

# Cervical Cord Compression as Initial Presentation of Papillary Thyroid Carcinoma: a Case Report

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Received: 12 March 2015 / Accepted: 1 September 2015  
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**Abstract** Cervical cord compression secondary to extension of a long standing papillary thyroid carcinoma as well as multiple cases of distal cord compression from occult follicular thyroid carcinoma have been reported. But cervical cord compression from Papillary Thyroid Carcinoma has not been reported so far. Forty eight year old lady presented with progressive quadriparesis of 2 months duration. MRI of the cervical spine showed destructive lesion with soft tissue component in vertebral bodies and posterior elements of C4-C6 vertebrae with cord compression along with a large thyroid mass extending to retrosternal region likely malignant. USG guided FNAC & Biopsy of thyroid lesion was inconclusive. She underwent Preoperative Selective angioembolisation for vertebral metastasis followed by total thyroidectomy with cervical cord decompression, bone grafting and plating. HPE reported follicular variant of Papillary Thyroid carcinoma. Four weeks postoperatively she underwent radioiodine ablation by 263 mci of I 131. She then received palliative EBRT to cervical and dorsal spine 30 Gy/10 fractions. She is alive and neurologically stable at 6 months follow up. Papillary thyroid carcinoma has an excellent prognosis. Hence a prompt management of primary disease and aggressive approach to metastatic lesion may prolong survival and allow favorable prognosis.

**Keywords** Spinal metastases · Metastatic ca thyroid · Vertebral metastases · Malignant spinal cord compression

## Introduction

Spinal cord compression as initial presentation of differentiated thyroid cancer is uncommon. Cervical cord compression secondary to extension of a long standing papillary thyroid carcinoma as well as multiple cases of distal cord compression from occult follicular thyroid carcinoma have been reported [1]. But cervical cord compression from metastatic papillary thyroid cancer as initial presentation has not been reported so far.

## Case Summary

Forty eight year old hypertensive lady was evaluated elsewhere for progressive quadriparesis. Computed Tomography of the chest revealed large mass arising from the left lobe of the thyroid extending onto the mediastinum as well as lytic lesions seen in C4,5& 6 (cervical) and D8 (dorsal)vertebrae suggestive of metastases (Fig. 1). Magnetic Resonance Imaging of cervical spine showed soft tissue lesions involving the vertebral bodies and posterior elements of C4-6 (cervical) & D 8 (dorsal)vertebrae with cord compression (Fig. 2). She then presented to our institute. Ultrasound guided Fine needle aspiration cytology and biopsy from thyroid inconclusive. Computed Tomography of Cervical spine showed complete collapse of the C5 vertebra with adjacent ventral and dorsal epidural soft tissue component causing compression and narrowing of the spinal canal. She underwent preoperative selective angioembolization for vertebral metastases followed by total thyroidectomy, cervical cord decompression, bone

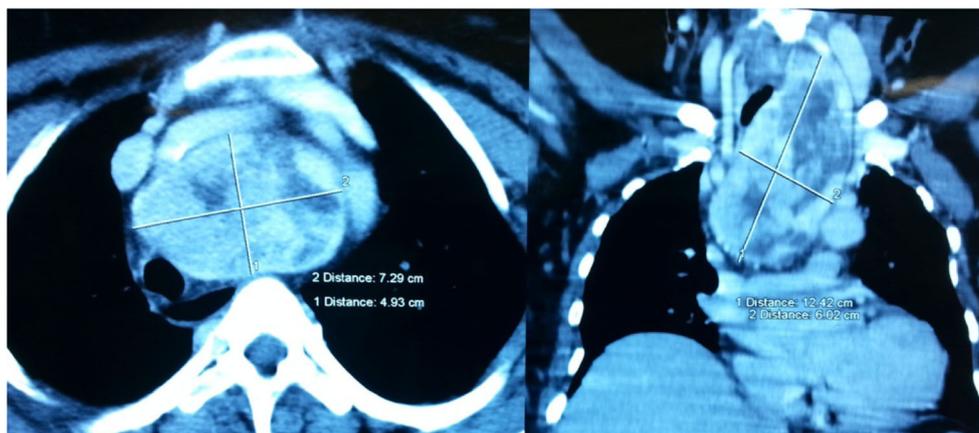
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**Fig. 1** Contrast enhanced computed tomography of neck and thorax shows large lesion arising from left lobe of thyroid with superior mediastinal invasion displacing the trachea



grafting and plating. The final HPE reported well differentiated follicular variant of papillary thyroid carcinoma. On Immunohistochemistry tumor cells were positive for TTF1 and thyroglobulin.

Whole body I131 scan showed uptake in the thyroid bed, cervical and dorsal vertebrae as well as distal shaft of left femur. She then underwent radioablation with 263 mci of I131 (Iodine). She then received palliative Radiation to the cervical and dorsal vertebrae (30 Gy/10 #) as well as Intravenous bisphosphonates. Her condition improved dramatically and is presently stable able to walk with support at 6 months of follow-up.



**Fig. 2** Magnetic resonance imaging of cervical spine shows thyroid mass lesion with cervical cord compression at the level of c4 and c5

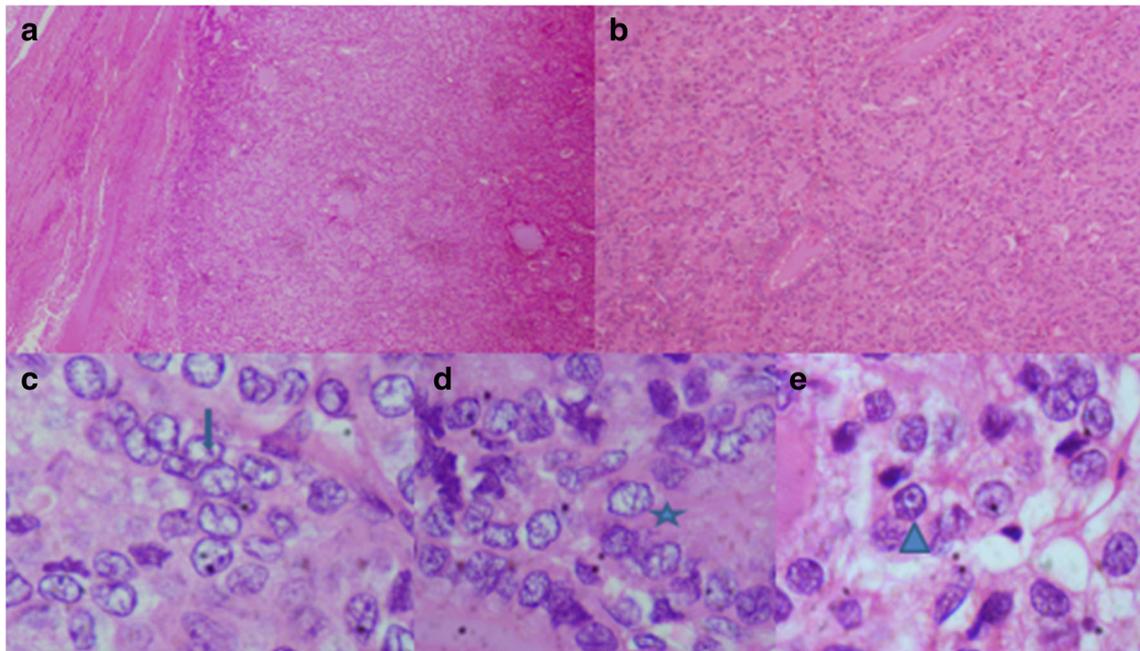
## Discussion

The vertebral body is the commonest site of spinal metastases from thyroid. The majority of the spinal metastases affect the thoracic vertebrae followed by the lumbar and cervical vertebrae through the Batson's venous plexus [2]. Spinal cord compression secondary to metastatic deposits is more common in the thoracic spine because the ratio of the spinal canal to spinal cord is smallest at the level of the thoracic vertebrae [3].

Hsiao et al. reported a case of metastatic spinal cord compression as initial manifestation of occult thyroid cancer. He reviewed related literature of 15 patients with spinal cord compression of which 2 patients underwent Radiation, one radioiodine ablation and rest surgical intervention. On histopathology 10 were follicular thyroid carcinoma, 4 follicular variant of Papillary Thyroid Carcinoma and 1 insular carcinoma [1].

Therapeutic interventions should be directed to restore the integrity of the spine as well as surgery of the primary lesion. The management usually includes a combination of surgery both of primary and decompression, radioiodine therapy, selective embolisation, bisphosphonates and radiotherapy.

In this particular case, the patient presented with neurological deficit. She was planned for total thyroidectomy because the biopsy from the thyroid mass was inconclusive and radioablation is ineffective in the presence of intact tissue. Preoperative embolization and cervical decompression was carried out simultaneously through the same approach since there was no added morbidity. Even though there is no comparative study to evaluate the role of radioablation versus surgical decompression multiple studies by Byrne et al. and Stojadinovic et al. recommend spinal stabilization in the context of potential long term survival [4, 5].

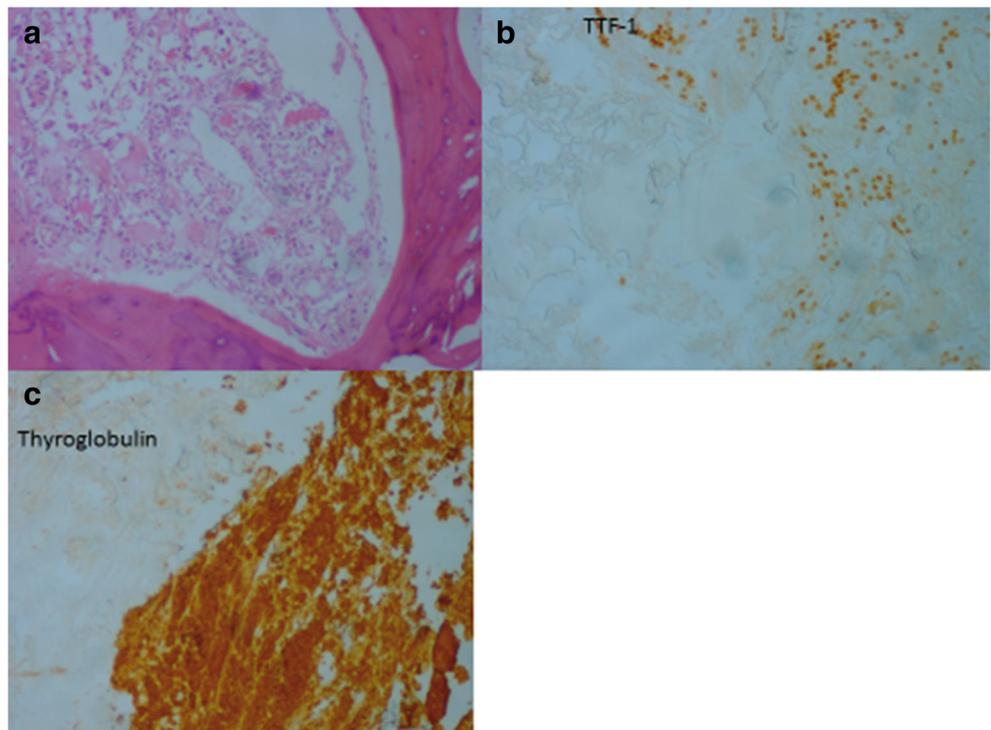


**Fig. 3** a and b section showing an encapsulated tumor with microfollicular architecture (Fig. 1a H&E;  $\times 40$ ) (Fig. 1b;  $\times 100$ ), c–e section showing cytoplasmic clearing (*arrow*), grooving (*star*) and intranuclear inclusion (*arrowhead*). (H&E;  $\times 1000$ )

The follicular variant of papillary thyroid carcinoma is characterized by the presence of tumor cells arranged in a follicular pattern with nuclear characteristics of papillary thyroid carcinoma (Figs. 3 and 4). The follicular variant of

papillary thyroid carcinoma has been shown to demonstrate more capsular invasion, angioinvasion and haematogenous spread and distant metastases than its counterparts [6].

**Fig. 4** a showing vertebral metastasis of FVPC. (H&E;  $\times 100$ ), b and c showing immunopositivity for TTF-1 and thyroglobulin respectively. (DAB;  $\times 100$ )



## Conclusion

We report a rare Follicular variant of papillary thyroid carcinoma presenting with cervical cord compression and managed with preoperative embolization, thyroidectomy, cervical cord decompression-stabilisation, Radioiodine ablation & Radiation. A prompt management of primary disease and aggressive approach to metastatic lesion may prolong survival and allow favorable prognosis in these patients. These patient needs to be under close follow-up and regular imaging surveillance.

**Acknowledgments** The authors would like to acknowledge the contribution of Dr. Jatin Gandhi in helping us with the photographs of the slides.

**Ethical Statement** The authors disclose no conflicts of interest.

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