-19 in patients with ILI. Taste and smell disorders have been associated with herpes zoster and HIV.[3,4] The neuroinvasive potential of SARS-CoV-2 might have a role in the pathophysiology of hypogeusia and hyposmia.[5] As the olfactory mucosa is located in the upper region of the nasal cavity, a direct or indirect effect of SARS-CoV-2 in situ might be another explanation for these symptoms. The prevalence of taste and smell disorders in patients with COVID-19 was estimated to be 5% in a previous study;[6] however, the data were retrospectively collected from medical files, which might have led to underestimation of the real prevalence. Indeed, these symptoms might not be spontaneously reported if not searched for.

This study has limitations. First, data were retrospectively collected through a web-based questionnaire, and we collected no data on age, sex, or other symptoms. Second, data were collected anonymously, so we could not check the accuracy of the diagnosis reported by patients. Third, the sample size was small and the response rate suboptimal. Finally, as the diagnosis relied on detection of SARS-CoV-2 by RT-PCR on nasopharyngeal samples, suboptimal sensitivity of this test (as low as 60% in some reports) might have led to misclassification and diagnostic bias.[7] However, this preliminary report of an association between hypogeusia or hyposmia and COVID-19 diagnosis in patients with ILI suggests that these symptoms might be a useful tool for initial diagnostic work-up in patients with suspected COVID-19. These symptoms, which are easy to collect, could be used for mass screening, by professionals with limited medical knowledge, and through telemedicine. Larger prospective studies are required to confirm these preliminary findings.

We declare no competing interests.

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Smell and taste dysfunction in patients with COVID-19

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See **Online** for appendix

The plural of an anecdote is not evidence, yet anecdotal international reports are accumulating from ear, nose, and throat (ENT) surgeons and other health-care workers on the front lines that anosmia, with or without dysgeusia, are symptoms frequently associated with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection. The American Academy of Otolaryngology—Head and Neck Surgery and the British Association of Otorhinolaryngology are now recommending these symptoms be added to the list of primary screening symptoms for COVID-19.

Our understanding of an absent or diminished ability to smell or taste, resulting from a neurotropic or neurovirulent viral infection targeting the olfactory system, remains fragmentary and is largely historically informed. The clinical evaluation of the first cranial nerve (olfactory nerve or CN I) has all but dropped from history taking and physical examination; hence, it is often referred to by ENT professionals as the forgotten cranial nerve. To further complicate matters, immediate self-recognition of olfactory dysfunction is typically only present in the most severe cases, or it is only self-identified after a prolonged latency period.[1,2] A scarcity of acute-phase advanced neuroimaging studies, difficulties in obtaining histopathological tissue specimens, and an absence of viral cultures of infected olfactory neuroepithelium compound the difficulties in studying this phenomenon. Moreover, in the context of normal trans-nasal airflow of odorant molecules (ie, no oedema in the nasal vault or olfactory cleft), and in the absence of intranasal disease (eg, infectious rhinosinusitis, allergic or vasomotor rhinitis, or polyposis), until now patients with sensorineural

viral anosmia have been seldom seen in general otolaryngology practice—on the order of approximately one to two new-onset patients each year. Hence, up until the coronavirus disease 2019 (COVID-19) pandemic, the low prevalence of sensorineural viral anosmia in society as a whole has made clinical research challenging.

Given the urgency and lethality of the current pandemic, knowledge obtained from front-line otolaryngologists who are currently managing and monitoring patients with COVID-19, and those with clinical experience in olfaction and rhinology, would have great value when transferred forward to deployed caregivers. Our multinational group, including one otolaryngologist currently infected with COVID-19 and experiencing anosmia and dysgeusia, suggest that physicians evaluating patients with acute-onset loss of smell or taste, particularly in the context of a patent nasal airway (ie, non-conductive loss), should have a high index of suspicion for concomitant SARS-CoV-2 infection. We have observed that traditional nasal cavity manifestations, as seen in other upper respiratory infections (eg, rhinovirus, influenza, and adenovirus), are commonly absent in patients with COVID-19. We have also observed that SARS-CoV-2 does not appear to generate clinically significant nasal congestion or rhinorrhoea—ie, a red, runny, stuffy, itchy nose. This observation suggests a neurotropic virus that is site-specific for the olfactory system. Although labelled as a respiratory virus, coronaviruses are known to be neurotropic and neuroinvasive.[3-6] Finally, we and others[7] have observed that anosmia, with or without dysgeusia, manifests either early in the disease process or in patients with mild or no constitutional symptoms.

Nevertheless, it is still too early in our understanding of COVID-19 to definitively establish the incidence, as well as the full-spectrum clinical utility, of these symptoms.

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