

## Thyroid Scintigraphy in Fever of Unknown Origin

### Abstract

Thyroiditis is a very rare cause of fever of unknown origin (FUO). Thyroiditis presenting as only fever and weight loss is very rare. We present a case of FUO, which was later on confirmed as thyroiditis on thyroid scintigraphy.

**Keywords:** *Fever, fever of unknown origin, pyrexia of unknown origin, scintigraphy, thyroid scan, thyroiditis*

### Introduction

Fever of unknown origin (FUO) is defined as fever that remains undiagnosed and persisted for more than 3 weeks with a temperature of more than 38°C.<sup>[1]</sup> The common causes of FUO can be neoplastic, infectious, inflammatory, and rheumatic.<sup>[2]</sup> Rarely, FUO can also occur due to endocrine causes such as thyroiditis.<sup>[3]</sup> Thyroiditis is usually associated with signs and symptoms of thyrotoxicosis in acute phase. Thyroiditis presenting as FUO is rare and we present a similar case diagnosed on thyroid scintigraphy.

### Case Report

A 51-year-old male presented with a low-grade intermittent fever of 1½-month duration. The maximum temperature recorded was 102°F and was associated with evening rise of temperature. There were no other constitutional symptoms. He complained of loss of appetite and weight loss of 3 kg in 1-month duration. There was no history of diabetes, hypertension tuberculosis, and thyroid disorders.

The clinical examination of respiratory, gastrointestinal, and central nervous system revealed no significant clinical abnormalities. There was a single submandibular lymph node of size <1 cm, which was mobile and nontender. There was no clinically significant thyromegaly or any tenderness in the neck.

The laboratory investigations showed a normal complete blood count and

negative blood and urine cultures. The erythrocyte sedimentation rate (ESR) was raised (112 mm/h). The urine examination for Bence Jones protein was negative. The patient's infectious disease workup was negative for malaria, scrub typhus, typhoid, hepatitis, HIV, leptospirosis, and dengue.

On imaging, there was no evidence of endocarditis on echocardiography. Contrast-enhanced computed tomography of the thorax and abdomen did not show clinically significant abnormalities. Ultrasonography of the neck for submandibular node showed reactive changes.

The thyroid function test showed raised free T3 of 4.32 pg/mL (normal: 2.3–4.2), raised free T4 of 4.24 ng/dL (normal: 0.89–1.76), and low serum thyroid-stimulating hormone <0.01 mIU/mL (normal: 0.3–4.5). The antithyroid peroxidase antibody level was within normal limit of 6.2 IU/mL (normal: <35 IU/mL). The antithyroglobulin level was within normal limit.

Tc-99m pertechnetate thyroid scan [Figure 1] demonstrated grossly impaired trapping function in the thyroid. The pertechnetate uptake at 20 min was 0.1% (normal: 0.3%–4.5%). The overall findings confirmed thyroiditis.

In view of thyroiditis, the patient was given symptomatic treatment, following which his fever subsided.

On follow-up, the patient became afebrile after 5 days. After 8 weeks, his thyroid function test became normal and ESR was 8 mm/h.

**Rashmi Ranjan Mohanty, Kanhaiyalal Agrawal<sup>1</sup>, Bikash Ranjan Meher<sup>2</sup>**

*Departments of General Medicine, <sup>1</sup>Nuclear Medicine and <sup>2</sup>Pharmacology, All India Institute of Medical Sciences, Bhubaneswar, Odisha, India*

### Address for correspondence:

*Dr. Kanhaiyalal Agrawal, Department of Nuclear Medicine, All India Institute of Medical Sciences, Sijua, Bhubaneswar - 751 019, Odisha, India.*

*E-mail: nucmed\_kanhaiyalal@aiimsbhubaneswar.edu.in*

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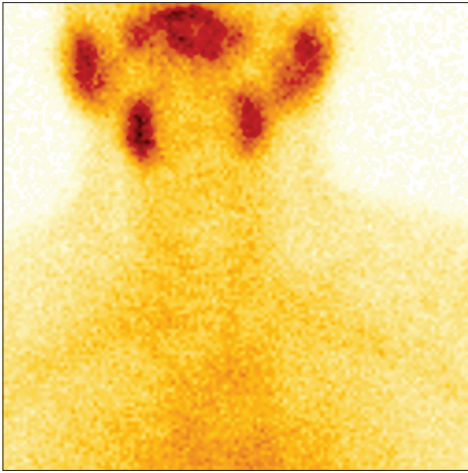
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**Figure 1:** The technetium pertechnetate thyroid scintigraphy shows that negligible tracer concentration is seen in the thyroid gland. There is increased tracer localization to the salivary glands. The overall features are suggestive of thyroiditis in the context of biochemical thyrotoxicosis

## Discussion

Despite the advancement of modern medicine and rapid progress in diagnostic tools, FUO remains a diagnostic puzzle for clinicians. Subacute thyroiditis is one of the uncommon causes of FUO.<sup>[4]</sup> Moreover, thyroiditis presenting only as fever is rare.

Thyroiditis may be categorized as acute, subacute, and chronic. Subacute thyroiditis is also known as granulomatous thyroiditis or giant-cell thyroiditis or de Quervain thyroiditis, which is an inflammatory self-limiting condition of thyroid usually present as painful swelling of thyroid or painless autoimmune thyroiditis.

There are few reported cases of subacute thyroiditis presented as pyrexia of unknown origin (PUO). A case series revealed that most patients of subacute thyroiditis presented as PUO complained of neck pain and tenderness in the neck.<sup>[5]</sup> Another patient, reported by Bahowairath *et al.*, had enlargement of the thyroid gland.<sup>[6]</sup> A few other cases also had either neck pain or thyromegaly as their presenting symptoms. However, in the present case, the patient did not have either neck tenderness or gland enlargement. This case also unique, as the patient was

biochemically thyrotoxicosis, but there were no much toxic symptoms except fever and weight loss.

Extensive clinical workup did not reveal any relevant diagnostic clue. A submandibular lymph node enlargement was seen, which was found to be reactive on ultrasonography. Thyroid scintigraphy using radioiodine or technetium pertechnetate is very helpful in differentiating hyperthyroidism from thyroiditis in a patient with thyrotoxicosis. In subacute thyroiditis, thyroid scan usually shows impaired tracer uptake in the thyroid gland. In the present case, thyroiditis was confirmed on thyroid scan.

## Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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## Conflicts of interest

There are no conflicts of interest.

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