Atypical subacute thyroiditis causing fever of unknown origin: the value of gallium-67 imaging

To the Editor: Very rarely, subacute thyroiditis may manifest fever of unknown origin (FUO). We report such an atypical case with intense accumulation of gallium-67 citrate (^{67}Ga-C) in the thyroid gland: A 36-year-old woman presented with a 3-week history of moderate fever associated with chills, headache and weight loss of 6 kg. She had no anterior neck pain. She was febrile at 38.5° C, but the rest of her physical examination was normal. Her medical history was unremarkable with no history of any autoimmune thyroid disease. Laboratory investigation revealed elevated erythrocyte sedimentation rate of 80 mm after 1 h and C-reactive protein level higher than 40 mg/dL. The white blood count was normal at 7500 cells/mL. In the context of FUO, a whole body ^{67}Ga-C scan revealed intense accumulation of the radioactivity in the thyroid gland, implicating the thyroid as an inflammatory focus (Fig. 1). Thyroid function tests (done with immunoradiometric assays and radioimmunoassays) showed suppressed thyroid-stimulating hormone (TSH) level and high levels of free triiodothyronine (FT3) and free thyroxine (FT4). Antithyroperoxidase and antithyroglobulin antibodies as well anti-TSH receptor antibodies, were negative. A thyroid ultrasound scan showed slight enlargement of the gland with normal thyroid tissue echo. A technetium-99m-pertechnetate (^{99m}Tc), thyroid scan showed no radionuclide uptake (Fig. 2). Based on the elevated thyroid hormone levels with TSH suppression, the high inflammation markers and the almost absent ^{99m}Tc uptake by the thyroid gland, subacute thyroiditis was diagnosed. The patient was treated with a 2-week course of naproxen (given at 500 mg/day) with progressive resolution of the fever within 7 days. Inflammation markers and thyroid function tests, returned to normal after 3 months. After 6 months, thyroid function tests and thyroid ultrasound were normal and antithyroid antibodies still negative. Despite the rarity of the presentation, the excellent clinical course and the patient's unwillingness for further evaluation deterred us from performing a scintigraphic follow-up.

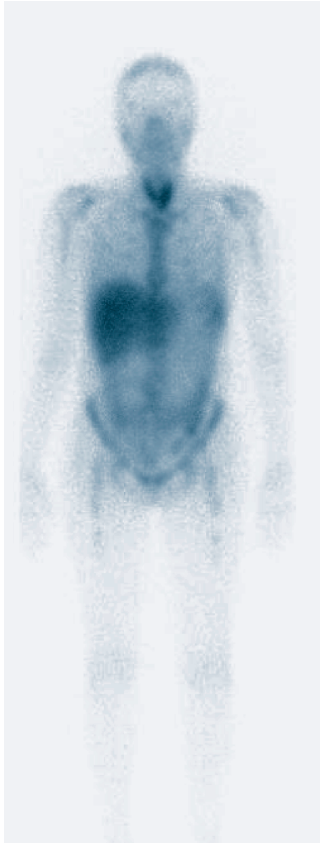

Figure 1. Whole-body image 48 h after the intravenous injection of 185 MBq of ^{67}Ga-C, reveals diffuse accumulation in the thyroid gland. No other abnormal focus of radioactivity is present. Activity is normally seen in the liver, spleen and the intestine.

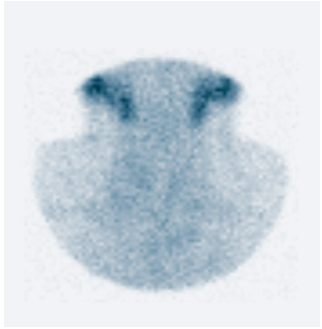

Figure 2. Anterior ^{99m}Tc pertechnetate image (distant view) after the intravenous administration of 185 MBq demonstrates no evidence of localized tracer uptake in the thyroid, consistent with subacute thyroiditis. There is background in the blood pool and in the salivary glands.

Subacute or De Quervain's thyroiditis usually occurs after an upper respiratory tract infection (in the case presented there was no evidence of such disease) and presents with a painful and tender goiter that is associated with general malaise and possible fever [1]. The diagnosis is often set clinically and is supported by the biochemical findings of hyperthyroidism and the suppressed ^{131}I or ^{99m}Tc uptake by the thyroid gland [2]. Subacute thyroiditis is an uncommon but well documented cause of FUO [3, 4]. Thyroid pain or tenderness is noted in approximately 77% of the patients [5]. However, atypical painless subacute thyroiditis has been reported [6]. Patients with atypical subacute thyroiditis is rare, since there are fewer than 20 documented cases worldwide with less than 5 of these with FUO; none has been reported in the Greek literature. In these patients typical features of thyroiditis are absent; fever is prolonged fever, significant weight loss, no local symptoms and the clinical course may simulate a chronic systemic infection or malignancy [6]. ^{67}Ga-C scintigraphy is still the gold standard for radionuclide imaging in patients with FUO, because it is capable of detecting acute, chronic inflammatory conditions and/or neoplasms [7]. Some investigators believe that ^{67}Ga-C scintigraphy should be used early in the diagnostic workup of FUO, and that this modality should be not be relegated to being a last resort procedure in the evaluation of FUO [8]. Diffuse ^{67}Ga-C thyroid uptake suggests benign rather than malignant disease [9]. On the other

hand, intense ^{67}Ga-C uptake by the thyroid gland may be due to neoplastic involvement or due to benign causes such as acute suppurative thyroiditis, autoimmune thyroiditis, silent thyroiditis, amiodarone-induced hyperthyroidism, Graves' disease, and even benign adenomatous goiter [10]. In our case, the history, clinical examination and the laboratory work-up did not support any of these malignant or benign causes, leading to a diagnosis of atypical subacute thyroiditis.

This case demonstrates the value of ^{67}Ga-C scintigraphy in detecting the focus of FUO in an unusual presentation of subacute thyroiditis.

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