



laboratory testing and thyroid ultrasound showed that the patient's thyroid function had returned to normal, with isoechogenicity throughout the thyroid gland and no signs of thyroiditis.

## Discussion

Subacute or De Quervain's thyroiditis is a self-limiting inflammatory thyroid disorder characterised by neck pain and thyrotoxicosis. The disease exhibits characteristics typical of viral infections, including viral prodrome with myalgia, malaise and fatigue.

One characteristic sign on laboratory testing is an elevated ESR. Typically, plasma thyroid hormone levels are elevated and TSH levels are undetectable with negative TPO and Tg Ab. The leukocyte count is usually normal with increased CRP, IL-6 and ferritin, as seen in the case report. Characteristically, I131 uptake is very low, and thyroid ultrasound shows areas of focal hypoechogenicity.

It seems that after a viral infection, an immune response mediated by cytotoxic T lymphocytes can occur and damage thyroid follicular cells. The onset and recurrence of subacute thyroiditis appear to be associated with human leukocyte antigen (HLA)-B35. Hence, the onset of subacute thyroiditis is influenced by genetics, and it appears that it can develop in patients with a genetic predisposition during a viral infection.<sup>1</sup>

The pathogenesis of this disease is linked to various viruses: enteroviruses, Coxsackieviruses, adenoviruses, orthomyxoviruses, Epstein-Barr virus, hepatitis E virus, human immunodeficiency virus (HIV), cytomegalovirus, dengue viruses and rubella virus. However, viral inclusion bodies have not been seen in thyroid tissue.<sup>1,3</sup>

Silent thyroiditis is a form of autoimmune thyroiditis that co-occurs with thyrotoxicosis caused by the release of thyroid hormones from a non-tender thyroid gland. High titres of TPO and Tg Ab are characteristically detected. The inflammatory process destroys the follicles, resulting in the release of large amounts of T4 and T3 into the bloodstream and causing thyrotoxicosis. The leukocyte count is normal and the ESR may be slightly elevated. During the thyrotoxicosis phase, I131 uptake is decreased.<sup>1</sup>

Our patient had laboratory results consistent with thyrotoxicosis, with a slightly elevated ESR, a non-tender thyroid gland, no I131 uptake and a negative autoimmunity study; such findings are possible in silent thyroiditis. The patient required no specific treatment as he had no symptoms; hence, it is suspected that he had silent thyrotoxicosis in the course of SARS-CoV-2 infection.

In a study published in 2007, a substantial number of patients with SARS-CoV-1 infection exhibited thyroid function abnormalities. In SARS-CoV-1, there was speculation as to the possibility of the virus itself causing direct damage to the thyroid gland through unclear mechanisms. Exami-

nation of thyroid tissue samples found destruction of the follicular and parafollicular epithelium. Another possibility was that the virus caused central hypothyroidism induced by hypophysitis or hypothalamic dysfunction.<sup>3,4</sup>

To date, a single case of subacute thyroiditis due to SARS-CoV-2 has been reported; that patient, unlike ours, experienced symptoms. The prevalence and diversity of this disease in patients with COVID-19 remains to be determined; larger numbers of cases would be needed to establish its causality and relationship to the virus.<sup>3</sup>

## Conclusion

SARS-CoV-2 infection has had a major impact in many countries due to its rapid spread and the large numbers of patients with COVID-19; complications secondary to SARS-CoV-2 infection have not yet been established. This article reports the case of a patient with concomitant SARS-CoV-2 infection and thyroiditis.

## Conflicts of interest

The authors have no conflicts of interest to declare.

## References

- Desailloud R, Hober D. Viruses and thyroiditis: an update. *Virology*. 2009;6:5, <http://dx.doi.org/10.1186/1743-422X-6-5>.
- Corman VM, Landt O, Kaiser M, Molenkamp R, Meijer A, Chu DK, et al. Detection of 2019 novel coronavirus (2019-nCoV) by real-time RT-PCR. *Euro Surveill*. 2020;25, <http://dx.doi.org/10.2807/1560-7917.ES.2020.25.3.2000045>.
- Brancatella A, Ricci D, Viola N, Sgrò D, Santini F, Latrofa F. Subacute thyroiditis after SARS-Cov-2 infection. *J Clin Endocrinol Metab*. 2020;105, [dga276dga2764](https://doi.org/10.1210/clinem.2020-105).
- Wang W, Ye YX, Yao H. Evaluation and observation of serum thyroid hormone and parathyroid hormone in patients with severe acute respiratory syndrome. *J Chin Antituberculous Assoc*. 2003;25:232-4.

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