

# COVID-19 Associated Subacute Thyroiditis Presenting with Unilateral Involvement

Tek Taraflı Tutulumla Ortaya Çıkan COVID-19 ile İlişkili Subakut Tiroidit  
Radyoloji

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## Özet

Bu yazıda SARS-CoV-2 virüsü ile subakut tiroidit (SAT) arasındaki ilişkinin ortaya çıkarılması amaçlanmıştır. COVID-19'a bağlı tek taraflı subakut tiroidit olgusu klinik, laboratuvar ve radyolojik bulgularla sunuldu. Sol taraflı boyun ağrısı olan 27 yaşındaki bir kadın hastanın laboratuvar sonuçları, sedimantasyon oranının yüksek olması dışında dikkat çekici değildi. TSH dahil tüm tiroid hormon düzeyleri tamamen normaldi. Ultrasonografik incelemede tiroid bezinin sol lobunda azalmış vaskülarite ile heterojen hipoekoik görünüm, elastografik incelemede sertlikte, boyut ve renk kodlamasında artış izlendi. Tiroid bezi sağ lobu normal görünümdeydi. SARS-CoV-2 virüsünün diğer viral ajanlar gibi SAT'a neden olabileceği ve tiroid bezinin tek taraflı olarak etkilenebileceği unutulmamalıdır.

**Anahtar kelimeler:** SARS-CoV-2, COVID-19, subakut tiroidit, dequervain tiroiditi

## Abstract

In this article, it was aimed to reveal the relationship between the SARS-CoV-2 virus and subacute thyroiditis (SAT). The case of unilateral subacute thyroiditis due to COVID-19 was presented with clinical, laboratory and radiological findings. Laboratory results of a 27-year-old female patient with left-sided neck pain was unremarkable except for a high sedimentation rate. TSH included all thyroid hormone levels were completely normal. In ultrasonographic examination, a heterogeneous hypoechoic appearance with decreased vascularity in the left lobe of the thyroid gland, an increase in size and color coding with increased stiffness in elastographic examination were observed. Thyroid gland right lobe was in normal appearance. It should be kept in mind that the SARS-CoV-2 virus may cause SAT like other viral agents and the thyroid gland may be affected unilaterally.

**Keywords:** SARS-CoV-2, COVID-19, subacute thyroiditis, dequervain thyroiditis

## Introduction

SARS-CoV-2 started in China at the end of 2019 and affected the whole world in a short time, causing a pandemic <sup>1</sup>. Patients mainly present with upper respiratory tract-like symptoms such as fever, dry cough, sore throat, malaise <sup>1,2</sup>. It has been reported in the literature that the virus has a more severe clinical course in elderly and male patients with comorbid diseases, and has a higher mortality rate compared to other viral agents, causing complications such as ARDS, sepsis, and multiorgan failure in the acute period <sup>1-3</sup> However, the late period complications of the disease have not been clarified yet. It is not known exactly whether there are complications that may occur in the body after a latent period like other viral agents. It is known that the ACE-2 receptors used by the virus to enter the cell are expressed intensely in the respiratory tract and lung epithelial cells, as well as in the gastrointestinal system mucosa and thyroid tissue <sup>4</sup>. In this context, thyroid gland dysfunctions and gastrointestinal system symptoms caused by the virus have been reported, especially in the acute phase of the disease <sup>5</sup>. In this case report, we wanted to emphasize that SARS-CoV-2 virus may also be included in the etiology of subacute thyroiditis (SAT) by presenting our patient who applied to our clinic with unilateral SAT symptoms in the subacute period of the disease together with its clinical, laboratory and radiological features. We aimed to guide clinicians and radiologists in questioning past COVID-19 disease in patients diagnosed with SAT,

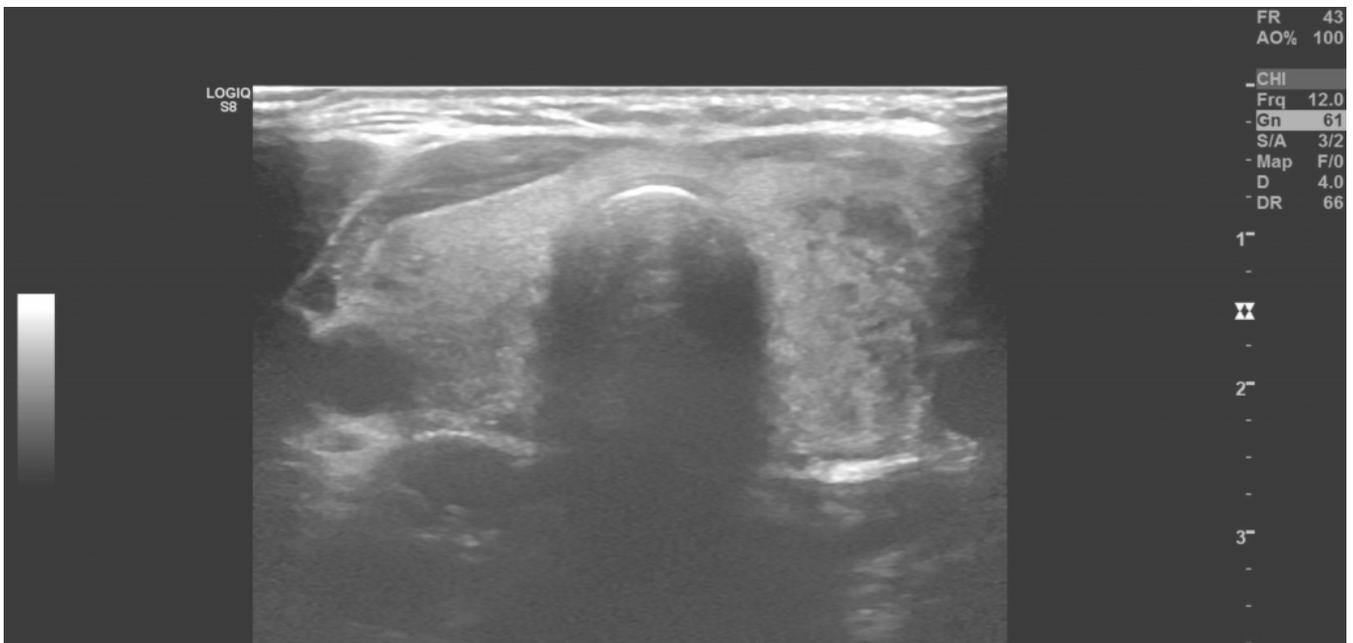
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especially in terms of the asymptomatic course of the disease in the young population and the key role of these asymptomatic patients in the rapid spread of the disease.

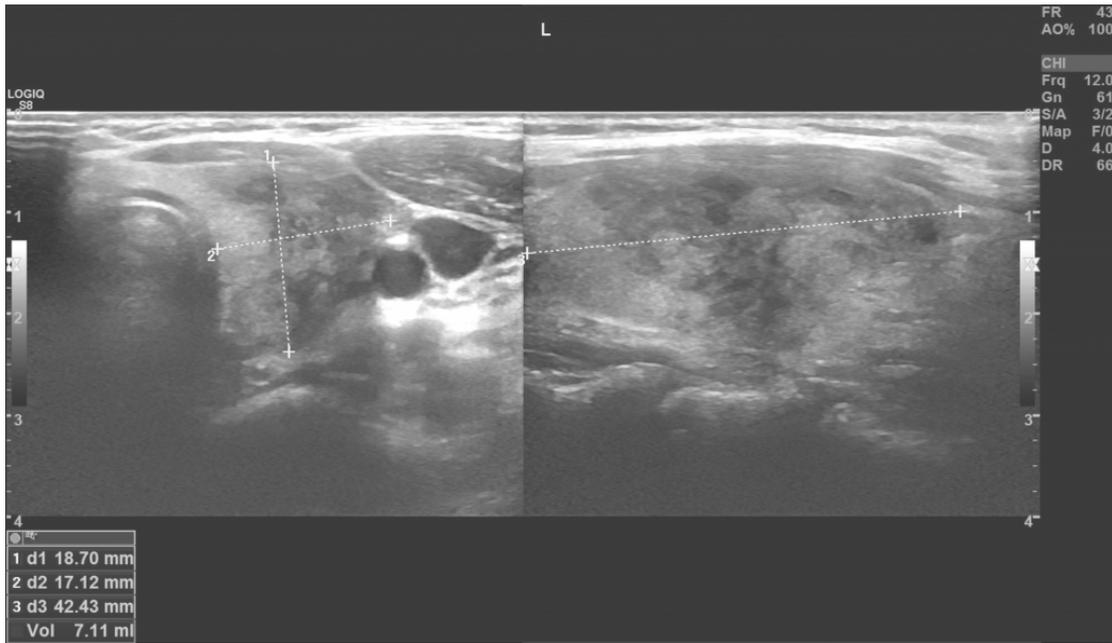
## Case Report

A 27-year-old female patient with no known chronic disease or a recent upper respiratory tract history was admitted to the internal diseases outpatient clinic with complaints of fever, chills, and sore throat for the last 1 week. The COVID-19 PCR test performed on the current nasopharyngeal swab sample of the patient who had COVID-19 infection 3 months ago and was treated was negative. On physical examination, the left lobe of the thyroid gland was palpable and sensitive. In the neck ultrasonography examination, it was observed that the dimensions of the thyroid gland left lobe increased (right: 3.2 ml; left: 7.2 ml), the left lobe parenchyma echo was diffuse heterogeneous and hypoechoic (Figure 1a-1b), vascularization was significantly reduced with color doppler ultrasonography (Figure 2a-2b), and in elastographic evaluation, the heterogeneous color coding with increased stiffness in the left lobe according to normal right lobe was detected (Figure 3a-3b).



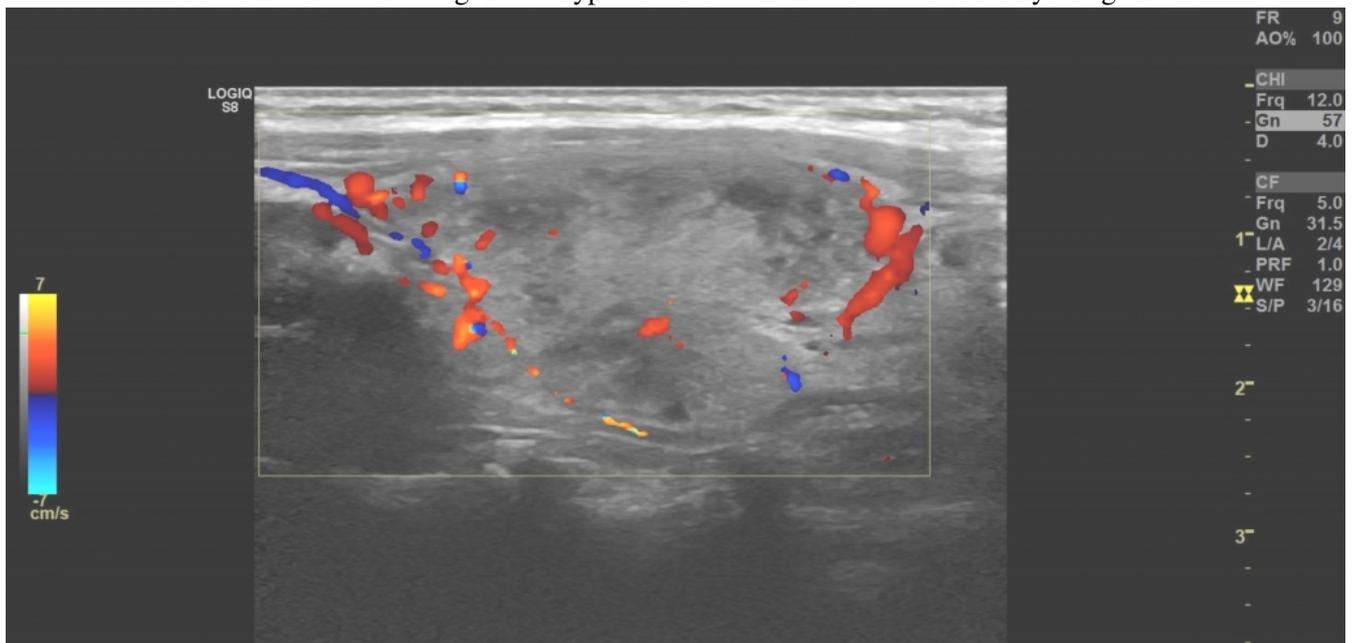
**Figure 1A**

On gray scale examination, it is seen that the right lobe of the thyroid gland is normal, whereas the left lobe is diffusely affected.



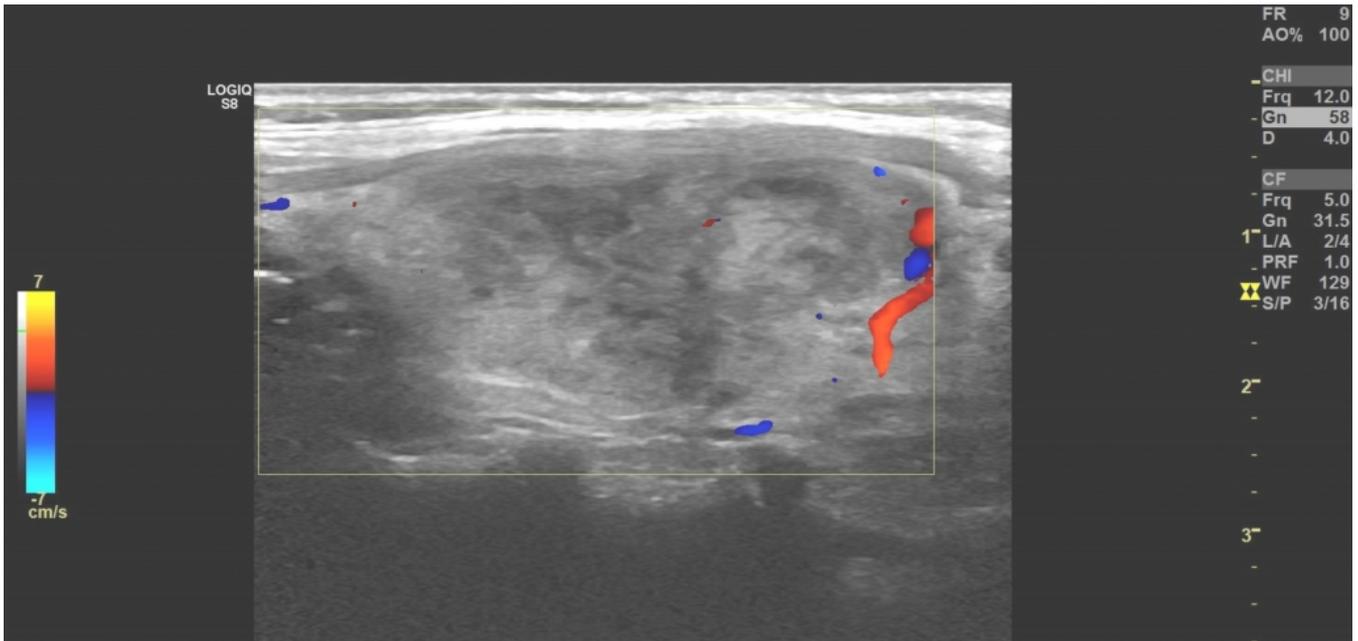
**Figure 1B**

Note the diffuse heterogeneous hypoechoic areas in the left lobe of the thyroid gland.



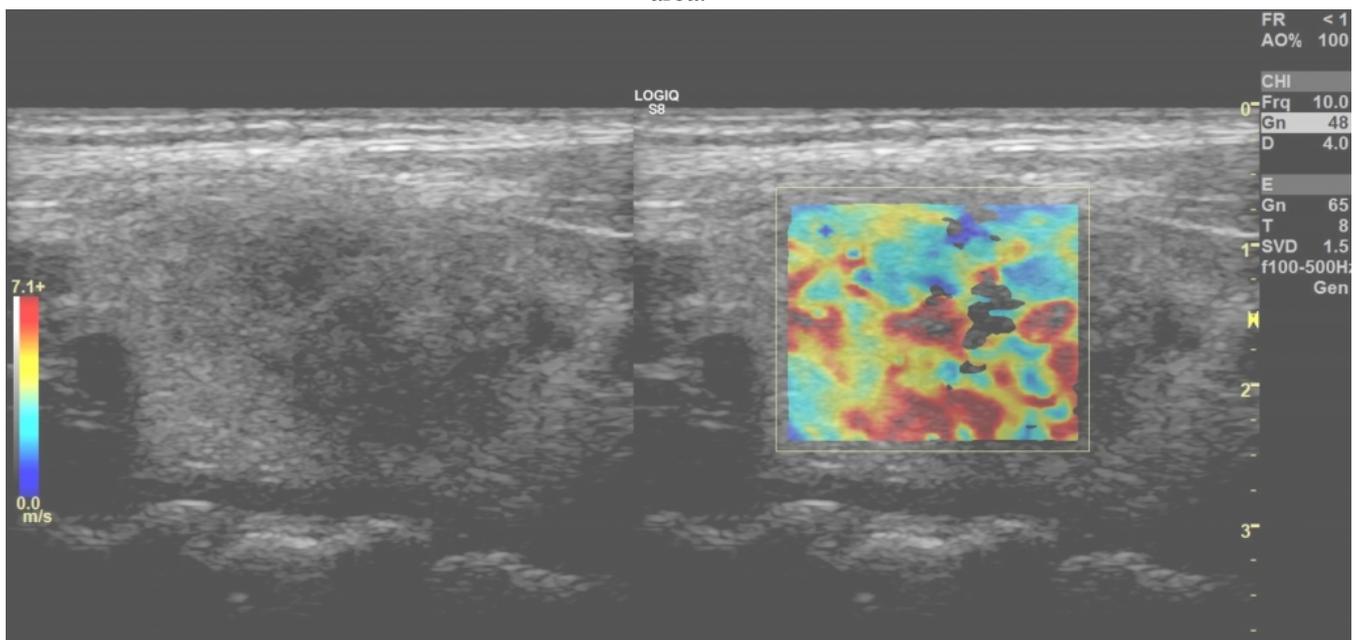
**Figure 2A**

In color doppler sonography, it is seen that vascularity is significantly decreased in the affected patchy hypoechoic area.



**Figure 2B**

In color doppler sonography, it is seen that vascularity is significantly decreased in the affected patchy hypoechoic area.



**Figure 3**

In the shear wave elastographic evaluation (SWE) performed for the affected area, heterogeneous color coding with increased stiffness compared to normal thyroid tissue supporting subacute thyroiditis is observed.

The right thyroid gland lobe was within normal limits in terms of sonoelastographic features. In the laboratory tests, no significant features were found except for erythrocyte sedimentation rate (ESR) (34 mm/h; N<20 mm/h) and increased liver function tests (ALT: 710 IU/L; N:7-40 IU/L). CRP, TSH, fT3 and fT4 values were within normal limits. The case was evaluated in favor of subacute thyroiditis together with the clinical, laboratory and

physical examination findings. However, the patient with normal thyroid hormone levels was followed up in clinical and laboratory follow-up without steroid treatment and other anti-inflammatory drugs due to the high ALT values.

## Case Discussion

Subacute thyroiditis is a benign clinical condition whose etiology is unknown, usually occurs within weeks-months after exposure to viral agents associated with upper respiratory tract infections and is usually self-limiting<sup>3,6</sup>. In the etiology of the disease, some viruses such as influenza, Epstein Barr (EBV), adenovirus, cytomegalovirus (CMV) and Coxsackie virus AB are held responsible. However, it has been mentioned SARS-CoV-2, which has recently become a serious health problem all over the world and mainly affects the respiratory tract with ACE-2 receptor affinity, may also cause subacute thyroiditis<sup>4,5,7</sup>. Case reports with subacute thyroiditis evaluated in association with SARS-CoV-2 have started to be reported<sup>5,8,9</sup>. Like other viral agents, SAT cases due to SARS-CoV-2 are presented after a certain latent period. While it does not differ significantly from other viral agents in terms of clinical findings, it may cause neck sensitivity, difficulty in swallowing, fever, and weakness symptoms. In physical examination, the increase in thyroid gland size is remarkable. Depending on the stage of subacute thyroiditis (hyperthyroidism-hypothyroidism-euthyroidism), variations in thyroid hormone levels and TSH values may be detected or may be completely normal<sup>4</sup>. Most of the COVID-19-associated SAT cases are young-middle-aged women, as in our case<sup>10</sup>. In cases reported in the literature, the development of SAT is approximately 1 month after COVID-19 infection<sup>10</sup>. However, in our case, SAT developed approximately 3 months after the infection, and it should be noted that the latent period may differ from person to person. In addition, isolated single lobe involvement was detected in our case unlike the others, and it should be kept in mind that unilateral infiltration of the SAT may be seen.

As a result, it should be known that the SARS-CoV-2 virus, which entered our lives in late 2019, may also play a role in the etiology of SAT. In order to reduce the risk of transmission of the disease, recent COVID-19 infection should be questioned in patients diagnosed with SAT. Because the disease has an asymptomatic course in the young population, clinicians should be alert about COVID-19 if a patient with a diagnosis of SAT.

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