*Clinical Infectious Diseases*

CORRESPONDENCE

## Self-reported Olfactory and Taste Disorders in Patients With Severe Acute Respiratory Coronavirus 2 Infection: A Cross-sectional Study

To the Editor—We read with interest the article by Wang et al [1] describing the clinical features of 69 patients with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection in Wuhan, China. The authors provide a detailed description of major signs and symptoms of overt disease [2, 3], but fail to give an account of minor symptoms that may be present at earlier stages of the infection.

After some patients admitted for coronavirus disease 2019 (COVID-19) at the Infectious Disease Department of L. Sacco Hospital in Milan, Italy, complained of olfactory and taste disorders (OTDs), we performed a cross-sectional survey of the prevalence of these alterations in the context of SARS-CoV-2 infection. On 19 March 2020, a simple questionnaire including questions about the presence or absence of OTDs, their type and time of onset respective to hospitalization were submitted through verbal interview to all SARS-CoV-2–positive hospitalized patients who were able to give informed consent. Of 88 hospitalized patients, 59 were able to be interviewed (29 were nonrespondents, of whom 4 had dementia, 2 had a linguistic barrier, and 23 were on noninvasive ventilation) (Table 1). Of these, 20 (33.9%) reported at least 1 taste or olfactory disorder and 11 (18.6%) both. Twelve patients (20.3%) presented the symptoms before the hospital admission, whereas 8 (13.5%) experienced the symptoms during the hospital stay. Taste alterations were more frequently (91%) before hospitalization, whereas after hospitalization taste and olfactory alteration appeared with equal frequency. Females reported OTDs more frequently than males (10/19 [52.6%] vs 10/40 [25%]; $P = .036$). Moreover, patients with at least 1 OTD were younger than those without (median, 56 years [interquartile range {IQR}, 47–60] vs 66 [IQR, 52–77]; $P = .035$). All patients reported the persistence of OTDs at the time of the interview.

**Table 1. Characteristics of Patients With Severe Acute Respiratory Syndrome Coronavirus 2 Infection Assessed for Taste and Olfactory Disorders (N = 59)**

| Patients | No. (%) |
|---|---|
| Age, y, median (IQR) | 60 (50–74) |
| Male sex | 40 (67.8) |
| Days from illness onset to hospital admission, median (IQR) | 6 (4–10) |
| Days from illness onset to the interview, median (IQR) | 15 (10–21) |
| Pneumonia at hospital admission | 43 (72.8) |
| Symptoms at hospital admission | |
| Fever | 43 (72.8) |
| Cough | 22 (37.3) |
| Dyspnea | 15 (25.4) |
| Sore throat | 1 (1.7) |
| Arthralgia | 3 (5.1) |
| Coryza | 1 (1.7) |
| Headache | 2 (3.4) |
| Asthenia | 1 (1.7) |
| Abdominal symptoms | 5 (8.5) |
| No taste or olfactory disorders | 39 (66.1) |
| With olfactory and/or taste disorders | 20 (33.9) |
| Taste disorders only | |
| Dysgeusia | 5 (8.5) |
| Ageusia | 1 (1.7) |
| Olfactory disorders only | |
| Hyposmia | 3 (5.1) |
| Anosmia | 0 (0) |
| Mixed taste and olfactory disorders | |
| Dysgeusia and hyposmia | 2 (3.4) |
| Dysgeusia and anosmia | 2 (3.4) |
| Ageusia and hyposmia | 2 (3.4) |
| Ageusia and anosmia | 5 (8.5) |

Data are presented as no. (%) unless otherwise indicated. Abbreviations: IQR, interquartile range; SARS-CoV-2, severe acute respiratory syndrome coronavirus 2.

Olfactory and taste disorders are well known to be related with a wide range of viral infections [4, 5]. SARS-CoV has demonstrated in a mice model a transneural penetration through the olfactory bulb [6]. Moreover, angiotensin-converting enzyme 2 receptor, which is used by SARS-CoV-2 to bind and penetrate into the cell, is widely expressed on the epithelial cells of the mucosa of the oral cavity [7]. These findings could explain the underlying pathogenetic mechanism of taste and olfactory disorders in SARS-CoV-2 infection.

Due to limitations related to the diffusivity of the disease and emergency contingencies, it was impossible to perform a more structured questionnaire associated with validated tests (ie, Pennsylvania smell identification test) [8]. However, our survey shows that OTDs are fairly frequent in patients with SARS-CoV-2 infection and may precede the onset of full-blown clinical disease. In a pandemic context, further investigations on nonhospitalized infected patients are required to ascertain if these symptoms, albeit unspecific, may represent a clinical screening tool to orientate testing of pauci-symptomatic individuals.

### Notes

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