CASE REPORT

Airway obstruction secondary to large thyroid adenolipoma

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Accepted 13 August 2014

SUMMARY

Adenolipoma of the thyroid gland is a rare benign neoplasm composed of normal thyroid and mature adipose tissue. Ordinarily, only a small amount of fat exists in a normal thyroid gland. CT and MRI may differentiate between benign and malignant lesions, and fine-needle aspirate often assists diagnosis. Surgical excision for adenolipoma is considered curative. We report the case of a 67-year-old man presenting with a large neck lump and evidence of airway obstruction. Imaging revealed a 97×70 mm left thyroid mass with retropharyngeal extension and laryngotracheal compression. Hemithyroidectomy was performed with subsequent histology confirming a large thyroid adenolipoma. The patient's symptoms resolved and he remains asymptomatic with no sign of recurrence 2 years postsurgery.

BACKGROUND

The differential diagnosis for a thyroid mass is wide. Ultrasound with fine-needle aspirate (FNA) of the mass where appropriate is considered the standard of care. Histological confirmation of an adipose lesion is usually benign but may be malignant. Thyroid adenolipoma is a rare entity, comprising an encapsulated lesion of fat and thyroid tissue of uncertain pathogenesis. To our knowledge, this is the first case of the 20 in the existent literature to describe extrinsic compression of the airway sufficient to cause obstructive symptoms.

CASE PRESENTATION

A 67-year-old man with an 80 pack-year smoking history was referred to an otolaryngology, head and neck surgery clinic with a slowly progressive, increasingly large left-sided neck lump. This was associated with a hoarse voice, dysphagia and progressive orthopnoea. The mass had been discovered incidentally 2 months earlier after a difficult extubation for a routine elective procedure. Comorbidities included Alzheimer's dementia and hypertension. Initial ultrasound and FNA led to a diagnosis of multinodular goitre, as only scant adipose cells were seen histologically. On examination, a soft left-sided neck mass spanning levels II–IV was palpable and the patient demonstrated a soft stridor at rest. Flexible nasendoscopy revealed swelling of the posterior pharyngeal wall from the soft palate down to the postcricoid area, with laryngeal displacement to the right and diminished movement of the left vocal cord.

INVESTIGATIONS

Repeat ultrasound-guided biopsy of the neck mass revealed only a benign colloid nodule (with no adipose tissue) and thyroid serology tests (thyroid-stimulating hormone, T4 and T3) were all normal. Subsequent CT of the neck with intravenous contrast demonstrated a well-encapsulated heterogeneous fat and soft-tissue containing mass measuring 70 mm (transverse diameter) × 51 mm (anteroposterior) × 97 mm (craniocaudally), closely related to the left lobe of the thyroid gland. The mass extended superoposteriorly into the left parapharyngeal and retropharyngeal spaces displacing the trachea, oesophagus and larynx. Pharyngeal narrowing was evident (figure 1). Subsequent MRI of the neck revealed the lesion to be predominantly T1 intense (figure 2), with loss of intensity on fat suppression, characteristic of lipomatous lesions. There were no invasive features or evidence of regional lymphadenopathy.

DIFFERENTIAL DIAGNOSIS

Despite the initial FNA results suggesting a colloid nodule, CT and MRI findings were characteristic of a lipoma variant, with an adenolipoma thought to be more likely than an angiolipoma or myolipoma.

TREATMENT

Left hemithyroidectomy proceeded uneventfully through a central transverse neck incision. Consistent with imaging, the mass was causing significant deviation and compression of the trachea

Figure 1 CT coronal images of a large heterogeneous mass causing significant compression of the pharynx.

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To cite: Fitzpatrick N, Malik P, Hinton-Bayre A, et al. *BMJ Case Rep*. Published online: [please include Day Month Year] doi:10.1136/bcr-2014-204793

Figure 2 MRI (T1 fat suppression) axial images showing retropharyngeal extension of the mass.

and oesophagus due to retropharyngeal extension. Excision in toto was achieved with preservation of the left recurrent laryngeal nerve, and cranial nerves XI and XII. Left superior and inferior parathyroid glands were not macroscopically involved and preserved.

OUTCOME AND FOLLOW-UP

Histopathology revealed a follicular adenoma with adipose metaplasia of the stroma consistent with thyroid adenolipoma (figure 3). The mass occupied the mid-upper 2/3 of the thyroid and weighed 184 g. No atypia or malignancy was seen, with adjacent left level II and III nodes found to be reactive. Postoperatively the patient recovered well and was discharged home day 2 postsurgery. Postoperative calcium levels were normal as was subsequent thyroid function.

On review in outpatient clinic 2 weeks later, the patient's stridor had resolved, however, a left vocal cord palsy was noted. Nonetheless, the patient compensated well with good voice and return to normal oral diet. There were no signs of recurrence but persistent left vocal cord palsy noted on follow-up at 1 year.

Figure 3 Thyroid lesion with admixture of normal follicles and mature fat (H&E stain, original magnification $\times 25$).

No corrective intervention was performed given the lack of clinical sequelae and patient's advanced dementia.

DISCUSSION

Thyroid adenolipoma (or Thyrolipoma) is a benign neoplasm characterised as an encapsulated and well circumscribed accumulation of thyroid follicles with the presence of intervening mature adipose tissue.¹ They are physiologically inactive lesions with maximum dimensions reported as ranging between 0.3 and 25 cm.² Symptoms are usually secondary to local mass effect, such as neck swelling, dysphagia and exertional dyspnoea. There were no other cases presenting with airway obstruction documented in the literature. In a normal thyroid gland some fat cells may occasionally be found near the capsule of the gland or along the septae and adipose tissue is commonly found in the parathyroids. It is unusual for large amounts of mature adipose tissue to be present within the thyroid gland and this finding suggests pathology, whether autoimmune (Grave's disease, lymphocytic thyroiditis) or neoplastic (papillary and follicular carcinoma, liposarcoma).¹ Thyrolipoma is histologically very similar to diffuse lipomatosis of the thyroid gland and amyloid goitre, the presence of a discrete capsule on imaging and absence of amyloid on a biopsy distinguish it from these other pathologies, respectively. In terms of imaging, Ultrasonography is the most common first-line investigation for neck lumps but has limited value in fat-containing lesions given the isoechogenicity between most fat and thyroid tissue. Thyroid scintigraphy is unlikely to be diagnostic, but may exclude other pathologies.³ CT, and particularly MRI, show characteristic findings of a well-defined, heterogeneous intrathyroidal lesion. CT should reveal low attenuation components with negative Hounsfield units and on MRI T1 hyperintensity that becomes hypointense with fat-suppression. Fascial planes are preserved and there is no locoregional lymphadenopathy.⁴ Encapsulated papillary carcinoma may mimic these findings. FNA presents a minimally invasive avenue for cytological diagnosis, yet is frequently only diagnostic in retrospect, often reported as a thyroid adenoma or colloid goitre as in our case. Kim and Yun⁵ suggested that samples may be misinterpreted due to non-routine searching for and reporting on adipose tissue seen on aspirates. Pre-FNA imaging may help guide the pathologist in interpretation in such cases. The pathogenesis of this tumour remains somewhat unclear, Trites⁶ suggested that it may have an embryonic origin given the coexistence of thyroid, pharyngeal and thymus lipomas and Breek *et al*⁷ reinforced the notion with a similar case. Other authors postulate it may derive from mesenchymal metaplasia of a follicular adenoma following local hypoxia and vascular changes.^{8 9} Definitive treatment was achieved in all cases of thyroid adenolipoma with surgery. Indications were the same as for other benign thyroid masses. There were no documented recurrences.

Learning points

- ▶ Thyroid adenolipoma is a rare, benign tumour of the thyroid gland, which can grow to large proportions and potentially cause airway compromise.
- ▶ Thyroid lesions have a wide differential and may require multiple investigations to arrive at a diagnosis.
- ▶ Adenolipomas have a characteristic appearance on CT and MRI.
- ▶ Surgical excision is the treatment of preference.

Acknowledgements The authors would like to thank Dr Bruce Latham (Pathologist) and Dr Randall Jones (Radiologist) for their involvement in the diagnosis of this case.

Contributors NF and PM were responsible for literature search and manuscript drafting. AH-B assisted in surgery and drafting of manuscript. RL was the supervising surgeon who performed the surgery and oversaw the conceptualisation and final drafting.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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