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Thyroid Adenolipoma of the Isthmus Associated with Multinodular Goiter: A Case Report

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Introduction

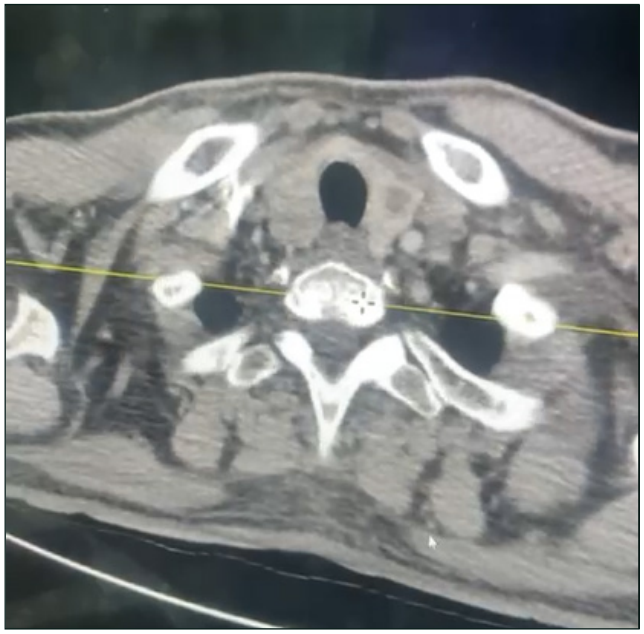
Adenolipomas or thyrolipomas are well-circumscribed benign neoplasm characterized by the presence of mature adipose tissue and glandular elements. They are a rare finding, first described by Trites [1]. In two studies [2, 3] the prevalence was about 1%. Kitagawa et al. [4] found that adenolipomas predominate in women (1,6:1) in the sixth decade. Both lobes are equally involved; nodules arising in the isthmic region are rare [4]. Patients are usually euthyroid and presenting swelling of the anterior neck with or without compression symptoms [5–7]. Adenolipomas may be associated with nodular goiter [4, 6]. US represents the first line examination to evaluate the thyroid gland and regional anatomy and has become an important diagnostic tool in the assessment of thyroid nodules.

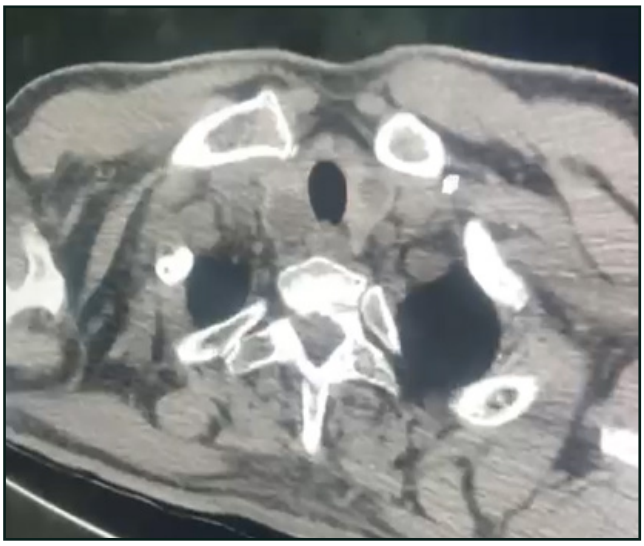
Case Report

A 50-year-old man presented to our department with a slowly progressive cervical swelling, associated with a history of orthopnea and recurrent bronchitis. She also reported moderate dysphagia and hoarseness. Thyroid hormone levels and thyroid-stimulating hormone (TSH) levels were within the normal range. Physical examination revealed bilateral enlargement of the thyroid gland.

The patient underwent cervical ultrasonography. Longitudinal and transverse scans of the thyroid gland and the lateral cervical compartments were obtained with the patient in the supine position and the neck moderately extended.

Ultrasonography demonstrated a diffusely enlarged thyroid gland, particularly involving the left lobe, with multiple hypoechoic nodules. In the isthmic region, an additional oval, homogeneous, hyperechoic nodule was identified, with well-defined regular margins, measuring 28 × 15 mm. Power Doppler ultrasonography showed no vascularity within the nodule. No significant cervical lymphadenopathy was identified.





CT scan images showing isthmic and lateral nodules

A cervical and thoracic computed tomography (CT) scan was subsequently performed, both without and with intravenous contrast administration. It revealed a multinodular goiter with calcifications, extending to the origin of the epiaortic vessels and causing rightward displacement of the trachea. The isthmic nodule was predominantly hypodense, with well-defined margins and an attenuation value consistent with fat on the non-contrast images, with a mean attenuation of −55 HU (Fig. 2a). Following intravenous contrast administration, no significant enhancement of the nodule was observed (Fig. 2b).

The patient underwent total thyroidectomy. Histopathological examination revealed a follicular adenoma composed of epithelial cells arranged in microfollicles admixed with mature adipose tissue. Approximately 65% of the tumor consisted of mature adipose tissue. A thin fibrous capsule separated the nodule from the adjacent thyroid parenchyma. The epithelial cells were positive for thyroglobulin. No cytological atypia or features of malignancy were identified. The findings were consistent with a thyroid adenolipoma associated with multinodular goiter.
Written informed consent was obtained from the patient prior to the diagnostic and therapeutic procedures.

Discussion

Normally, the thyroid gland contains a small amount of adipose tissue, mainly located in the subcapsular regions and around the vessels [5,6]. Histologically, adenolipomas are well-circumscribed, isolated lesions surrounded by a fibrous capsule. They are composed of varying proportions of mature adipose tissue, ranging from 10% to 90%, admixed with a proliferation of thyroid follicles without cytologic atypia, capsular invasion, or vascular invasion [4, 6]. A small connection between the lesion and the perithyroidal adipose tissue, referred to as the “scoop”-sign, has also been described [3].

Several hypotheses have been proposed to explain the presence of adipose tissue within the thyroid parenchyma and thyroid lesions. Some authors consider adenolipomas to represent developmental anomalies resulting either from the entrapment of adipose tissue during thyroid encapsulation or from an abnormal development of the primitive foregut. The association of thyroid abnormalities with anomalies involving other cervical glands supports this developmental hypothesis. Another proposed mechanism is metaplasia of stromal fibroblasts secondary to tissue hypoxia or age-related involution [1, 4-6].

The differential diagnosis of thyroid lesions containing macroscopic fat mainly includes thyrolipomatosis and amyloid goiter [5,6]. Thyrolipomatosis is characterized by diffuse infiltration of the normal thyroid parenchyma by mature adipose tissue between the follicles, without a surrounding capsule. Stromal fibrosis and lymphocytic aggregates may occasionally be present. Amyloid goiter is generally associated with an underlying systemic disease and is characterized histologically by amyloid

deposition within the thyroid parenchyma and other organs, which can be confirmed using special stains such as Congo red. The expression of thyroglobulin and the absence of parathormone (PTH) and cytoplasmic glycogen help distinguish thyroid adenolipomas from ectopic parathyroid tissue and ectopic parathyroid lipoma [5, 6]. Other pathological conditions that may be associated with adipose tissue include lymphocytic thyroiditis, Graves' disease, encapsulated papillary carcinoma, and liposarcoma [5,6].

On ultrasonography (US), adenolipomas typically appear as ovoid, well-defined, hyperechoic thyroid nodules, usually without calcifications or posterior acoustic shadowing and with smooth margins [8]. On computed tomography (CT), they generally appear as well-circumscribed hypodense nodules demonstrating negative attenuation values, typically around −30 Hounsfield units (HU) [9,10]. Surgery remains the treatment of choice, with indications similar to those established for other benign thyroid nodules [4].

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