



## Subacute Thyroiditis After SARS-Cov-2-First Study From Madhya Pradesh, India

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### Abstract

**Background:** Subacute thyroiditis is a viral or postviral thyroid disease. The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) outbreak, which began in Wuhan, China, has spread fast throughout the world, also affected almost all states of India. **Objectives:** The present work is the first report of Subacute thyroiditis after SARS-CoV-2 Infection from Dewas, region of Madhya Pradesh, India. **Methods:** In the present study is about the clinical, laboratory diagnosis, and radiological findings of 25 years old female, who came to our hospital with symptoms like fever, neck pain radiated to the jaw and palpation which was noticed one month after positive report for SARS-CoV-2 by RT-PCR technique. Coronavirus disease 2019 (COVID-19) was mild positive and the woman had recovered completely within a week. **Results:** Increased heart rate and painful and enlarged thyroid on palpation were noticed during physical examination. The laboratory test findings indicated high values of free thyroxine and free triiodothyronine. Total leukocyte count and inflammatory markers were also increased. Neck ultrasound reported enlargement of both the lobes of the thyroid with multiple isoechoic & hypoechoic nodules. FNAC examination suggested a case of subacute thyroiditis. Finally, Subacute Thyroiditis was diagnosed. In the treatment, the patient has started prednisone (25 mg/d). Neck pain and fever recovered within 2-3 days and the remaining symptoms within 1 week. Thyroid function and inflammatory markers normalized in one month. **Conclusions:** The present study is the first report of Subacute Thyroiditis from the Dewas region of Madhya Pradesh, India. This study will be alert to clinicians and other medical practitioners for Subacute Thyroiditis and its clinical manifestations in association with COVID-19.

**Keywords:**-FNAC, COVID-19, free thyroxine and free triiodothyronine, CRP

### INTRODUCTION

The inflammatory thyroid disease subacute thyroiditis is characterized by neck pain, nonspecific symptoms, and thyroid dysfunction.<sup>[1]</sup> The upper respiratory tract

infection is frequently the precursor to subacute thyroiditis. Many viruses have been described as possible causative agents, and direct and indirect evidence supports a viral or post-viral origin of this disease.<sup>[2]</sup> This disease

condition is reported during different viral infections like Cocksackieviruses, adenoviruses, echoviruses, Epstein-Barr virus, influenza viruses, mumps, and measles, HIV, etc.[3] Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is the primary cause of Coronavirus disease 2019 (COVID-19), which has generated a severe pandemic affecting many nations throughout the world and appears to be difficult to manage.[4] It was originally detected in China in December 2019 and has now spread to many other countries.[5] The present study is the first report of Subacute thyroiditis in a young female (25 years) from the Dewas region of Madhya Pradesh, India.

## MATERIAL AND METHODS

**Presentation of study:** A 25-year-old lady, on 8<sup>th</sup> August 2020 tested for COVID-19 by oropharyngeal swab for SARS-CoV-2 based on indications that his husband had been already reported positive for COVID-19 a few days before. Her report came as a positive result by RT-PCR test. The woman had mild upper respiratory symptoms like rhinorrhea and cough, during the next three days. She recovered completely after 4 to 5 days without taking any treatment. Follow-up samples for SARS-CoV-2 were collected on 24<sup>th</sup> August and its report came negative. On 28<sup>th</sup> August, the patient presented with sudden fever (37.5 °C), fatigue, palpitations, and anterior neck pain radiating to the jaw as shown in Fig. 1(a). Because of worsening of the neck pain, on 30<sup>th</sup> August she was referred to our Institute from the near by primary health care centre. She had not any history of thyroid disorder.

## RESULTS

### Physical Examination

On 30<sup>th</sup> August, the patient heart rate was increased (89 beats per minute) also painful and enlarged thyroid on palpation was noticed during the physical examination as shown in figure 1(a).



**Figure 1:**1(a) Swelling and palpation in thyroid gland 1(b) Improvement after treatment

### Laboratory diagnosis

During laboratory diagnosis on 30<sup>th</sup> Aug 2020, the values of thyroid hormones, free thyroxine (FT4) and free triiodothyronine (FT3) were elevated. Thyroid-stimulating Hormone(TSH) value was undetectable, while the values of ESR,CRP and WBC counts were high, as shown in table 1.

**Table 1:** Laboratory tests result

Test Name	Units	Reference value	Values on 30 <sup>th</sup> Aug 2020 (Before)	Values on 25 <sup>th</sup> Sept 2020 (after)
FT3(Free triiodothyronine)	pmol/L	4.5-8.2	8.9	6.1
FT4(free thyroxine)	pmol/L	12.0-22.0	45.84	16.2
TSH(Thyroid stimulating Hormone)	mIU/L	0.34-5.6	0.05	2.5
WBC count (white blood cell count)	Cu/mm	4000-11000	13300	5400
ESR(Erythrocyte Sedimentation Rate)	mm/hr	< 20	79	5
CRP (C-reactive protein)	mg/L	< 2	6.4	0.9

### Fine Needle Aspiration cytology ( F.N.A.C) examination

FNAC was performed from the midline thyroid swellings and smears were prepared from aspirated material for H&E staining. The microscopic examination of smears showed benign follicular epithelial cells; few oxyphil cells and occasional giant cells were also noticed. No evidence of granuloma or malignancy was seen in the smears. Cytosmears suggested Subacute thyroiditis.

**Radiological Examination:** The ultrasound examination of the neck region showed enlargement in both the lobes of the thyroid gland. Multiple isoechoic and hypoechoic nodules were noticed, the largest measured 1.3cmx1.2cm in the right lobe and 1.1cmx 0.9 cm in the left lobe.



**Figure 2:** Thyroid ultrasound showing multiple isoechoic & hypoechoic nodules in both left and right side

Based on physical examination, laboratory diagnosis and radiological examination

Subacute thyroiditis was diagnosed and the patient has started prednisone(25 mg/d). After

taking treatment neck pain and fever started decreasing within 2 to 3 days. The neck swelling was also noticed to be decreasing within 8 to 10 days. On 25th Sept 2020 the neck came to its normal appearance as shown in figure 1(b), the laboratory values of the thyroid hormone-like FT3, FT4 and TSH came to their normal level (Table 1). The values of ESR, CRP and WBC count also came within their normal limits (Table 1).

## DISCUSSION

Subacute thyroiditis is a self-limited inflammatory illness marked by neck pain and other symptoms and is frequently linked to thyroid problems.<sup>[6]</sup> The most common presenting sign of Subacute thyroiditis is neck pain that radiates to the upper neck. The thyroid is unpleasant, sensitive, and swollen when palpated. Fever, tiredness, myalgia, and anorexia are frequent systemic symptoms.<sup>[1]</sup> Laboratory testing and neck imaging are

important in the diagnosis of Subacute thyroiditis, which is mainly established for clinical reasons.<sup>[2]</sup> The values of inflammatory markers like ESR and CRP are commonly elevated. The majority of people have overt thyrotoxicosis in the acute phase i.e. high FT4 levels and low to undetectable TSH levels.<sup>[1]</sup> In the present study, we found treatment with prednisone during the acute phase is beneficial for patient with Subacute thyroiditis for faster recovery as well as low risk of recurrence.<sup>[8]</sup> Subacute thyroiditis had its association to viral infections like Hepatitis E virus, HIV, H1N1 influenza, SARS-CoV-2.<sup>[3,9,10,11,12,13]</sup>

## CONCLUSIONS

The present study is the first report of Subacute thyroiditis after SARS-CoV-2 from the Dewas region of Madhya Pradesh, India. In this pandemic situation, this report would create awareness among clinicians, doctors, physicians, etc about the possibility of Subacute thyroiditis related to COVID19.

## REFERENCES

1. Nishihara E, Ohye H, Amino N, Takata K, Arishima T, Kudo T, et al. Clinical characteristics of 852 patients with subacute thyroiditis before treatment. *Intern Med.* 2008;47(8):725-9. doi: 10.2169/internalmedicine.47.0740.
2. Desailoud R, Hober D. Viruses and thyroiditis: an update. *Virol J.* 2009;6:5. doi: 10.1186/1743-422X-6-5.
3. Bouillet B, Petit JM, Piroth L, Duong M, Bourg JB. A case of subacute thyroiditis associated with primary HIV infection. *Am J Med.* 2009;122(4):e5-6. doi: 10.1016/j.amjmed.2008.11.010.
4. Rodriguez-Morales AJ, Bonilla-Aldana DK, Tiwari R, Sah R, Rabaan AA, Dhama K. COVID-19, an emerging coronavirus infection: current scenario and recent developments - an overview. *JPure AppMicrobiol.* 2020;14(1): 05-12. <https://doi.org/10.22207/JPAM.14.1.02>
5. Yattoo MI, Hamid Z, Parray OR, Wani AH, UIHaq A, Saxena A, et al. COVID-19 - Recent advancements in identifying novel vaccine candidates and current status of upcoming SARS-CoV-2 vaccines. *Human Vaccines and Immunotherapeutics.* 2020;19:40. doi: 10.1186/s12941-020-00384-w.
6. Benbassat CA, Olchovsky D, Tsvetov G, Shimon I. Subacute thyroiditis: clinical characteristics and treatment outcome in fifty-six consecutive patients diagnosed between 1999 and 2005. *J Endocrinol Invest.* 2007;30(8):631-5. doi: 10.1007/BF03347442.
7. Bennedbaek FN, Hegedüs L. The value of ultrasonography in the diagnosis and follow-up of subacute thyroiditis. *Thyroid.* 1997;7(1):45-50. doi: 10.1089/thy.1997.7.45. PMID: 9086570.



8. Arao T, Okada Y, Torimoto K, Kurozumi A, Narisawa M, Yamamoto S, Tanaka Y. Prednisolone Dosing Regimen for Treatment of Subacute Thyroiditis. *J UOEH*. 2015;37(2):103-10. doi: 10.7888/juoeh.37.103.
9. Martínez-Artola Y, Poncino D, García ML, Munné MS, González J, García DS. Acute hepatitis E virus infection and association with a subacute thyroiditis. *Ann Hepatol*. 2015;14(1):141-2.
10. Gafencu M, Bizerea TO, Stroescu RF, Costa R, Marginean O, Doros G. Thyroid Dysfunction in an Aids Patient. *ActaEndocrinol (Buchar)*. 2017;13(2):220-223. doi:10.4183/aeb.2017.220
11. Dimos G, Pappas G, Akritidis N. Subacute thyroiditis in the course of novel H1N1 influenza infection. *Endocrine*. 2010;37(3):440-1. doi: 10.1007/s12020-010-9327-3.
12. Brancatella A, Ricci D, Viola N, Sgrò D, Santini F, Latrofa F. Subacute Thyroiditis After Sars-COV-2 Infection. *J ClinEndocrinolMetab*. 2020;105(7):dgaa276. doi: 10.1210/clinem/dgaa276.
13. San Juan MDJ, Florencio MQV, Joven MH. Subacute Thyroiditis In A Patient With Coronavirus Disease 2019. *AACE Clin Case Rep*. 2020 Nov 23;6(6):e361-e364. doi: 10.4158/ACCR-2020-0524.

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