



## 'METASTASIS DETECTING AN UNKNOWN PRIMARY – HIGHLIGHTING THE IMPORTANCE OF THYROID EVALUATION IN SPINAL AND SOFT TISSUE LESIONS' – REPORT OF A RARE CASE AND REVIEW OF LITERATURE

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<p><b>Article Info</b></p> <p>Received 06/09/2016 Revised 10/09/2016 Accepted 15/09/2016</p> <p><b>Key words:</b> Thyroid, Follicular thyroid carcinoma, Bone metastasis, Spine metastasis.</p>	<p><b>ABSTRACT</b></p> <p>Follicular Carcinoma of thyroid rarely manifests as a distant metastatic lesion, and when presents, is usually found in flat bones. A soft tissue metastasis along with metastasis to bone has rarely been reported in literature so far. Clinical presentations usually delay the detection and management of patients with distant metastasis from thyroid cancers. There is limited information about the treatment and prognosis of patients with follicular thyroid cancer with metastasis. We, hereby, present a case of metastasis of follicular thyroid carcinoma to cervical spine and soft tissue around the iliac fossa due to its rarity and unique presentation.</p>
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### INTRODUCTION

Thyroid cancer accounts for approximately 1% of all new malignancies, around 1.5% in females and 0.5% in males. Out of all thyroid cancers, 90% are differentiated thyroid cancers (DTC), <5% are undifferentiated or anaplastic cancers and the rest 5-10% are Medullary thyroid carcinomas. Among the differentiated thyroid malignancies, 70-75% are Papillary thyroid cancers (PTC), 15-20% are Follicular thyroid cancers (FTC) and the rest 2% include Hurthle cell cancers. Rarest of all are lymphomas and sarcomas of thyroid [1].

Follicular and papillary thyroid cancers are usually curable when detected at an early stage. As compared to papillary, follicular cancers are seen in older patients and are more commonly associated with high mortality and distant metastasis. At presentation, incidence of distant metastasis ranges from 1-3% whereas incidence after the initial treatment increases to 7-23% [2]. In 90% of cases, thyroid carcinoma simply present as thyroid

nodules. Rarely, the first manifestation is cervical lymphadenopathy (5%), or distant metastasis.

The most common sites of distant metastasis in order of frequency are lung, bone, liver and brain [2,1]. Bone metastasis is diagnosed clinically in 2-13% of patients with DTC.

Quan *et al.* (2012) reported 8 cases with spinal metastasis from thyroid carcinoma at the time of diagnosis out of which three of them had follicular thyroid cancer [3]. De Vries *et al.* (2008) reported all 10 cases of follicular cancer of thyroid presenting with spinal metastatic symptoms [4]. An unusual presentation of follicular thyroid cancer in the form of skull metastasis was reported by Chiafalo *et al* [1].

Metastasis of follicular thyroid cancer to soft tissue is rare. Ambikavathy Mohan described a patient with two soft tissue painless swellings in right occipitoparietal region and left scapular region showing thyroid follicular cells in microfollicular pattern [5]. Management of



metastatic thyroid cancer requires a multidisciplinary approach and multimodality treatment [2].

### CASE REPORT

A 68 year old male patient came with complaints of increasing cervical pain and gradual restriction of neck movements since 10-15 days as an initial presentation. Patient had no complaints specific to the thyroid or any palpable neck swelling. His thyroid function tests were within normal limits.

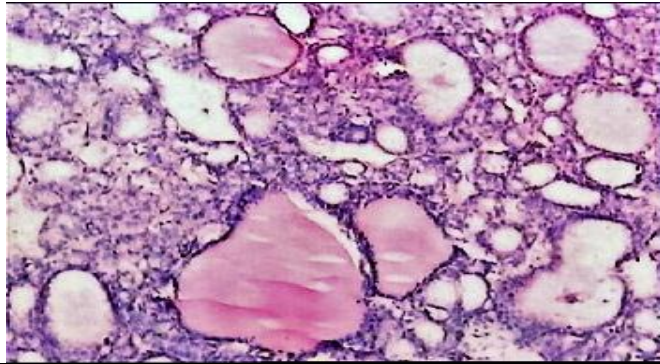
CT (Spine) revealed a poorly defined mass at the level of C6-C7 level and in the soft tissue around the left iliac fossa suggestive of ?metastasis of an unknown primary. Surgical excision from both the sites was

performed and sent for histopathological examination in 2 separate containers labelled as bony bits from C6-C7 and soft tissue bits around left iliac fossa respectively. Entire tissue was processed as per the standard protocol.

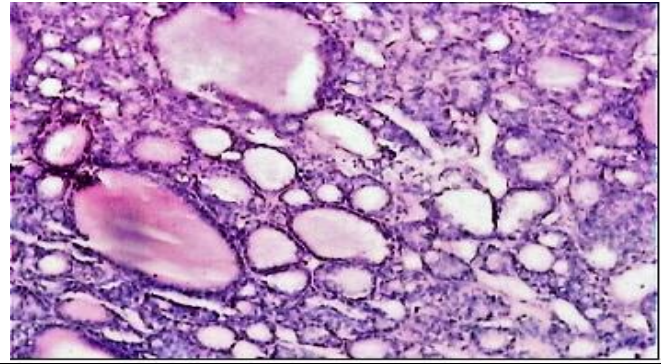
### Microscopy

Microscopic features of the tissue in both the containers revealed identical histomorphology. Sections showed thyroid follicles lined by flat to cuboidal cells displaying mild pleomorphism and overlapping nuclei. At places, colloid was seen in few of the follicles. These follicles were infiltrating into the surrounding structures. (figure 1 & 2).

**Fig 1. H&E Stained section from bony bits of c6-c7 vertebrae**



**Fig 2. H&E Stained section from the left iliac fossa soft tissue.**



### Impression

Based on the above microscopic picture, metastasis of follicular carcinoma to the C6-C7 spine as well as to the soft tissue around left iliac fossa was given.

### DISCUSSION

Tumors metastasizing to bone are uncommon and a thyroid origin is considered extremely rare [6]. Out of the two differentiated thyroid cancers, higher prevalence of bone metastasis occurs in follicular (7-20%) than in papillary carcinoma (0-6%) due to its more aggressive nature of vascular invasion [5, 6]. Patients presenting with distant metastasis to bone and soft tissues in the absence of goiter, are rare as seen in our case.

Thoracic spine is most commonly affected as a site of metastasis (60-80%), followed by lumbar spine (15-30%) and least commonly affected is cervical spine (<10%). Vertebral body (85%) is the commonest site for initial involvement, mainly the posterior aspect (66%). The preferred route of spread of tumor to the spine is via arterial or venous especially the Batson's venous plexus resulting in multifocal lesions. Other routes of metastasis are either direct infiltration from paraspinal disease or less commonly, through CSF [1]. Our case shows multifocal lesions affecting the cervical spine and soft tissue around left iliac fossa.

Follicular carcinoma predominantly affects middle-aged females. However, features of metastasis in the absence of a thyroid swelling are seen in 4<sup>th</sup> & 5<sup>th</sup> decade [5, 1]. Spinal metastasis shows a male predominance due to higher prevalence of lung and prostate cancer usually in the 4<sup>th</sup> – 7<sup>th</sup> decade of life [1]. Our patient is a 68 year old male with no obvious thyroid swelling.

Classical clinical symptoms of spinal metastasis develop with the progression of metastatic disease and are consequences of infiltration or compression of paravertebral, osseous and/or neural tissue. The chief presenting symptom of spinal metastasis is pain seen in about 83-95% of cases. Pain is often localized, of gradual onset but may progress to shooting pain due to impingement or irritation of nerve root either by direct compression by tumor mass or an induced pathological fracture. Advanced cases can present with sensory and motor dysfunction [1]. Our patient presented with cervical pain and restriction of neck movements that indicated impingement of a cervical nerve root. This was due to direct effect by the metastatic deposits as no pathological fracture was detected on CT.

In such patients with no obvious thyroid swelling, a full diagnostic workup should be done to find out the level of vertebral column involvement, spinal instability



and the degree of neurological impairment. These parameters help in deciding whether to operate or not. X-rays are insensitive in early spinal lesions as 30-50% demineralization of bone is required for it to be apparent on the film. Therefore, CT imaging in an excellent radiological investigation with 90% sensitivity and 100% specificity in identifying spinal metastasis from highly vascular primary malignancies such as that of thyroid. MRI is still considered the gold standard. Other tests are bone scintigraphy (sensitivity of 62-89%), single-photon emission computed tomography (SPECT) and finally CT-guided biopsy which is of utmost importance in staging the tumor and further planning of treatment for the patient [1].

On microscopy, an index of suspicion should be maintained to recognize the typical features like follicular arrangement, presence of colloid, etc. characterizing a metastasis of follicular thyroid carcinoma, as seen in our case.

Treatment of such cases with metastatic thyroid lesions requires a multimodal approach. If resectable, a total thyroidectomy is performed for the primary tumor followed by surgical removal of resectable metastatic lesions and radioactive iodine therapy. Bone metastasis requires an External beam Radiotherapy (ERBT) as well, although it is only proven to improve local control of pain

in selected cases and has no real benefit in metastatic lesions that concentrate radioiodine [5, 2]. However, the quality of life and prognosis following all such complicated treatment options should be carefully taken into consideration [5].

## CONCLUSION

Patients with follicular thyroid carcinoma may be asymptomatic and present with features of distant metastasis. Therefore, clinical approach should rely on a multidisciplinary teamwork based on disease presentation and prognosis. Since a definitive cure of a metastatic thyroid cancer is rarely achievable, one should instead aim to manage the local control of disease, its symptoms and improvement in survival.

In the present case, the important role of a pathologist in diagnosing an unknown primary lesion on histopathology need not be emphasized any further.

## ACKNOWLEDGEMENT

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## DECLARATIONS OF INTEREST

No Conflicts of Interest to declare. No funding was required.

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