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Commentary

Olfactory and taste disorders in COVID-19 patients: an update

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INTRODUCTION

Since December 2019, a pandemic of coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has spread globally.[1,2] A spectrum of disease severity has been reported for the infection, with main symptoms of fever, fatigue, dry cough, myalgia, and dyspnoea.[3]

Previous strains of coronavirus have been demonstrated to invade the central nervous system through the olfactory neuroepithelium and propagate from within the olfactory bulb.[4] Furthermore, nasal epithelial cells display the highest expression of the SARS-CoV-2 receptor, angiotensin-converting enzyme 2, in the respiratory tree.[5]

It has been observed that SARS-CoV-2 does not appear to generate clinically significant nasal congestion or rhinorrhoea-i.e., a red, runny, stuffy, itchy nose. This observation suggests a neurotropic virus that is site-specific for the olfactory system. Although labelled as a virus affecting respiratory system, coronaviruses are known to be neurotropic and neuroinvasive.[6-9]

Olfactory and taste disorders are well known to be related with a wide range of viral infections.[10,11] In a mice model, SARS-CoV has demonstrated a transneural penetration through the olfactory bulb.[12] 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.[13] These findings could explain the underlying pathogenetic mechanism of taste and olfactory disorders in SARS-CoV-2 infection.

STUDIES ON SMELL AND TASTE DYSFUNCTION IN PATIENTS WITH COVID-19

Giacomelli et al performed a cross-sectional survey of the prevalence of these alterations in the context of SARS-CoV-2 infection after some patients admitted for COVID-19, at the Infectious Disease Department of L. Sacco Hospital in Milan, Italy, complained of olfactory and taste disorders (OTDs).[14] Of 88 hospitalized patients,59 were able to be interviewed (29 were non-respondents, of whom 4 had dementia, 2 had a linguistic barrier, and 23 were on non-invasive ventilation). 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=0.036). 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=0.035).[14]

Spinato et al evaluated prevalence, intensity, and timing of an altered sense of smell or taste in patients with mildly symptomatic SARS-CoV-2 infection.[15] Any altered sense of smell or taste was reported by 64.4% (95% CI, 57.3%-71.0%) out of which 34.6% also reported blocked nose. Other frequent symptoms were fatigue (68.3%), dry or productive cough (60.4%), and fever (55.5%). Among all patients, the timing of an altered sense of smell or taste onset in relation to other

symptoms occurred before other symptoms in 11.9%; at same time as in 22.8%; and after other symptoms in 26.7%. An altered sense of smell or taste was reported as the only symptom by 3.0%. An altered sense of smell or taste was more frequent among women (72.4%, 95% CI: 62.8%-80.7%) than among men (55.7%, 95% CI: 45.2%-65.8%; p=0.02).[15]

Xydacis et al have observed that anosmia, with or without dysgeusia, manifests either early in the disease process or in patients with mild or no constitutional symptoms.[16]

CONCLUSION

Olfactory and taste disorders are fairly frequent in patients with SARS-CoV-2 infection and may precede the onset of full-blown clinical disease. Alterations in smell or taste were frequently reported by mildly symptomatic patients with SARS-CoV-2 infection and often were the first apparent symptom. Consideration should be given to testing and self-isolation of patients with new onset of altered taste or smell during the COVID-19 pandemic.

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