Case Report

Subacute granulomatous (*De Quervain*) thyroiditis mimicking thyroid malignancy on ultrasonography: Fine-needle aspiration cytology preventing an unnecessary thyroidectomy

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ABSTRACT

Subacute granulomatous thyroiditis (*De Quervain* thyroiditis) is a self-limiting inflammatory disorder characterized by painful thyroid enlargement, fever, and elevated inflammatory markers. While its clinical presentation is often distinctive, ultrasonographic (USG) findings can occasionally simulate thyroid malignancy, specifically mimicking infiltrative neoplasms with irregular margins and hypoechoic areas, leading to diagnostic uncertainty. This report details the case of a 30-year-old woman who presented with acute painful neck swelling and thyrotoxicosis. USG revealed heterogeneous solid lesions with irregular margins, classified as Thyroid Imaging Reporting and Data System 4, raising significant suspicion of malignancy. Fine-needle aspiration cytology (FNAC) proved crucial, demonstrating characteristic epithelioid granulomas and multinucleated giant cells, thereby confirming the diagnosis of subacute thyroiditis and averting an unnecessary thyroidectomy. This case underscores the indispensable role of FNAC in resolving diagnostic dilemmas where radiological findings are misleadingly suggestive of malignancy.

Key words: *De Quervain* thyroiditis, Fine-needle aspiration cytology, Granulomatous thyroiditis, Painful thyroid swelling, Thyroiditis

Subacute granulomatous thyroiditis (SGT), also known as *De Quervain* thyroiditis, is an inflammatory condition commonly attributed to viral infections in genetically predisposed individuals [1-3]. Although typically presenting with a clear clinical triad of pain, tender goiter, and transient thyrotoxicosis [1,2], its radiological appearance can be deceptive.

The rationale for presenting this case lies in the significant diagnostic overlap between the sonographic features of SGT and thyroid malignancy [2,4-6]. SGT can manifest as ill-defined, hypoechoic, and irregular nodules that meet Thyroid Imaging Reporting and Data System (TI-RADS) criteria for moderate-to-high suspicion of malignancy. In such instances, sole reliance on imaging can precipitate unwarranted surgical interventions. This report highlights how the timely integration of fine-needle aspiration cytology (FNAC) [4,7] can provide a definitive diagnosis, ensuring appropriate conservative management and preventing the morbidity associated with unnecessary thyroid surgery.

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CASE REPORT

A 30-year-old female presented to the surgical outpatient department with a 15-day history of acute-onset, progressively worsening pain and swelling in the anterior aspect of the neck. The pain radiated to the jaw and was exacerbated by swallowing and neck movements. She also reported intermittent low-grade fever and generalized malaise. While she had experienced some weight loss and palpitations over the preceding weeks, there was no documented history of pre-existing hyperthyroidism, previous thyroid disease, autoimmune disorders, or neck irradiation. Her medical history included a COVID-19 infection in May 2020.

Physical examination revealed mild pyrexia and a resting pulse rate of 90 beats/min. Blood pressure was 130/84 mm Hg. Local examination of the neck demonstrated diffuse enlargement of the thyroid gland involving both lobes. The swelling was firm, exquisitely tender, and moved with deglutition. No cervical lymphadenopathy was noted.

Routine hematological investigations were within normal limits, except for a markedly elevated erythrocyte sedimentation rate of 60 mm in the first hour, indicative

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of an active inflammatory process. Thyroid function tests revealed a thyrotoxic state: T3 200.1 ng/dL (normal range: 80–200 ng/dL), T4 16.72 µg/dL (normal range: 4.8–12.7 µg/dL), and TSH 0.02 µIU/mL (normal range: 0.45–4.5 µIU/mL). It was explicitly confirmed that this thyrotoxicosis was a new finding associated with the current illness, with no prior history of thyroid dysfunction or other thyroid disorders.

Ultrasonography (USG) of the thyroid demonstrated solid hyperechoic areas with irregular margins involving both thyroid lobes, classified as TI-RADS 4 (moderately suspicious for malignancy). The right lobe lesion measured 1.3 × 1.6 cm, while the left lobe lesion measured 1 × 1.5 cm. Given the irregular margins and suspicious radiological appearance, an USG-guided FNAC was subsequently performed to exclude malignancy.

The smears were moderately cellular, revealing numerous epithelioid histiocytes arranged singly and in loose granulomatous aggregates. Multiple multinucleated giant cells were identified, many intimately associated with disrupted colloid. Scattered degenerating follicular epithelial cells and a mixed inflammatory infiltrate, predominantly lymphocytes with occasional neutrophils, were observed. The background showed scant colloid and granular necrotic material. Crucially, no papillary fragments, nuclear grooves, intranuclear cytoplasmic inclusions, nuclear clearing, psammoma bodies, or other cytological features suggestive of malignancy were identified. Based on these characteristic cytomorphological findings, a diagnosis of Subacute Granulomatous (*De Quervain*) Thyroiditis was rendered.

The patient was managed conservatively with non-steroidal anti-inflammatory drugs (NSAIDs) and symptomatic measures. Her neck pain gradually subsided, and the thyroid swelling regressed on follow-up without any surgical intervention, confirming the self-limiting nature of the condition.

Table 1: Differential diagnosis and rationale for exclusion

Differential diagnosis	Clinical and cytological basis for exclusion
PTC	Although ultrasonographic findings suggested malignancy, the cytology definitively lacked the pathognomonic nuclear features of PTC, such as nuclear clearing, grooves, and pseudoinclusions.
Hashimoto thyroiditis	This condition typically presents as a painless thyroid enlargement. Cytologically, it is characterized by a dense lymphoid infiltrate and prominent Hürthle cell changes, neither of which was observed in our case.
Acute suppurative thyroiditis	This was excluded by the absence of high-grade fever, significant leukocytosis, and the cytological finding of granulomas rather than a predominantly purulent (neutrophilic) aspirate.
Specific granulomatous infections (e.g., tuberculosis, and fungal)	These were ruled out due to the absence of caseous necrosis and the classic clinical presentation consistent with *De Quervain* thyroiditis.

PTC: Papillary thyroid carcinoma

DISCUSSION

SGT is a significant cause of painful thyroiditis [1], yet it frequently presents a diagnostic challenge on imaging [2]. The acute inflammatory phase leads to patchy destruction of thyroid follicles, which ultrasonographically manifests as ill-defined hypoechoic areas. These features, including irregular margins and the absence of a distinct capsule, often mimic the infiltrative growth pattern characteristic of papillary thyroid carcinoma [4-6].

In this particular case, the TI-RADS 4 classification could have readily led to a surgical course had it not been for the decisive cytological intervention. FNAC remains the cornerstone for resolving such diagnostic discrepancies [7]. The presence of multinucleated giant cells and granulomas, when correlated with clinical tenderness and elevated erythrocyte sedimentation rate, is highly specific for SGT [8,9]. Several differential diagnoses were meticulously considered and systematically excluded (Table 1). The patient's history was specifically reviewed to confirm the absence of any pre-existing hyperthyroidism or other thyroid disorders, thereby affirming that the observed laboratory findings were entirely attributable to the acute destructive phase of SGT.

Recent literature indicates that while SGT is generally self-limiting, a notable proportion (5–30%) of patients may develop permanent hypothyroidism [8,10]. Early and accurate identification through FNAC facilitates appropriate monitoring of thyroid function post-recovery. In our patient, the rapid and complete response to NSAIDs and clinical regression further supported the diagnosis and obviated the need for more aggressive interventions [2,10].

CONCLUSION

SGT can clinically and radiologically mimic thyroid malignancy, posing a significant diagnostic pitfall. This case vividly demonstrates that even in the presence of highly suspicious USG findings (TI-RADS 4), the clinical context of a tender thyroid gland and elevated inflammatory markers should prompt FNAC. Cytopathology provides the definitive evidence required to avoid unnecessary thyroidectomy, thereby enabling successful conservative management and optimizing patient outcomes.

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