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## PERSISTING THROAT PAIN AFTER COVID-19 INFECTION: A CASE REPORT OF SUBACUTE THYROIDITIS

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### ABSTRACT

A 25-year-old female patient was admitted to the family medicine clinic with complaints of sore throat, fever, and right ear pain that persisted for 15 days despite receiving ant biotherapy treatment. In her medical history, she had a COVID-19 infection 30 days ago. The thyroid examination revealed painful palpation with a slight increase in the size of the thyroid gland. The patient's blood tests and thyroid ultrasonography were evaluated as subacute thyroiditis. Although it is impossible to establish a definite causal relationship between COVID-19 and subacute thyroiditis in this case, we think such a relationship is possible. Since thyroid-related diseases should also be considered in case of sore throat that persists despite treatment and thyroid examination should not be skipped during a physical examination, it is deemed appropriate to present this case with literature.

**Key words:** COVID-19; SARS-CoV-2; Thyroiditis; Subacute thyroiditis

## INTRODUCTION

Subacute thyroiditis is a self-limiting inflammatory thyroid disease with thyroid dysfunction, fever, and neck pain. It usually develops after a viral upper respiratory tract infection.<sup>1</sup> Many viruses, such as coxsackie, influenza, and adenovirus, were blamed for the etiology of subacute thyroiditis.<sup>2</sup> The SARS-CoV-2 virus led to the ongoing Coronavirus disease 2019 (COVID-19) pandemic, which started in 2019 and rapidly spread worldwide. Numerous reports were published on COVID-19's extrapulmonary involvement and clinical findings.<sup>3</sup> In the literature, many cases of subacute thyroiditis developing after COVID-19 infection are reported.<sup>4,5</sup> The mechanisms by which SARS-CoV-2 causes thyroid dysfunction are not fully known.<sup>5</sup>

The diagnosis of subacute thyroiditis is mostly made by clinical and laboratory examinations. The patient describes increasing pain with swallowing and severe pain and tenderness with palpation in the thyroid gland region to the ear. During thyroid examination, the thyroid gland was large, painful, tender, and hard. Sedimentation rate and CRP are usually found to be significantly higher, and serum fT4 and fT3 levels are found to be high in blood tests. Ultrasonographic findings of subacute thyroiditis are well-defined. The natural clinical course of subacute thyroiditis includes an initial thyrotoxic phase followed by a hypothyroid phase with a return to a euthyroid state. Cases of subacute thyroiditis are expected to recover within six months at the latest.<sup>6</sup> The diagnosis of subacute thyroiditis cases may still be delayed, and it is usually diagnosed and treated as hyperthyroidism at the initial stage of the disease.<sup>7</sup> In this article, a case who was diagnosed with subacute thyroiditis after admission with a persistent sore throat despite treatment after COVID-19 infection is presented.

## CASE

### *Medical Background*

A 25-year-old female patient with no known disease, operation, or regular medication applied to the family medicine outpatient clinic with complaints of sore throat and sub-febrile fever going on for 15 days and persisting despite treatment. The patient was admitted to an external center twice for 15 days with a similar complaint. She was diagnosed with acute upper respiratory tract infection and prescribed oral paracetamol 1000 mg/day together with oral amoxicillin 1000 mg/day. She stated that, after applying for the second time with the same complaint, the same treatment was repeated. However, despite the regular medication, she stated that there was no regression in her complaints. In the patient's history, she stated that she applied to an external center 30 days ago with the complaint of mild weakness and mild cough and her Covid-19 PCR combined nasopharyngeal swab result was positive. She had mild symptoms that lasted five days, and she got through as an outpatient and without treatment. Her complaints increased gradually in the last two days, especially when swallowing. She suffered from severe sore throat and right ear pain. The patient stated that her current complaints started after approximately ten days of symptom-free well-being after the COVID-19 infection.

### *Physical Examination*

Her body temperature was measured to be 37.5 degrees, blood oxygen saturation was 99%, respiratory rate was 18/min, blood pressure was 130/80 mmHg, and pulse was 85/min. In the physical examination, the oropharynx and tonsils were normal in appearance and size in the throat, with a painful 2x1 mm lymph node located in the right cervical region. During the thyroid examination, the thyroid gland was found to be painful by palpation, with a slight increase in size.

During an in-ear examination with an otoscope, both ears looked normal. Examination findings on other systems were found to be normal.

#### *Laboratory and Pathological Results*

Blood tests and electrocardiography were requested from the patient. In blood test results, white blood cell was 10.030/mm<sup>3</sup>, neutrophil rate 74.2%, C-reactive protein (CRP) 2.42 mg/dL (reference range 0-0.5), Free T4 hormone (fT4) level 1.00 ng/dl (reference range 0.89 - 1.76), and Thyroid Stimulating Hormone (TSH) level 0.73 mud/L (reference range 0.55-4.78). The patient's electrocardiography was in normal sinus rhythm and no signs of myocardial ischemia were detected. The patient was referred to the emergency department with a preliminary diagnosis of subacute thyroiditis and peritoneal abscess. Thyroid ultrasonography in the emergency department reported, "The thyroid parenchyma in an area of 16x22 mm in the right lobe has a heterogeneous appearance, and its blood supply has increased (acute thyroiditis?)". During her discharge, she was prescribed NSAID, and an outpatient clinic control application was recommended to the endocrinology department.

#### *Medical Follow-up*

The patient's complaints persisted ten days after discharge from the emergency department despite the treatment, and she applied to the endocrinology department. In the blood test results, higher than normal levels of CRP, fT4, fT3, and TSH were determined. Thyroid ultrasonography under elective conditions reports resulted in subacute thyroiditis. The endocrinology specialist started prednisolone therapy. About two months have passed since the patient's complaints, and the endocrinology outpatient controls and treatment process continue at regular intervals. However, full well-being has not been achieved yet.

## DISCUSSION

Despite the recent developments in diagnostic methods, subacute thyroiditis diagnosis is often missed because it is a rare disease and is confused with different infective processes, and there are still great delays in diagnosis.<sup>8,9</sup> According to the results of a retrospective study, it was found that the time until diagnosis was 2 weeks or longer in 81.8% of patients with subacute thyroiditis, and subacute thyroiditis diagnosis was often delayed. In addition, in the same study, it was found that three-quarters of the patients with subacute thyroiditis consulted at least 2 other physicians before their last admission, and 58.7% of them used antibiotics at least once before the diagnosis of subacute thyroiditis. It was found that physicians of primary care and other branches do not sufficiently consider the possibility of subacute thyroiditis in the differential diagnosis of neck pain.<sup>8</sup> High-quality primary care in society can reduce the likelihood of missed cases of subacute thyroiditis.<sup>9</sup>

Patients with mild symptoms should be initially treated with NSAIDs. When patients are unresponsive or initially present with moderate to severe pain and/or thyrotoxic symptoms, corticosteroids should be used instead of NSAIDs.<sup>6</sup> However, sometimes patients may receive inadequate treatment due to the hypersensitivity of physicians to corticosteroids and sometimes due to dosing or time problems.<sup>10</sup>

Firstly, Brocatelle et al. reported a case of an 18-year-old female patient with a diagnosis of subacute thyroiditis after two weeks of SARS-CoV-2 infection.<sup>1</sup> In a study that compiled 22 cases of developing subacute thyroiditis after COVID-19 infection, after about 35±12 days, most patients

reached euthyroid status after short-term subclinical hypothyroidism.<sup>4,5</sup>In this case, it is noteworthy that the patient applied to two separate centers before she applied to our unit, and in both cases, the patient was evaluated as having an upper respiratory tract infection, and antibiotherapy was started and continued, and no NSAIDs were prescribed.

In conclusion, primary care physicians should not forget that in their clinical practice, unusual clinical symptoms may be seen due to SARS-CoV-2 infection. Although it is not possible to establish a definite causal relationship between COVID-19 and subacute thyroiditis in this case, we think that such a relationship is possible. Thyroid-related diseases should also be considered in case of a sore throat that persists despite treatment, and thyroid examination should not be skipped during a physical examination in primary care.

#### Disclosures

*Peer-review:* Externally peer-reviewed.

*Conflict of Interest:* The authors have no conflicts of interest to declare.

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*Authorship Contributions:* Concept-SHA, BOO, IK Design- SHA, BOO Materials - SHA, BOO; Data collection and/or processing- SHA, BOO; Analysis and/or interpretation SHA, IK Writing - SHA, BOO, IK; Critical review - IK

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