

# Subacute thyroiditis presenting as a painful suspicious thyroid nodule

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## Summary

We report a case of subacute thyroiditis in a 40-year-old female who initially presented with painful thyroid nodules without clinical and biochemical evidence of hyperthyroidism. Thyroid ultrasound was done to evaluate the thyroid nodules and fine-needle aspiration (FNA) was performed in view of the suspicious features. As the FNA showed a follicular lesion of undetermined significance or atypia of undetermined significance (FLUS/AUS, Bethesda III), she was advised for surgical excision. She was subsequently diagnosed with subacute thyroiditis based on her clinical symptoms, biochemical evidence of hyperthyroidism, raised erythrocyte sedimentation rate (ESR) as well as low uptake on thyroid scintigraphy. The thyroid lesions disappeared after symptomatic treatment. It is important to recognise that subacute thyroiditis can present with painful thyroid lesions with ultrasound features similar to suspicious thyroid nodules which can resolve with the resolution of the thyroiditis.

## Learning points:

- Subacute thyroiditis can present with atypical features such as the absence of pain, normal erythrocyte sedimentation rate or absence of hyperthyroidism.
- In subacute thyroiditis, ultrasound findings are commonly described as focal or multifocal lesions with poorly defined and heterogeneous and hypoechoic echogenicity which can be misdiagnosed as malignancy.
- Thyroid lesions can resolve with the resolution of thyroiditis with or without symptomatic treatment.

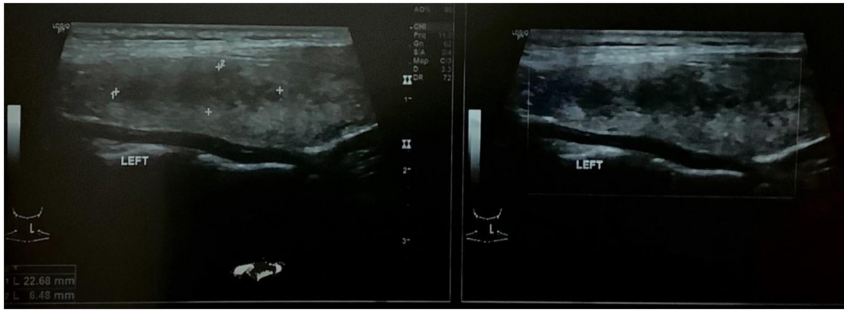
## Background

Subacute thyroiditis commonly known as de Quervain thyroiditis or subacute granulomatous thyroiditis is an inflammatory disorder of the thyroid gland that is thought to be post-viral in aetiology (1). The clinical manifestations include neck pain and tenderness, low-grade fever, diffuse goitre and signs and symptoms of hyperthyroidism. Diagnosis can be made clinically based on history, physical examination, biochemical evidence of transient thyrotoxicosis and reduced radio-iodine uptake (RAIU) on radioactive iodine uptake scan (2, 3, 4). Ultrasonography although not routinely done can typically show hypoechoic and heterogeneous areas with reduced vascularity (5). However, the presentation of subacute

thyroiditis can be atypical leading to misdiagnoses with unnecessary imaging, fine-needle aspiration (FNA) as well as surgery. Here, we report a case of subacute thyroiditis who presented initially with painful thyroid nodules.

## Case presentation

A 40-year-old female was referred to the emergency department by her primary care physician for mild anterior neck pain, palpitations, chest discomfort and fever of 1-day duration. Otherwise, she had no other hyperthyroid symptoms such as weight loss, tremor, diaphoresis, diarrhoea or menstrual irregularity. She had a significant



**Figure 1**  
Thyroid ultrasound done 6 weeks before admission which showed 2.3 cm × 0.6 cm irregular heterogeneous hypoechoic solid nodule in the upper-mid pole of the left thyroid lobe.

history of intermittent neck pain that started 2 months prior to her admission for which she was biochemically euthyroid with free thyroxine (fT4) of 16.9 pmol/L (Normal range (NR): 12.0–22.0), thyroid-stimulating hormone (TSH) of 0.8 mIU/L (NR: 0.27–4.20). Ultrasound imaging of the thyroid was performed subsequently which revealed a 2.3 cm × 0.6 cm irregular heterogeneous hypoechoic solid nodule in the upper-mid pole of the left thyroid lobe, one 0.7 cm × 0.4 cm isoechoic nodule with spongiform appearance in the left lobe and two 0.3 cm hypoechoic nodules in the mid and lower pole of the right lobe (Fig. 1). She had no history of radiation exposure and no family history of thyroid disease. Based on the thyroid imaging reporting and data system (TI-RADS), the left upper-mid pole nodule would be classified as TIRAD 4, which was moderately suspicious. She was then referred to a private endocrinologist for FNA of the left thyroid nodule and a repeat of her thyroid function showed mild hyperthyroidism (fT4 20.9 pmol/L, TSH 0.08 mIU/L, thyroglobulin antibodies 34.86 IU/mL (NR 0.00–4.00)) and negative thyroid peroxidase antibodies. She was prescribed prednisolone 5 mg once daily and etoricoxib 60 mg once daily 3 days before her admission for the neck pain with clinical improvement. Her FNA revealed atypia of undetermined significance (Bethesda Class III) and surgery was discussed and recommended in view of a 30% risk of malignancy. On admission to our hospital, she was afebrile, her heart rate was tachycardiac but regular at 114 b.p.m., blood pressure was 115/69 mmHg. There were no

signs of thyroid eye disease, no hand tremors but she had a small non-tender goitre with no palpable thyroid nodules.

## Investigation

Initial biochemical evaluation on admission showed hyperthyroidism with free triiodothyronine (fT3) of 6.39 pmol/L, fT4 of 35.56 pmol/L and TSH of 0.005 mIU/L (Table 1). TSH receptor antibodies (TRAbs) was negative. ECG showed sinus tachycardia, and there were no signs of heart failure or consolidation on chest radiography. Erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP) were elevated at 82 mm/h (NR <20) and 62.9 mg/L (NR <3), respectively (Table 1). Bedside thyroid ultrasound showed a heterogeneous thyroid gland, with reduced vascularity and a heterogeneous hypo-to-isoechoic 1.7 cm × 2 cm poorly defined lesion in the mid pole of the left thyroid lobe.

## Treatment

She was initiated on IV hydrocortisone, oral propylthiouracil and propranolol for the thyrotoxicosis by the emergency department. She was diagnosed with subacute thyroiditis by the endocrinology team and was started on symptomatic treatment, etoricoxib 60 mg once daily and propranolol 10 mg three times daily. She was planned for a formal thyroid ultrasound and thyroid scintigraphy scan after discharge.

**Table 1** Initial investigations.

Investigations	2 months before admission	1 month before admission	Day 1 of admission	Day 2 of admission
fT3				<b>6.39</b> (2.5–5.5) pmol/L
fT4	16.9 (12.0–22.0) pmol/L	20.9 (12.0–22.0) pmol/L	<b>41.03</b> (10.0–20.0) pmol/L	<b>35.56</b> (10.0–20.0) pmol/L
TSH	0.8 (0.27–4.20) mIU/L	<b>0.08</b> (0.27–4.20) mIU/L	<b>0.006</b> (0.4–4) mIU/L	<b>0.005</b> (0.4–4) mIU/L
TRAbs (U/L)				<1.1
ESR (<20 mm/h)				<b>82</b>
CRP (<3 mg/L)			<b>61.9</b>	<b>34.5</b>

Abnormal results are shown in bold

**Table 2** Investigations on follow-up.

Weeks from discharge	2 weeks	4 weeks	6 weeks	10 weeks
ESR (mm/h)	100	45	41	
Thyroid panel				
fT4 (10–20) (pmol/L)	<b>29.68</b>	14.64	<b>8.61</b>	10.83
TSH (0.4–4) (mU/L)	<b>&lt;0.004</b>	<b>&lt;0.004</b>	3.79	1.66
TPO ab (<5.50 IU/mL)			3.44	
Treatment	Etoricoxib and propranolol	Stopped etoricoxib and propranolol		

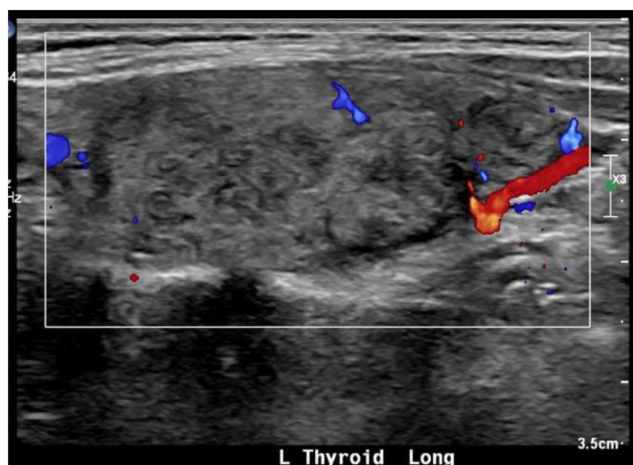
## Outcome and follow-up

The patient was reviewed 2 weeks post-discharge and her palpitations resolved and neck pain improved. In addition to the clinical improvement, there was an improvement in her thyroid function and ESR (Table 2). She was continued on etoricoxib and planned for review again in 2 weeks time. Thyroid scintigraphy scan and ultrasound performed after her discharge showed uniformly reduced tracer uptake and increased background activity with no dominant hot or cold nodules detected which was consistent with the diagnosis of thyroiditis (Figs 2 and 3). During her second follow-up visit 4 weeks post-discharge, her neck pain and palpitations completely resolved. Her goitre was smaller and non-tender. Her fT4 was borderline low at 8.61 pmol/L but she had no symptoms of hypothyroidism (Table 2). As such, thyroid hormone replacement was not started. She was reviewed again 10 weeks after her discharge, and she had no neck pain, palpitations or hyperthyroid symptoms. She was clinically euthyroid and her thyroid function completely normalised (Table 2). A repeat thyroid ultrasound was performed and showed that the thyroid was less heterogeneous, and there was resolution of the

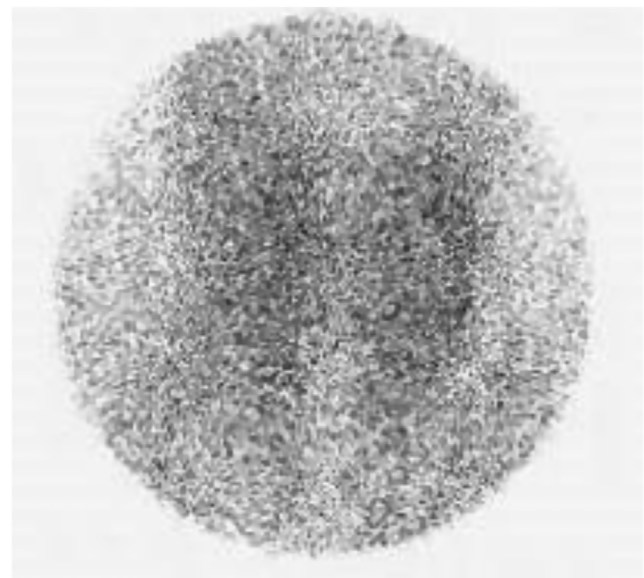
previous thyroid nodules (Fig. 4). She was planned for review in 6 months time.

## Discussion

Subacute thyroiditis (SAT) is a self-limiting inflammatory disorder that is typically caused by viral infection (1, 2). Subacute thyroiditis presents classically with anterior neck pain, sometimes with radiation to the jaw, throat or ear, fatigue, fever and symptoms of hyperthyroidism. The destruction of the thyroid gland and the release of the preformed thyroid hormones can lead to a transient thyrotoxicosis phase with elevated thyroid hormones and suppressed TSH (1). A subsequent hypothyroid phase can occur as the thyroid hormones stores are depleted and this phase can be transient or permanent (1). The ESR and CRP will be markedly elevated while TRAbs are not expected to be raised. In SAT, the RAIU will be low on the thyroid scintigraphy scan as opposed to Graves' disease which will have high RAIU (2, 3, 4). Diagnosis is usually made from



**Figure 2**  
Thyroid ultrasound done 1 week after discharge which showed heterogenous thyroid gland with no discrete thyroid nodules.



**Figure 3**  
Thyroid scintigraphy scan done 1 week after discharge which showed reduced tracer uptake.



**Figure 4**

Thyroid ultrasound done 10 weeks after discharge which showed that the thyroid gland was less heterogenous and resolution of the previous thyroid nodule.

the clinical and biochemical evaluations. However, in atypical presentations such as the absence of pain, normal ESR or absence of hyperthyroidism, ultrasonography may be needed. Our patient was euthyroid initially as such, and a thyroid ultrasound was performed for the evaluation of the neck pain.

In subacute thyroiditis, ultrasound findings are commonly described as focal or multifocal lesions with poorly defined and heterogeneous and hypoechoic echogenicity as well as decreased colour Doppler flow (5, 6). The hypoechoic lesions can be nodular or non-nodular and the features vary according to the stage of inflammation and disease process (5, 6). As there is significant overlap in the ultrasonography features between subacute thyroiditis and malignancy, it might be difficult to differentiate between the two entities. Although one study proposed that the margin, vascularity and echogenicity may be useful differentiating features (6). It might lead to unnecessary procedure such as FNA which is rarely required in the diagnostic workup for thyroiditis. The cytological feature of subacute thyroiditis varies according to the stage of the disease but it is typically described as multiple multinuclear giant cells with fragments of inflammatory cells and follicular epithelial cells (7, 8). FNA can aid in the diagnosis of subacute thyroiditis however if the FNA is reported as Bethesda Group I or III, it will result in repeat FNA or even surgery. In our case, the patient was considering surgery initially in view of the FNA result.

The management of subacute thyroiditis is mainly symptomatic including non-steroidal anti-inflammatory agents in mild cases and glucocorticoids in severe or refractory cases. Resolution of the symptoms and regression

of the thyroid lesions occur with or without treatment with NSAIDs or glucocorticoids (9). The resolution rates have been reported to range from 57 to 100% although the appearance of new lesions can occur (5). The thyroid lesions in our patient resolved a few weeks after her discharge. Hence, in patients with clinical presentation suggestive of subacute thyroiditis, it may be prudent to monitor the thyroid lesions with serial ultrasonography instead of performing FNA prematurely as it can lead to misdiagnosis of malignancy and eventually surgical intervention. Fortunately, our patient opted for monitoring instead of surgical intervention and thus unnecessary thyroid surgery was avoided. Even though thyroidectomy is generally safe, complications such as recurrent laryngeal nerve palsy and hypoparathyroidism can occur.

## Conclusion

In conclusion, the diagnosis of subacute thyroiditis should be made clinically based on the clinical presentation, biochemical evaluation as well as thyroid scintigraphy scan. Ultrasonography can be performed in patients with atypical presentation and FNA is rarely indicated. It is important for the attending physician to recognise that subacute thyroiditis can present as suspicious nodular lesions on ultrasound and can be misdiagnosed as malignancy to avoid unnecessary invasive procedure or surgery.

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### Declaration of interest

The authors declare that there is no conflict of interest that could be perceived as prejudicing the impartiality of this case report.

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### Patient consent

Written informed consent has been obtained from the patient to share anonymised data and images for the case report.

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### Author contribution statement

W Z was involved in patient management, wrote and edited the manuscript. T K was involved in patient management and the final editing of the manuscript. S T was involved in writing the draft manuscript. All authors reviewed and approved the final version of the manuscript.



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