
CASE REPORT

Metastatic Thyroid Carcinoma Presenting with Spinal Cord Compression

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ABSTRACT

Metastatic follicular thyroid carcinoma presenting with spinal cord compression is rare. We describe a 69-year-old woman who initially presented with gradual onset of bilateral lower limb weakness and numbness for 3 months. Her magnetic resonance image revealed extradural spinal cord compression at the T3/T4 level by a right chest wall mass, which was histologically proven to be follicular thyroid carcinoma.

Key Words: Adenocarcinoma, follicular; Carcinoma; Spinal cord compression; Thyroid neoplasms

中文摘要

表現為脊髓壓迫症候群的轉移性甲狀腺癌

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表現為脊髓壓迫症候群的轉移性甲狀腺濾泡狀癌很罕見。本文報告一名首發症狀為進行性下肢無力及麻痺達三個月的69歲女性病例。磁力共振影像顯示病人右胸壁腫塊，引致胸椎T3/T4水平硬膜外脊髓受壓，後經組織學確診為甲狀腺濾泡狀癌。

INTRODUCTION

Bone is a common site of metastasis from thyroid cancer, with follicular thyroid carcinoma being the most common histological type.¹ Spinal cord compression as a complication of thyroid carcinoma is uncommon and occurs mainly in the later stage of the disease.² It is even rarer to encounter spinal cord compression as the initial presentation of a differentiated thyroid carcinoma, without there being any other symptoms of malignancy.³ We present a patient with metastatic follicular thyroid carcinoma, who first presented with spinal cord compression.

CASE REPORT

An obese 69-year-old woman, with a body mass index

of 31 kg/m² and an underlying history of hypertension and ischaemic heart disease, first presented to our orthopaedic clinic with a 3-month history of bilateral lower limb weakness and numbness. Owing to a clinical impression of spinal cord compression at the L1 level, a lumbosacral magnetic resonance (MR) imaging was carried out. The imaging, which included the lower thoracic spine up to the level of T8, revealed no significant abnormality. No chest radiograph was obtained at that time.

Three months later the patient was admitted to Coronary Care Unit with left ventricular failure and paroxysmal atrial fibrillation. The first chest radiograph showed fea-

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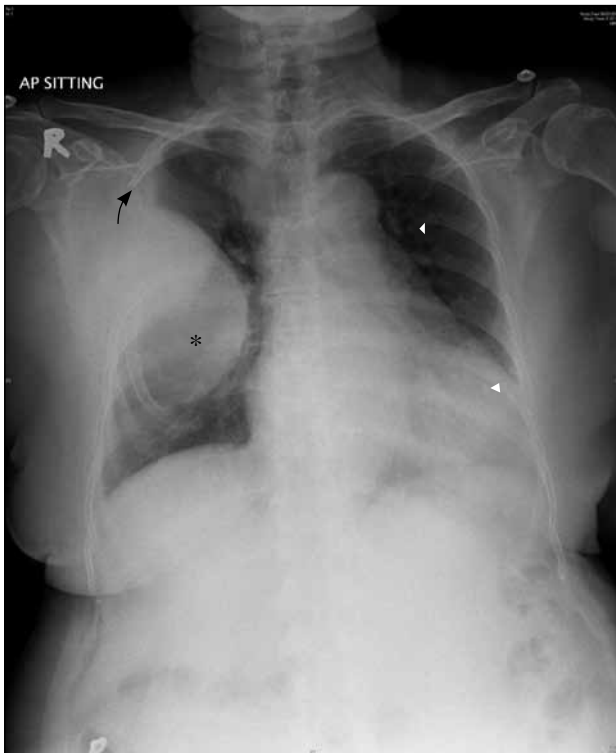


Figure 1. Frontal chest radiograph showing a large pleural based mass (*) with adjacent ribs erosion (arrow), right paratracheal lymph node enlargement and left lung nodules (arrowhead).

tures of pulmonary congestion and a large right pleural-based mass with adjacent rib destruction and a right paratracheal mass (Figure 1). Smooth indentation of the trachea was seen on the left at the level of the thyroid gland. A few nodules were seen in the left lung. During the admission, the patient was treated accordingly for her atrial fibrillation and cardiac failure, and was also diagnosed to have type 2 diabetes.

Contrast-enhanced computed tomographic (CT) scan of the thorax was performed and showed a large heterogeneously enhancing lobulated mass in the right upper chest wall with central area of necrosis. There was an extension of this mass into the spinal canal at the level of T3 and T4 causing spinal cord compression (Figure 2). Adjacent ribs and thoracic vertebrae were eroded. Multiple nodules were also noted throughout both lungs. No pleural effusion was observed. A solitary hypodense nodule in the right lobe of the thyroid gland (Figure 3) with absence of the left thyroid lobe was also noted. The corresponding tracheal indentation by the left thyroid bed with a focus of calcification was also seen on CT (Figure 4). Further questioning revealed a history of partial thyroidectomy 20 years previously, of which the



Figure 2. Axial contrast-enhanced computed tomography of thorax at the level of T4 demonstrates heterogeneously enhancing pleural based mass with intraspinal extension and vertebral erosion.

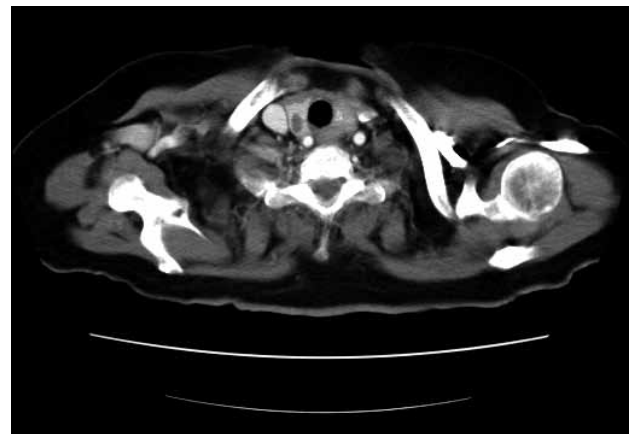


Figure 3. Axial contrast enhanced computed tomography of thorax at the level of suprasternal notch shows solitary right thyroid nodule with evidence of left thyroidectomy.

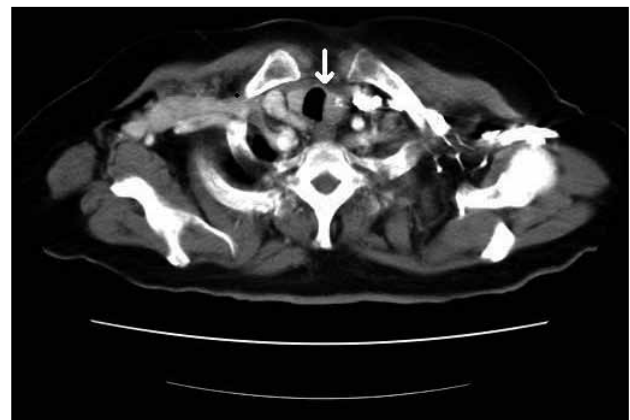


Figure 4. Corresponding smooth indentation of the trachea (arrow) as seen on chest X-ray by left thyroid bed with focus of calcification.

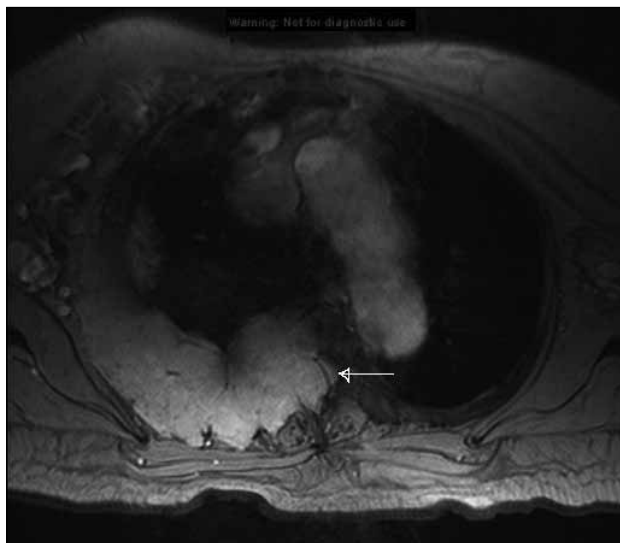


Figure 5. T2-weighted magnetic resonance imaging of thorax at the level of T4 shows lobulated hyperintense mass along the right chest wall with intraspinal extension causing extradural cord compression (arrow).



Figure 6. Sagittal T1-weighted gadolinium-enhanced magnetic resonance imaging of the thoracic spine demonstrates the intraspinal portion of the mass causing spinal cord compression and involvement of the adjacent thoracic vertebrae.

histopathology diagnosis was unsure.

Further MR imaging of the thoracic vertebrae and the mass were performed to assess the extent of spinal canal involvement and further characterise the right chest wall mass. A large lobulated soft tissue mass (hypointense on T1-weighted and hyperintense on T2-weighted images) was noted along the right chest wall with extradural extension into the spinal canal at the level of T2, T3, and T4 (Figure 5). This was deemed to be causing extradural spinal cord compression at these levels (Figure 6). The lesion showed heterogeneous enhancement post contrast.

A CT-guided biopsy of the right chest wall mass was performed and material was sent for histopathological examination. Microscopic findings and immunostaining results favoured the diagnosis of a metastatic follicular carcinoma of thyroid. Immunostains showed strong focal positivity for thyroglobulin, focal positivity for cytokeratin (CKMNF116) and positivity for thyroid transcription factor (TTF-1), whereas it was negative for Gremilium, synaptophysin, and epithelial membrane antigen.

The patient succumbed to her diseases before receiving any treatment at a tertiary centre for endocrine tumours.

DISCUSSION

Follicular thyroid carcinoma favours the haematogenous

route for metastases and more often results in distant metastases than papillary-type thyroid carcinomas. The majority of the thyroid carcinomas present as a thyroid nodule and any distant metastasis usually become evident at a later stage of the disease.² Only 4% of patients with thyroid cancer present with symptoms due to a distant metastasis.⁴

The differential diagnosis of a chest wall mass includes metastasis, and the thyroid gland is reported as one of the primary sites. Extension of the chest wall mass into the spinal cord to cause spinal cord compression may be one of the complications. However, spinal cord compression as the initial presentation of metastatic thyroid carcinoma is rare.

As in this case, a large chest wall mass is liable to be noticed earlier if the patient is not obese, as it is easily palpated. Chest wall asymmetry may also give a clue to such a mass and would be more noticeable in a slimmer individual. In this patient, the delay in detection of the chest wall mass was related to the initial presentation with symptoms of spinal cord compression.

At her first presentation, when the patient complained of bilateral lower limb weakness, no further investigations were performed after the initial lumbosacral MR.

In this particular case, further examination should have revealed the cause of the lower limb weakness. Radiography of the thoracic spine may have been helpful, as lower spine imaging failed to show any abnormality. Regrettably for this patient, appropriate follow-up of the primary complaint did not occur, which contributed further to the delayed diagnosis.

Because of the rarity of this clinical presentation, it may be diagnostically challenging to surgeons as well as the radiologists. As in this particular case, initial presentation with cord compression and a chest wall mass following the course of the neurovascular bundle with intraspinal extension gave rise to the suspicion of a neural sheath tumour. History of partial thyroidectomy was only revealed after the contrast-enhanced CT scan eventually raised the possibility of a metastatic deposit from a thyroid carcinoma.

The prognosis of thyroid carcinoma with distant metastasis varies in different studies. Factors such as co-morbidity, age at presentation, stage of disease at

presentation, and treatment play a role in patient's survival and quality of life. As for this patient, late presentation and diagnosis together with co-morbidity (heart failure, diabetes mellitus, and hypertension) delayed initiation of treatment and probably caused the adverse outcome.

In conclusion, for these rare cases, early presentation, appropriate examination and follow-up, prompt diagnosis, and early initiation of treatment can probably prolong the patient's life and improve her quality of life.

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