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Case Report

Papillary thyroid carcinoma presenting as acute suppurative thyroiditis: A case report and review of the literature

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ABSTRACT

Acute suppurative thyroiditis is a rare, potentially life-threatening condition. We report the case of a 17-year-old male who initially presented with a thyroid abscess. Due to persistent symptoms and lack of evidence for underlying predisposing factors, he was followed closely and subsequently diagnosed with papillary thyroid cancer. He was successfully managed with surgery. His clinical course, radiological evaluation, and pathology reports are presented here along with a review of the literature. This case of papillary thyroid cancer highlights the need for close follow-up of patients presenting with a thyroid abscess, when other predisposing risk factors are not evident.

1. Introduction

Acute suppurative thyroiditis/thyroid abscess is an extremely rare entity, given the relative resistance of the thyroid gland to infection. When it does occur, it can be secondary to underlying aerobic or anaerobic infectious process or due to an anatomic abnormality predisposing to infection, such as an infected third or fourth branchial cleft cyst [1–3]. At our institution, though a rare entity, we are still more likely to see a thyroid abscess related to an infected third or fourth branchial anomaly. Thyroid nodules are less common in children than in adults, but tend to have a higher risk of malignancy (22–26%) than in adults [4]. Papillary thyroid carcinoma (PTC) is the most common pediatric thyroid malignancy, representing 85–95% of differentiated thyroid cancers (DTC). The presentation of pediatric DTC, while usually more disseminated than in adults, is usually a thyroid nodule or lymphadenopathy, and not an abscess [4]. We report a rare case of PTC in a young man who initially presented with signs and symptoms of a thyroid abscess. From our review of the literature, we did not find many cases wherein a thyroid malignancy presented as suppurative thyroiditis.

1.1. Case description

A 17-year-old, previously healthy male presented to his primary care physician with fever and swelling of the right side of his neck. One day prior, he had been prescribed amoxicillin for a presumed diagnosis of acute cervical lymphadenitis. He denied night sweats or weight loss, but was fatigued. There was no history of otalgia, rhinorrhea, dental pain, chest pain, difficulty breathing, abdominal pain, nausea, vomiting, diarrhea, bleeding, bruising, other masses, joint pain, myalgia or rash. Due to worsening symptoms, a neck ultrasound (US) was performed and showed a solid neck mass. His antimicrobial therapy was changed to amoxicillin-clavulanic acid, and he was referred to an endocrinologist who repeated the US that identified a 3 × 2 cm solid mass in the thyroid. Fine needle aspiration (FNA) showed non-malignant inflammatory cells and thyroid function studies were normal. No cultures were taken.

When his symptoms persisted, he presented to the emergency room where he was afebrile with normal vital signs. A computerized tomography (CT) scan of the neck with contrast showed a 2.4 × 2.2 × 2.8 cm rim-enhancing, hypoattenuating lesion in the right thyroid lobe extending beyond the expected anterior contour of the thyroid, with

Abbreviations: CT, Computerized Tomography; DTC, Differentiated Thyroid Cancer; FNA, Fine Needle Aspiration; PTC, Papillary Thyroid Carcinoma; US, Ultrasound

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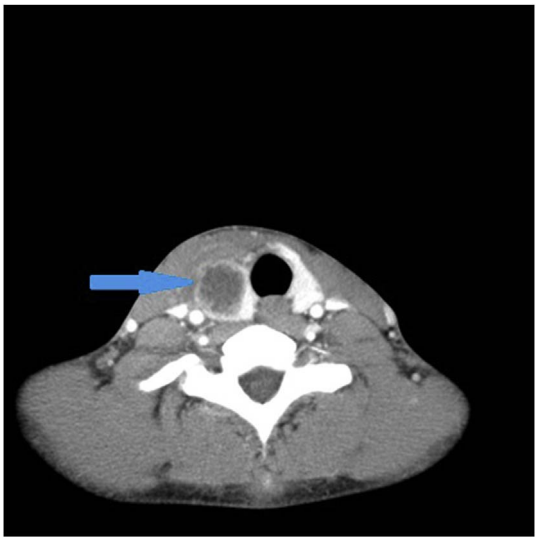

Fig. 1. CT Scan of neck (soft tissue) with contrast.
Initial CT scan of neck showing a predominantly hypoattenuating structure (arrow) within the right thyroid lobe, with small areas of heterogeneous enhancement within, extending beyond the expected location of the anterior contour of the inferior right thyroid lobe.

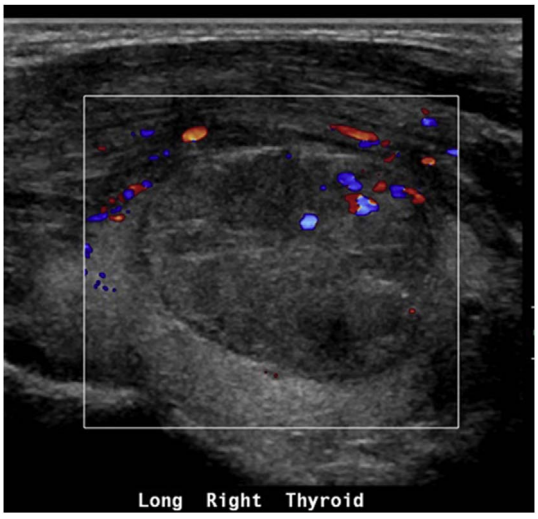

Fig. 2. US Thyroid at initial presentation.
Initial thyroid US showing a complex solid lesion in the right thyroid lobe measuring approximately 3 cm × 1.9 cm x 2.5 cm with peripheral vascularity.

associated reactive lymph nodes and mild tracheal deviation to the left, felt to consistent with an infectious process (Fig. 1). The suspicion of an infected branchial cleft anomaly was raised by these findings, though a right-sided lesion would be rare. He was given ceftriaxone in the emergency department, and admitted to the general pediatrics service for intravenous antibiotic treatment with clindamycin. The pediatric otolaryngology service was consulted for evaluation of the thyroid abscess. On exam, he had a fluctuant 3 cm right neck swelling in the area of the thyroid gland. Laboratory data showed that thyroid function was again normal but C-reactive protein was elevated [TSH 1.57 uIU/ml (0.35–5.50 uIU/ml), FT4 1.2 ng/dl (0.8–1.8 ng/dl), CRP 7.4 mg/dl (0.0–0.5 mg/dl)]. An US-guided needle aspiration of the lesion was planned the day after admission to decompress the mass and obtain culture material given the suspicion for infection. As the possibility of an infected branchial cleft anomaly was raised, which could require future surgical intervention, an open incision and drainage was not performed as this is known to cause scarring in the surgical field

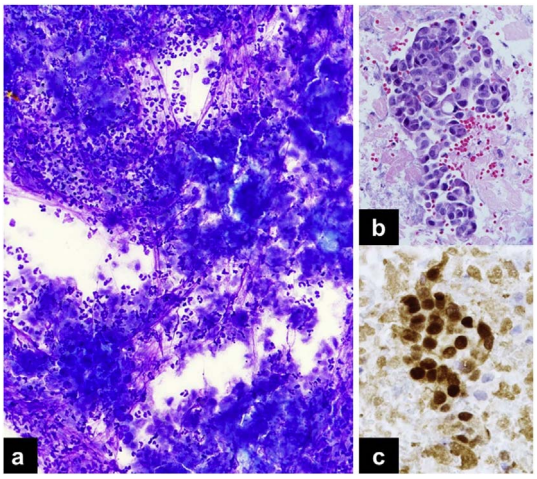

Fig. 3. FNA of 3 cm right thyroid nodule presenting as abscess.
a) cytology smear shows abundant neutrophils admixed with necrotic material (DiffQuik ×200); b) cell block histology section shows atypical epithelial cells in a background of necrosis (H&E ×200); c) Immunohistochemical stain performed on the cell block demonstrates positive TTF-1 staining of the epithelial cells (×400).

rendering complete surgical excision more difficult. The US of the thyroid showed a complex solid lesion noted in the right thyroid lobe measuring approximately 3 cm × 1.9 cm x 2.5 cm with peripheral vascularity (Fig. 2), and the needle aspiration resulted in significant improvement in symptoms. The aspirate was sent for culture and amylase, given suspicion for a branchial cleft anomaly with associated pyriform sinus fistula. The pathology report of the aspirate smears showed abundant acute purulent exudate with necrosis consistent with an abscess (Fig. 3). However, within this inflammatory background were several groups of atypical cells which were positive for Thyroid Transcription Factor-1 (TTF-1), thyroglobulin (Tg), focally positive for CK5/6, and negative for calcitonin and p63. This immunophenotype indicated that these atypical cells were of thyroid origin, and that the possibility of an infected branchial cleft cyst was less likely.

He was discharged home on oral Clindamycin for a total of two weeks, at which point he reported no symptoms and was clinically euthyroid on follow-up. Culture was negative for fungi and acid-fast bacilli, anaerobes and aerobes. Amylase in the aspirate was undetectable. As prior aspirations were performed in the setting of acute inflammation, and a pathologic diagnosis could not be obtained, a conversation was prompted between the radiologist performing the exam (U.P.) and the surgeon (R.S.P.) concluding that a repeat US with possible FNA should be performed in two months once the inflammation resolved. This re-demonstrated a nodule in the right thyroid lobe, now smaller and measuring 1.5 × 1.4 × 0.8 cm (Fig. 4). No abnormal lymphadenopathy was noted on the neck US. An US-guided fine needle aspiration (FNA) of the right thyroid nodule was performed showing highly cellular smears with papillary and irregular tridimensional follicular groups displaying significant nuclear overlap and nuclear size variation. Nuclear grooves or intranuclear pseudoinclusions were not appreciated. Histiocytes, scattered multinucleated giant cells and rare fragments of granulation tissue were identified in the background (Fig. 5). These findings were suspicious for PTC, and as such at least a right hemi-thyroidectomy was planned. Given the presentation that could be consistent with a third or fourth branchial cleft anomaly, although presentation on the right side would be very rare, a direct laryngoscopy was planned to evaluate for a pyriform sinus fistulous tract. The patient and his family were counseled on the possibility of total thyroidectomy if PTC was noted on frozen section, after discussing options of one surgical procedure versus possibly two. They elected to have one procedure if possible.

In the operating room, direct laryngoscopy with telescope was