Thyroid adenolipoma: a case report

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Abstract

Generally, small quantities of adipose tissue is present in the thyroid gland. The adenolipoma of the thyroid gland is considered a rare finding. It consists in a benign, encapsulated neoplasm composed of mature adipose tissue and glandular elements. We report a case of a 71 year-old female patient presenting with swelling of the anterior neck and history of airway obstruction. Ultrasound (US) examination showed a bulky multinodular goiter which caused dislocation and compression of the trachea. The scans performed at the level of the isthmus region showed the presence of a hyperechoic oval formation with a homogeneous echostructure and regular contours; these characteristics suggested the lipomatous nature of the nodule. The patient was subsequently subjected to a Computer Tomography (CT) of the neck for a pre-operative balance of the goitre and to exclude extra-thyroid pathologies. The CT scan confirmed the sonographic findings, and the probable adipose nature of the isthmus formation. After the patient has been subjected to total thyroidectomy and histological examination confirmed the diagnosis of adenolipoma.

Sommario

Generalmente solo scarse quantità di tessuto adiposo sono presenti a livello tiroideo. L'adenolipoma tiroideo è considerato una lesione di raro riscontro. È una neoplasia benigna, provvista di capsula, composta da tessuto adiposo maturo ed elementi ghiandolari. Presentiamo il caso di una donna di 71 anni giunta alla nostra osservazione per una tumefazione del collo e una storia di ostruzione respiratoria. L'esame ecografico evidenziava la presenza di un voluminoso gozzo multinodulare che determinava modesta compressione e dislocazione della trachea. Le scansioni eseguite a livello della regione istmica mostravano la presenza di una formazione ovoidale iperecogena ad ecostruttura omogenea e a contorni regolari; tali caratteristiche suggerivano la natura lipomatosa della suddetta formazione. La paziente fu sottoposta successivamente ad esame TC del collo per un bilancio pre-operatorio del gozzo e per escludere patologie extra-tiroidee. L'esame TC confermava i reperti ecografici e la verosimile natura adiposa della formazione istmica. In seguito la paziente fu sottoposta a tiroidectomia totale ed esame istologico che confermava la diagnosi di adenolipoma.

Keywords Ultrasound · Thyroid · Adenolipoma

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 isthmus 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.

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Case report

A 71-year old female patient came to our observation with a slowly progressive, neck swelling, history of orthopnoea and recurrent bronchitis. Moderate dysphagia and hoarse voice were also present. Thyroid and thyroid-stimulating hormone levels were normal. On physical examination, the patient had bilateral enlargement of the thyroid gland. The patient underwent an US study of the neck with a Toshiba Aplio XG device with a 7,5 MHz linear probe; scans of the thyroid gland and lateral neck compartment were made on the longitudinal and transverse planes with the patient in the supine position and moderate neck extension.

US examination showed that the thyroid was diffusely enlarged, especially the left lobe and multiple hypoechoic nodules were found. In the isthmus region an ovoid, homogeneous hyperechoic nodule was also found with smooth margin and diameters of 26×14 mm (Fig. 1a). Using power-Doppler ultrasonography the nodule showed no evidence of vascularization (Fig. 1b). No significant cervical lymphnodes enlargement was detected.

Subsequent CT of the neck and torax, without and with intravenous contrast agent, demonstrated a multinodular goiter with calcification which reached the origin of epiaortic vessels and dislocated the trachea to the right side. The isthmus nodule appeared prevalently hypodense, with regular margins and showed a typically adipose attenuation on unenhanced scans (mean value of -55 UH) (Fig. 2a). After the administration of contrast agent no significant enhancement was observed (Fig. 2b).

The patient underwent to total thyroidectomy. Histopathology revealed a follicular adenoma, with epithelial cells arranged in microfollicular pattern, mixed to mature adipose tissue. About 65% of the tumor consisted of mature adipose tissue. A thin fibrous capsule separated the nodule from adjacent thyroid tissue. The epithelial cells were positive to thyroglobulin. No atypia or malignancy was seen. The diagnosis is compatible with thyroid adenolipoma in association with multinodular goiter.

It was obtained informed consent from the patient before the diagnostic procedures.

Discussion

Normally, in the thyroid gland, a small amount of adipose tissue is found in the subcapsular areas and around the vessels [5, 6].

Histologically adenolipomas are isolated lesions surrounded by a fibrous capsule, composed of mature adipose tissue (from 10 to 90%) and proliferation of follicles without cytologic atypia, capsular or vascular invasion. [4, 6]. Small connection with perithyroidal fatty tissue are described ("scoop"-sign) [3].

The mechanism by which adipose tissue is detectable in the thyroid parenchyma and lesions has different hypotheses. Some authors consider these lesions as development anomalies: resulting from entrapment of adipose tissue during encapsulation of the thyroid or a disorder in the development of the primitive foregut. Coexisting anomalies in thyroid and other glands in the neck suggest this pathogenesis. Another theory considers intrathyroid adipose tissue

Fig. 1 Thyroid ultrasound. **a:** Gray-scale ultrasound. Transverse scan of the isthmus region shows the presence of an ovoid, homogeneous hyperechoic nodule with smooth margins (long arrows) placed anteriorly to the trachea (short arrow). **b:** Thyroid power-Doppler sonography, detail of the isthmus region. Transverse scan of the nodule shows few peripheral vascular signals (arrow)

Fig. 2 CT examination of the neck. Axial scans at the thyroid gland level. **a:** Unenhanced scan shows multi-nodular goiter with calcification, predominantly at the left lobe (short arrows). The trachea is dislocated to the right side (arrow head). The isthmus nodule (long

arrow) appears prevalently hypodense, with regular margins and shows a typically adipose attenuation (mean value of 55 UH). **b:** After the contrast agent administration, the isthmus nodule (long arrow) shows no significant enhancement unlike the left lobe (short arrow)

as due to stromal fibroblast metaplasia resulting from tissue hypoxia or senile involution [1, 4–6].

The differential diagnosis of macroscopic fat-containing thyroid lesions mainly includes thyrolipomatosis and amyloid goiter [5, 6]. The first one is characterized by diffuse infiltration of the normal parenchyma by mature adipose tissue between follicles and no evidence of a capsule. Stromal fibrosis and lymphocytic aggregates are occasionally observed. Amyloid goiter is associated with systemic disease and histologic evidence of amyloid deposition (confirmed with special stains, e.g. Congo red) both in the thyroid parenchyma and in other organs. The expression of thyroglobulin and absence of parathormone (PTH) and cytoplasmic glycogen differentiate thyroid adenolipomas from ectopic parathyroid tissue or ectopic parathyroid lipoma [5, 6]. Other pathologic conditions associated with the presence of adipose tissue are lymphocytic thyroiditis, Grave's disease, encapsulated papillary carcinoma and liposarcoma [5, 6].

On US images, adenolipomas generally appears as ovoidal, hyperechoic thyroid nodules with no calcification, no posterior shadowing and smooth margin [8].

On CT images adenolipomas appears as hypodense nodules with negative values of density (about −30 H.U.) [9, 10].

Surgery is the treatment of choice; indications are the same as for other benign thyroid nodules [4].

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

Informed consent Written informed consent was obtained from the patient for the publication of this case report and accompanying images.

Ethical approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

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