A rare case of sacral metastasis of unknown follicular thyroid carcinoma radiologically mimicking as chordoma

Sudeep Khera¹, Poonam Elhence¹, D. Jayakumar², Amit Gupta¹
¹Department of Pathology and Lab Medicine, ²Surgical Oncology, All India Institute of Medical Sciences, Jodhpur, Rajasthan, India

ABSTRACT
Follicular thyroid carcinoma (FTC) presenting as an isolated spinal metastasis with features of compression myelopathy is extremely rare with <10 cases reported in world literature. FTC is the second most common thyroid cancer with an indolent course. It predominantly occurs in females. The most common route of metastasis is through hematogenous routes to lung, liver, bones, etc. Herein we report a case of 47-year-old female presented with lesion involving sacral vertebrae and biopsy showing metastatic follicular carcinoma with morphology and immunohistochemistry of thyroid gland. The present case highlights the rarity of FTC to present as upfront solitary vertebral metastases with history of prior hemithyroidectomy. All the cases of spinal mass should be evaluated thoroughly to exclude any metastatic deposits.

Keywords: Follicular type thyroid carcinoma, spinal metastasis, spinal tumor

Introduction
Follicular thyroid carcinoma (FTC) ranks the second most common thyroid cancer with an indolent course presenting as an asymptomatic solitary thyroid nodule. It has a predilection for hematogenous spread with 10-15% of patients presenting with metastatic disease to lung followed by bone with brain, liver, and skin less commonly involved. Most common site for bone metastases is vertebral bodies followed by pelvis, femur, skull, and ribs. However, spinal metastasis with symptomatic cord compression as the initial presenting feature with solitary site of involvement of FTC is extremely rare. Herein an unusual case of spinal metastasis of occult follicular thyroid carcinoma with compression myelopathy is discussed.

Case Report
A 47-year-old woman presented with progressive lower back pain for 1 year associated with fecal incontinence for 2 years and urinary incontinence for 1 year. However, no past history of pulmonary tuberculosis and diabetes mellitus was recorded. On examination, no obvious swelling was noted. However, patient complained of local tenderness at sacral region. No cervical lymphadenopathy was recorded. On radiological imaging studies, she had an approximately 6.5 × 5 cm lobulated expansile mass involving S1 and S2 vertebrae. The mass was encroaching sacral canal and foramina, superiorly reaching up to L5-S1 recess. On imaging, diagnosis of chordoma was rendered. All hematological and biochemical parameters were within normal limits. Thyroid hormone assay were also normal. Sagittal MRI scan revealed an extradural mass with spinal canal stenosis [Figure 1]. Core needle biopsy was performed from the mass under guidance. Biopsy revealed follicles/acini arranged in back to back manner. Keeping in mind the architectural pattern differential diagnosis of metastatic adenocarcinoma from breast, colon, etc.
etc., and FTC were deliberated on histology alone [Figure 2]. Subsequently, panel of immunohistochemical markers was carried out. These follicles were intensely and diffusely positive for TTF-1 & thyroglobulin [Figure 3]. These follicles were non immunoreactive for CK7 & CK20, respectively. Thus, diagnosis of metastatic follicular carcinoma from thyroid was rendered on histology and immunohistochemistry. Further eliciting the clinical history, patient had history of hemithyroidectomy 6 years back, following which the patient was put on thyroxine. Unfortunately, patient had no histopathology reports available from prior surgery. Subsequently, thyroid ultrasound study revealed a 3 × 2.5 mm cystic nodule filled with colloid was identified in the left thyroid lobe. Right thyroid lobe was not visualized. Subsequently, patient underwent completion thyroidectomy. On histological examination, it was reported as hyperplastic cellular nodule without any evidence of capsular or vascular invasion.

The patient postoperative course was uneventful. Patient was put on high dose thyroxine therapy to suppress TSH stimulation which relieved pain to some extent. Patient was discharged with the advice of I-131 ablation therapy for further management. Unfortunately, the patient did not turn up for further treatment. We tried to establish the contact with the patient and patient was doing fine but refused to come for further management.

**Discussion**

Thyroid malignancy accounts for 1% of cancers occurring in humans. Few case reports have been mentioned in literature of FTC metastasizing to the sacrum as a solitary site of metastases with neurological symptoms because of spinal cord compression. The frequency of follicular thyroid malignancy is the second most common thyroid malignancy with usual predilection in elderly females. These patients have a significant past history of long standing multinodular goitre.\(^{[3]}\) In the present case, patient did not present with multi nodular goitre. The most common mode of spread is through vascular invasion resulting in metastases to the lung, bone, and lymph nodes.\(^{[4]}\) The incidence of metastatic spread reported as 10–50% from follicular carcinoma by Harkness *et al*.\(^{[5]}\) Okuntan presented a case of FTC metastasizing to the lumbar vertebra.\(^{[6]}\) Quinn confirmed four cases as sacral metastasis from FTC.\(^{[7]}\) Tazi reported a case which presented as dural metastasis.\(^{[8]}\) Fanchiang reported the occurrence rate of bony metastasis in thyroid carcinomas as 4.3% and 71% of all cases.\(^{[9]}\) Of 127 autopsy cases, only three cases of metastasis to the thoracolumbar spine of thyroid carcinoma were reported by Baron.\(^{[10]}\) There are very few case reports of FTC presenting as distant metastasis as the initial manifestation leading to the diagnosis of FTC.\(^{[11‑13]}\) Compression myelopathy is extremely unusual presenting feature of metastatic thyroid carcinoma. Of 1,038 patients with thyroid malignancy presented as distant metastasis in 11% of the cases, in which 4% presented with initial distant metastasis reported by Shaha.\(^{[13]}\) In our case, patient presented with spinal mass, followed by guided biopsy aided in the detection of metastatic thyroid malignancy which in turn elicited clinical history of thyroidectomy. Complete excision of the thyroid gland and removal of the metastatic foci as much as possible is considered as the best management strategy for metastatic thyroid carcinoma. It offers the best chance of prolonged survival.\(^{[10‑13]}\) Inoperable/highly vascularised metastatic spinal tumors can be managed by biopsy followed by radiotherapy and I-131 internal radiation. High-dose radioiodine treatment is recommended for vertebral body metastases as bony lesions are less likely to concentrate radioiodine and are associated with a worse prognosis than pulmonary metastases.\(^{[14]}\)

Radioactive iodine is preferred over radiotherapy in younger individuals with total resection of secondaries in the spine presented with bony metastases of the FTC.\(^{[15]}\)
In our patient, completion thyroidectomy was performed followed which the patient was advised for radioactive iodine ablation therapy but patient refused for further treatment. The prognosis is said to be favorable for differentiated thyroid cancers which remains around 80–95% for 10 years, whereas the survival rates drop down to 40% with distant metastasis.¹⁶

As a primary care physician while dealing with a case of spinal mass, thorough clinical history including any past history of thyroidectomy, thyroid hormone assay, thyroid biomarkers such as serum thyroglobulin levels to monitor for any recurrence and imaging studies are recommended before referring the patient for any surgical management. Since all the cases of spinal mass are not primary in nature, some may turn out to be metastatic in nature. Thus, it is imperative to be vigilant to exclude any past history of thyroid malignancy.

**Conclusion**

One must keep in mind metastatic deposits of thyroid malignancy as a differential diagnosis while dealing with cases of spinal mass. So preoperative detailed clinical evaluation, imaging of thyroid and thyroid function tests ought to be performed to exclude any thyroid lesion. In our case eliciting past history of thyroidectomy was essential to correlate with the histopathological diagnosis on core biopsy.

**Key points**

1. Metastatic lesions of the spine to be excluded in the patients having spinal mass as an initial presentation
2. Eliciting a good clinical history is essential for establishing a diagnosis
3. Serum thyroglobulin levels to be monitored to look for any recurrence, if past history of thyroidectomy is elicited.

**Declaration of patient consent**

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient have given their consent for their clinical information to be reported in the journal. The patient understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Institutional ethical committee clearance is not warranted for case reports.

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**Conflicts of interest**

There are no conflicts of interest.

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