

A Case of Asymptomatic Riedel Thyroiditis with Follicular Adenoma in a Patient with a Multinodular Goiter: An Unusual Association

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What Is Known about This Topic

- Riedel thyroiditis is a rare disorder.
- Riedel thyroiditis has been associated with other thyroid conditions like chronic lymphocytic thyroiditis, hypothyroidism, hyperthyroidism and anaplastic carcinoma.

What This Case Report Adds

- An unusual case of Riedel thyroiditis in a patient with asymptomatic multinodular goiter and thyroid autoantibodies.
- The true nature of thyroid pathology in this case was suggested by ultrasonography (not by fine-needle aspiration cytology), and histopathology-confirmed Riedel thyroiditis.

Key Words

Riedel's thyroiditis • Follicular adenoma • Multinodular goiter • High thyroid antibodies

Abstract

Background: Riedel's thyroiditis (RT) is a rare inflammatory disease that results in fibrosis of the thyroid gland and invasion to the surrounding structures of the neck. Follicular adenoma (FA) of the thyroid is the most common benign neoplasm of the gland. **Patient Findings:** A 42-year-old woman was referred to the outpatient clinic due to a multinodular goiter and thyroiditis. The patient was euthyroid and thyroid

function tests were within normal limits. Thyroid antibodies (thyroid peroxidase antibody and thyroglobulin antibody) were high. Thyroid ultrasonography showed multiple iso-hypoechoic nodules and thyroiditis. Fine-needle aspiration cytology was performed, and it was consistent with 'suspicious for a follicular neoplasm' according to the Bethesda system. Due to the clinical findings, which included weight loss and sweating, and the cytological results indicative of a follicular neoplasm, the patient underwent a total thyroidectomy. The histopathological diagnosis was RT associated with FA. The patient was started on thyroid hormone (thyroxine) replacement therapy after surgery and was evaluated for additional fibrosis related to RT. **Conclusions:** To our

knowledge, this is the first case of RT associated with FA in an asymptomatic patient with a multinodular goiter and high thyroid antibodies reported in the literature.

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Introduction

Riedel's thyroiditis (RT) is a rare inflammatory disease that results in fibrosis of the thyroid gland and invasion to the surrounding structures of the neck [1, 2]. Although the etiology of RT is unclear, the most probable cause is an autoimmune process [1]. The condition is associated with extensive fibrosis in the gland that spreads to the neighboring tissues and is associated with the presence of inflammatory cell infiltrates [3]. RT is more common in females, with an operative incidence of 0.06% reported [4].

Follicular adenoma (FA) of the thyroid accounts for over 90% of benign neoplasms of the gland. FA may present with a range of patterns, from the classical follicular pattern to the hyalinizing trabecular pattern [5].

There are many reports of RT in conjunction with other thyroid diseases [6–8], but to our knowledge, RT with FA has not been reported yet. We describe a case of RT associated with FA occurring in a 42-year-old female patient. This is an unusual report investigating this association in the literature.

Case Report

A 42-year-old female patient was seen by her family physician for weight loss, sweating, and headache during the last 3 months. There was no history of any disease or medication. Physical examination revealed a multinodular goiter with very firm tissue. There was a movement of the mass with swallowing. The thyroid function tests were within normal limits (free T₃ 4.6 (3.5–6.4 pmol/l), free T₄ 12.87 (11.33–22.14 pmol/l), TSH 3.82 (0.63–4.82 mIU/l). Levels of thyroid antibodies consisting of thyroid peroxidase antibody (anti-TPO) were 600 (5–34 kU/l), and levels of the thyroglobulin antibodies (anti-TG) were 180.1 (0–60 kU/l). The patient's sedimentation rate was 15 mm in the first hour. The patient was then referred to the outpatient clinic for a multinodular goiter and thyroiditis. A neck ultrasound (USG) displayed multiple iso-hypoechoic thyroid nodules, with the largest being 13 × 12 × 10 mm on both of the lobes; hypoechoic, hypovascular areas composed almost all of the right lobe and 80% of the left lobe. The fibrosis invaded the adjacent soft tissues and almost reached the left carotid artery wall that looked like the beginning of a vascular encasement. USG-guided fine-needle aspiration cytology (FNAC) was performed on the nodule of greatest size [9].

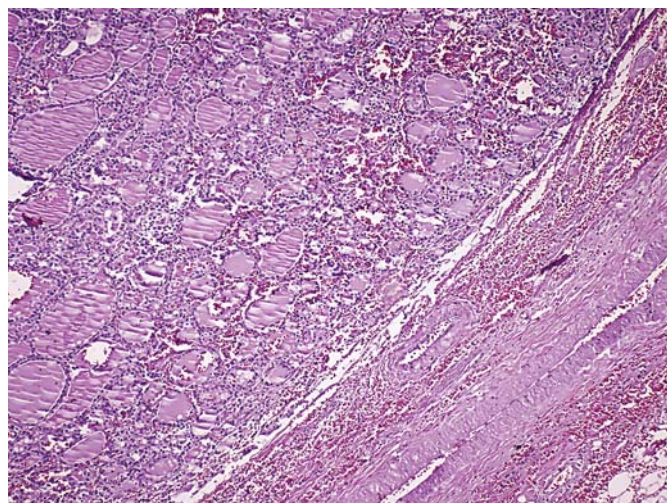


Fig. 1. FA with fibrous capsule. HE. ×100.

FNAC was consistent with 'suspicious for a follicular neoplasm' according to the Bethesda system [10]. Due to the clinical findings and the suspicious cytological result, the patient underwent a total thyroidectomy. As a result of the fibrotic extensions to the perithyroidal soft tissues, dissection of thyroid gland proved difficult during surgery. The surgical specimen was investigated by the pathologists (T.O., M.Y.). Upon macroscopic examination, the volume of the thyroid gland was 64.7 cm³, and the cut sections of the gland were mostly stark white and firm, except for red and brown areas that were softer in the left lobe. On the left lobe, there were two nodules 12 × 10 × 11 and 8 × 7 × 5 mm in size, compatible with these red and brown areas. Histopathological examination revealed that the thyroid gland was destroyed and extensively replaced by dense fibrous tissue with lymphocytic infiltration. There were many lymphocytes, plasma cells, and eosinophils but not neutrophils, granulomatous tissue, or malignancy, confirming the diagnosis of RT. The microscopic examination of the surgical material revealed no evidence of Hurthle cells.

The fibrous nature of the RT-associated connective tissue was shown by Masson's trichrome histochemical staining. Residual follicular epithelium was found to be atrophic (fig. 1–3). In the left lobe, there was a nodular hyperplasia with lymphocytic infiltration. One of the nodules protruding outside the gland was diagnosed as FA. The nodule was surrounded by a fibrous capsule (fig. 4). The histopathological diagnosis was RT associated with FA. The patient was started on thyroid hormone (thyroxine) replacement therapy after the surgery. A CT scan of abdomen and thorax, in addition to blood analysis, was also performed to evaluate RT associated with other fibrosis. These revealed no systemic evidence of fibrosis. Neck USG was performed after 6 months postoperatively showed no progression in fibrosis.

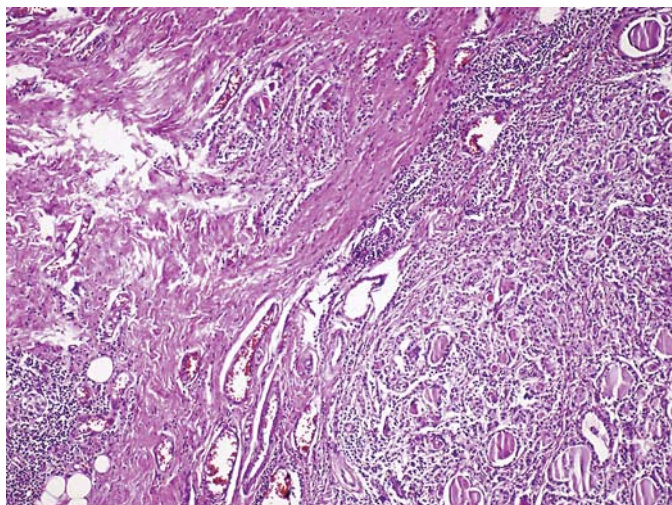


Fig. 2. Fibrosis extending into perithyroidal soft tissues. HE. $\times 100$.

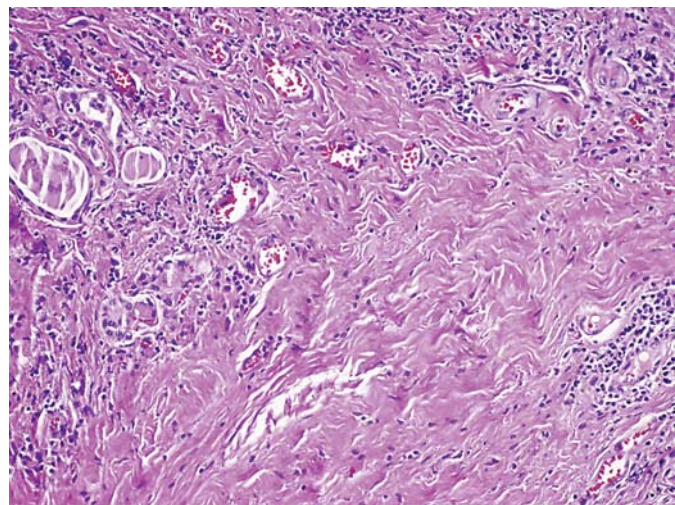


Fig. 3. Small follicles with scant colloid surrounded by intense lymphoid infiltrate and destructive fibrosis. HE. $\times 200$.

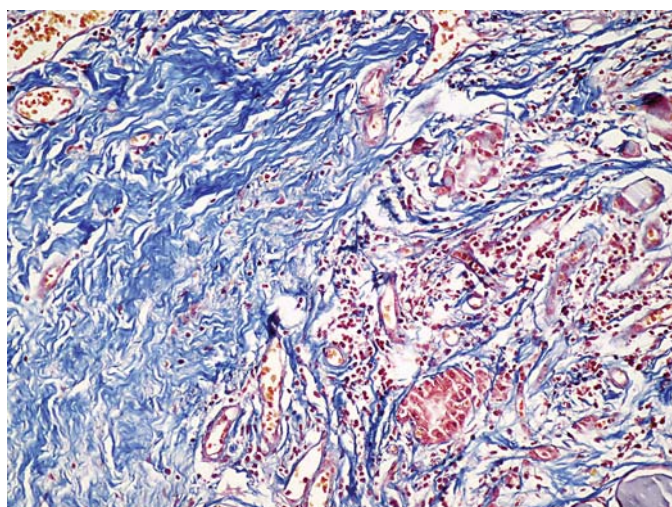


Fig. 4. Dense fibrosis with collagen fibers. Masson's trichrome. $\times 200$.

Discussion

Although the clinical picture is fairly clear, the origin of RT is not yet known. There are many hypotheses regarding this disorder [11]. It is mostly seen in middle-aged females, as was the case here, a 42-year-old woman [12]. Patients with RT are usually euthyroid. Laboratory findings are not specific for this disease. In a study per-

formed by Schwaegerle et al. [13], among 185 RT patients, 64% were euthyroid, 32% were hypothyroid, and 4% were hyperthyroid. The present case had a history of weight loss, pointing to thyrotoxicosis. However, the free thyroid hormone levels and TSH were in the normal range, with high anti-thyroid antibodies (anti-TPO, anti-TG). Regarding thyroid ultrasonography, our case showed that the fibrosis reached the left carotid artery wall. The specific sign of a vascular encasement that was reported by Slman et al. [14] was not obvious in our case but had probably begun. Moreover, the observed hypoechogenicity is a common finding of lymphocytic infiltration encountered in inflammatory diseases of thyroid gland as in the current report [15].

Marin et al. [16] described 2 cases of RT with hypothyroidism and hypoparathyroidism. Anti-microsomal antibodies were positive in their patients, but the levels were lower than our case, and there was no concomitant follicular neoplasm.

Fatourechi et al. [17] reviewed RT retrospectively, emphasizing especially the clinical presentation, associated conditions, and complications. They reported that 14 patients were hypothyroid at presentation, and 9/10 had positive TPO or TG antibodies, similar to the present case. However, the FNAC results of 6 of the patients were nondiagnostic. One of the patients had chronic lymphocytic thyroiditis, and another patient had reactive thyroid epithelial cells with mixed inflammation. We were also unable to confirm the diagnosis of RT with FNAC but

suspicious for a follicular neoplasm diagnosis was another question to be answered and histopathologic examination cleared all. This is an unusual report of RT associated with FA in an asymptomatic patient with a multinodular goiter and high thyroid antibodies.

In RT, the thyroid follicles are replaced by dense, hyalinized collagen bands. Additionally, the fibrosis and inflammatory infiltrate may extend beyond the gland and surrounding tissues [18]. In the present case, Masson's trichrome histochemical staining showed that increased collagen fibers extended beyond the gland and invaded the perithyroidal soft tissues. The inflammatory infiltrate was mostly composed of lymphocytes without giant cells and oncocytes or granulomas related to RT.

The association of RT with FA has not been reported previously. In the current case, a well-capsulated solitary nodule, which was architecturally and cytologically different from the surrounding parenchyma, was seen at the left lobe. The capsule was intact, and there was no lymphovascular invasion, supporting the FA diagnosis. There were also hyperplastic nodules near the adenoma.

RT is extremely rare, and standard therapy is not established yet. Empirical therapy includes glucocorticoids and tamoxifen [19]. Surgical excision is generally preferred to relieve obstructive symptoms and confirm the diagnosis by excluding malignancy in both RT and FA, as in the current report [20].

In conclusion, clinicians and pathologists should be aware of RT, which presents as a stony hard mass in the neck, and the need to differentiate this condition from other disorders, especially malignant lesions. Local compressive symptoms including tracheal compression, dysphagia, and dyspnea are frequent in RT, but not all patients have these complaints, as in the present case [21]. This is an unusual case of RT associated with FA in an asymptomatic patient with a multinodular goiter.

Disclosure Statement

The authors have no conflicts of interest to disclose.

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