Neurological Manifestations of COVID-19: Disorders of taste and smell

Dear Researcher,

In the last newsletter we discussed the broad range of neurological manifestations of COVID-19. This second part of the COVID-19 series will focus on two important peripheral nerve symptoms: loss of taste and smell, which have been reported as common symptoms following fever and fatigue in milder cases of COVID-19.

Disorders in Smell/taste occur early on in COVID-19

In contrast to the 5% of anosmia (loss of smell)/ageusia (loss of taste) reported by Mao *et al*., (2020) the first paper to recognise loss of test and smell, recent studies are detecting a very high frequency of chemosensitive disorders in COVID-19 patients, ranging between 19.4% and 88%. In particular, the disorders seem especially frequent in the initial stages of the infection and in paucisymptomatic patients suggesting that the loss of taste and smell could be important early indicators/subclinical markers of the disease.

Vaira *et al*., (2020) looked at 72 COVID-19 patients with a mean age of 49.2 from the University Hospital of Sassari, Italy. Of these, 65.5% were out patients. The Connecticut Chemosensory Clinical Research Center orthonasal olfaction test (CCCRC) was used to assess olfactory function.Based on the CCCRC scores, complete anosmia was detected in 2.8% of the cases, 80.6% showed variable degree hyposmia while in 16.7% of the cases olfactory function was normal. The analysis of the clinical course supported the hypothesis that ageusia and anosmia are early symptoms in COVID-19, generally occurring within the first 5 days of the clinical onset (Figure 1). In 18.1% of the patients, taste and smell impairment represented the first clinical manifestation of the disease and importantly were not associated with the presence of nasal obstruction or rhinitis.

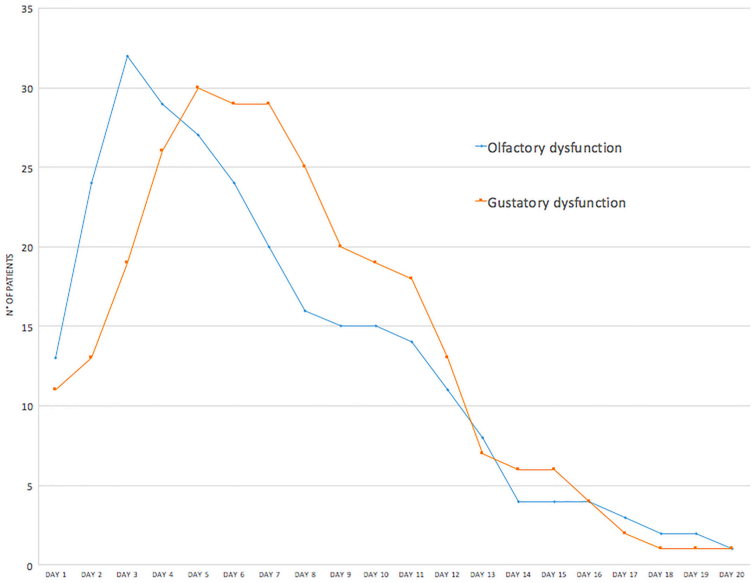

Figure 1: Olfactory and gustatory dysfunction clinical course

Disorders of Smell/taste: A predictor of disease outcomes

Smell impairment in COVID-19 may associate with a milder clinical course of disease. A retrospective analysis by Yan *et al.*, (2020) of COVID-19 patients presenting at the UC San Diego Health System revealed that hospitalised patients were significantly less likely to report anosmia/hyposmia (26.9% vs 66.7%) and dysgeusia i.e. distortion in the sense of taste (23.1% vs 62.7%) than patients who showed milder forms of the disease and were not hospitalised

Disorders of Smell/taste: A Biomarker for diagnosis of COVID19?

Many viruses (including other coronaviruses) affecting the upper respiratory tract can lead to olfactory dysfunction, mostly through an inflammatory reaction of the nasal mucosa.

Another study by Yan *et al.*, (2020) showed that loss of smell/ taste was significantly more likely to occur in COVID-19 patients compared to influenza patients. The study looked at a cohort of 1480 patients with influenza-like symptoms that underwent COVID-19 testing. Smell impairment was reported in 68% of the COVID-19 positive cohort compared to 16% of the COVID-19 negative cohort expressing influenza like symptoms. For taste impairment, 71% of the COVID-19 positive cohort reported symptoms compared to 17% of the COVID-19 negative cohort. Importantly most studies reported that the loss of smell/ taste were temporary with sensory return typically matching the timing of disease recovery.

In summary, new-onset symptoms of smell and taste could be considered as a specific manifestation of COVID-19 and could be used as a biomarker to facilitate better medical decision making and efficient allocation of limited medical resources.

Best wishes & stay safe,
The Biosensis Team

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