Hypothyroidism is associated with prolonged COVID-19-induced anosmia: a case–control study

Since the onset of COVID-19 pandemic, an exponentially increasing body of data suggests that infection with SARS-CoV-2 affects multiple organs with short-term and long-term outcomes that remain still unknown. Viral effects on thyroid function can, inevitably, lead to multisystem involvement, as thyroid hormones affect the development and function of virtually all human cells, including neural maturation of olfactory receptor neurons. A recent prospective observational study by Lui et al found abnormal thyroid function tests, defined as deranged thyroid-stimulating hormone (TSH) and/or free thyroxine (FT4) and/or free triiodothyronine (FT3) in 25 patients (13,1%), suggesting that SARS-CoV-2 might directly induce viral thyroiditis. Moreover, low FT3 values were independently associated with an increased likelihood for clinical deterioration; the researchers concluded that ‘there may be a direct effect of SARS-CoV-2 on thyroid function, potentially leading to exacerbation of pre-existing autoimmune thyroid disease’. However, it was not clear whether thyroid dysfunction was more frequent among patients with particular clinical features, that is, anosmia, or not.

Our multidisciplinary collaborative team has previously investigated the prevalence and neuroimaging findings in patients with COVID-19 presenting with olfactory disorders. We have used validated smell test (containing microencapsulated odorant strips) to quantitatively assess olfactory dysfunction in patients with COVID-19 and controls. The prevalence of normosmia dysfunction in patients with COVID-19 and strips) to quantitatively assess olfactory receptor neurons. A recent prospective observational study by Lui et al found abnormal thyroid function tests, defined as deranged thyroid-stimulating hormone (TSH) and/or free thyroxine (FT4) and/or free triiodothyronine (FT3) in 25 patients (13,1%), suggesting that SARS-CoV-2 might directly induce viral thyroiditis. Moreover, low FT3 values were independently associated with an increased likelihood for clinical deterioration; the researchers concluded that ‘there may be a direct effect of SARS-CoV-2 on thyroid function, potentially leading to exacerbation of pre-existing autoimmune thyroid disease’. However, it was not clear whether thyroid dysfunction was more frequent among patients with particular clinical features, that is, anosmia, or not.

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EK, MPaneta, KP and LP. Drafting and revising the manuscript were performed by GT, PCF and LP. Critical comments during manuscript revision were provided by EK, MPaneta, KP, CF, MPapathanasiou, SL, PPS and ST. All authors read and approved the final manuscript.

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