

## Lesson of the month 1: Subacute thyroiditis: a rare cause of fever of unknown origin

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### ABSTRACT

Fever of unknown origin (FUO) is sometimes a diagnostic dilemma for clinicians. Endocrine causes reported in the literature include subacute thyroiditis, thyrotoxicosis, adrenal insufficiency and pheochromocytoma. Among these, subacute thyroiditis is often overlooked as it can occasionally lack typical symptoms. This case illustrates the fact that subacute thyroiditis should be considered as a possible cause of fever even if signs and symptoms of hyperthyroidism and thyroid tenderness are absent.

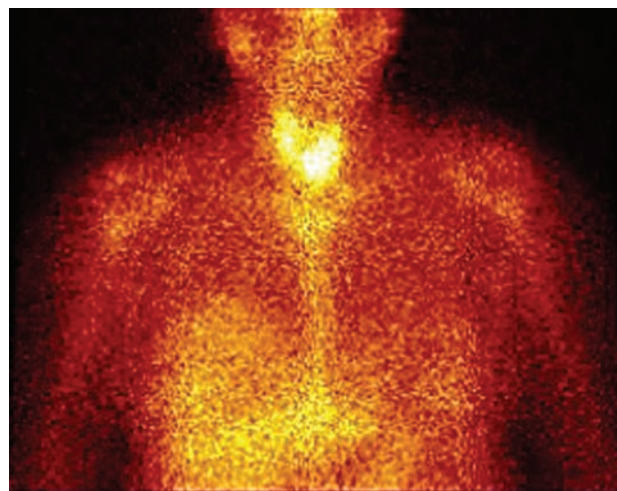
**KEYWORDS:** Fever of unknown origin, FUO, gallium scan, thyroiditis

### Case history

A 43-year-old woman presented with a history of high grade fever for 1 month. Her fever was associated with chills and rigors along with mild flu-like symptoms, and was relieved with paracetamol. She had a documented fever almost every day, reaching 39°C. She had no history of weight loss, night sweats, urinary symptoms or recent travel. She had received two courses of antibiotics at her local health centre and private clinic. She was admitted for evaluation of fever of unknown origin (FUO). On admission her temperature was 38.1°C, but during the rest of her hospital stay, she had only a low grade fever.

The patient's investigations showed a normal full blood count and negative cultures. She had a high erythrocyte sedimentation rate (ESR) of 99 mm/hour. Her infectious diseases work up was negative for hepatitis, *Brucella*, Q fever and mycoplasma; respiratory viral screen was also negative. The patient was also negative for antinuclear antibody and anti-neutrophil cytoplasmic antibody. There was no evidence of endocarditis on echocardiography. She was prescribed doxycycline to cover atypical organisms but her fever did not improve.

A gallium-67 whole body scintigraphy was done to look for a source of infection; this showed normal physiological radiotracer uptake in the body but, to our surprise, there was an



**Fig 1.** Gallium-67 whole body scintigraphy showing increased radiotracer uptake in both lobes of the thyroid gland.

increased radiotracer uptake noted in both lobes of the thyroid gland (Fig 1). This finding was suggestive of an active infective/inflammatory process in the thyroid gland.

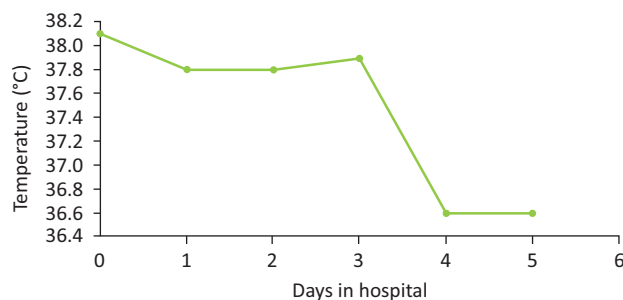
On further examination of the patient, a small goiter was palpable but was only mildly tender. Her thyroid function showed a free thyroxine level of 23.3 pmol/L (normal range 7.9–14.4) and thyroid stimulating hormone 0.02 mIU/L (normal range 0.34–5.6). A thyroid antibody (anti-thyroid peroxidase) screen was negative. An ultrasound of the thyroid showed that both lobes of the gland, as well as the isthmus, were enlarged with heterogenous texture of the parenchyma of the thyroid gland. There was a nodule measuring approximately 2.63×1.92 cm in the right lobe, and a similar nodule in the left lobe measuring 1.7×0.8 cm. A fine needle aspiration of the larger thyroid nodule showed a colloid nodule.

She was started on ibuprofen three times a day as management of subacute thyroiditis. Following this, her pain and fever subsided (Fig 2).

### Discussion

FUO can be described as a temperature higher than 38.3°C on several occasions; a fever lasting more than 3 weeks; and a failure

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**Fig 2. The patient's temperature during her hospital stay.** After starting non-steroidal anti-inflammatory drugs on the third day in hospital, she became afebrile.

to reach a diagnosis despite 1 week of inpatient investigation.<sup>1</sup> Endocrine causes of fever are rare but, among these, subacute thyroiditis and thyrotoxicosis are the most common.

Subacute thyroiditis is a self-limited inflammation of the thyroid gland that can cause fever.<sup>2,3</sup> In an analysis of 94 patients with subacute thyroiditis, pain was the presenting symptom in 96% of patients.<sup>4</sup> Both the thyroid lobes are usually involved although the pain, tenderness and enlargement can be unilateral initially and then spread to the other side.<sup>5</sup>

Imaging studies are a cornerstone for the diagnosis of thyroiditis. Technetium and iodine scans usually show poor radiotracer uptake, whereas a gallium-67 scan shows increased uptake.<sup>6</sup> Gallium scans are sometimes performed in the course of an evaluation for FOU. Localisation of gallium to the thyroid gland is a useful finding to confirm thyroid inflammation as the source of the problem but the differential of gallium-positive thyroid tissue will also include the presence of Riedel's thyroiditis.<sup>7,8</sup>

A review of the literature showed that subacute thyroiditis rarely presents as FOU without anterior neck pain or symptoms of thyrotoxicosis.<sup>9,10</sup>

Our patient had features of subacute thyroiditis, like high ESR and mild neck tenderness on clinical examination, but she lacked the symptoms of thyrotoxicosis that is usually present during the early phase of subacute thyroiditis.

This case suggests that, when a patient has fever of unknown origin, subacute thyroiditis should be considered, even if there are no clinical symptoms. ■

## Conflicts of interest

The authors have no conflicts of interest to declare.

## Acknowledgements

Written consent was obtained from the patient to publish the clinical details and images in this article.

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