

**Follicular carcinoma of thyroid presenting as widespread metastases**

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Received: 27-07-2018 / Revised: 28-08-2018 / Accepted: 18-09-2018

**ABSTRACT**

Follicular carcinoma of thyroid is the second most common thyroid carcinoma accounting for 10-20 % of all thyroid malignancies, most commonly seen above 40 years of age. Distant metastases at the time of diagnosis is 11-20 %, usual presentation is asymptomatic solitary intrathyroid nodule. Its metastases is hematogenous, lung and bone are most commonly affected. Skull metastases is the unusual site of presentation. The present case of 60 year female presenting with skull, chest wall swelling, spine, lung metastases but asymptomatic thyroid lesion, is unusual.

**Keywords:** Follicular carcinoma, thyroid, skull & chest wall metastases.

**Introduction**

Follicular carcinoma of thyroid is the second most common thyroid carcinoma after papillary carcinoma. It accounts for 10-20 % of all thyroid malignancies and is most commonly seen above 40 years of age [1]. Its usual presentation is asymptomatic solitary intrathyroid nodule. It metastasizes hematogenously, most commonly observed via the systemic circulation or the paravertebral plexus. Lymphatic spread is less common but is also possible. Lung and bone are most commonly affected. Distant metastases at the time of diagnosis are reported in 11-20 % of patients [2], less than 1 % is seen in patients < 45 years of age. There are few case reports of Follicular carcinoma causing unusual bony metastases such as skull [3], mandible [4], maxilla [5], spine [6] and orbit [7]. Synchronous lung metastases in Follicular carcinoma have been reported in about 20 % of cases, with mean age of 50 years at presentation [8]. Present case had unusual primary presentation with metastases in skull, chest wall, spine, lungs and no primary symptoms of thyroid.

**Case report**

A 60 year old female presented in OPD with swelling over left side of skull, left chest wall swelling and pain in the back.

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After clinical evaluation CT scan was advised for evaluating extent of bony involvement. CT scan showed lytic destructive lesion heterogeneously enhancement in right side of sacrum [ Fig 1], D 10, D 12 vertebral body, 2<sup>nd</sup> and 3<sup>rd</sup> rib on left side with intrathoracic and intercostal lytic destructive lesion [Fig 2], 47x35x44 mm involving clivus, pituitary fossa with bony expansion as well as nasopharynx, sphenoid sinus with extension into pre / parasellar and left cavernous sinus [ Fig 3]. There were subcentric cervical lymph nodes along with jugular chain, 11 x 10 mm left axillary lymph node, reticulo nodular opacities in bilateral lung parenchyma.

Fine needle aspiration was taken under ultrasound guidance from left chest wall swelling. The smears were air dried and stained with Giemsa stain which showed round cells in microacinar pattern and pinkish homogenous material in background [Fig 4]. Cytomorphological diagnosis of metastatic Follicular carcinoma of thyroid was made in view of cytomorphology. Ultrasonography of neck showed 1.5x1.5 cm calcified lesion in right lobe of thyroid. FNAC from thyroid nodule did not yield cellularity as it was calcified. Ultrasonography of abdomen was done which showed no metastases in liver or other abdominal viscera. Core needle biopsy from chest wall swelling was done to confirm the cytological diagnosis by histomorphology and Immuno Histochemistry. H & E stained slides of the biopsy showed closely packed follicles some of which contained colloid. Tumor cells had round to oval nuclei showing minimal atypia and vacuolated pale eosinophilic cytoplasm. [ Fig 5] Histological diagnosis

of metastatic Follicular carcinoma of thyroid. IHC markers CK, TTF-1, PAX-8, Thyroglobulin, CK 7 showed diffuse strong positivity in tumor cells [ Fig 6-8]. Synaptophysin was negative, Ki 67 showed 01 %

positivity. Thus a diagnosis of Metastatic Follicular carcinoma of thyroid was established.

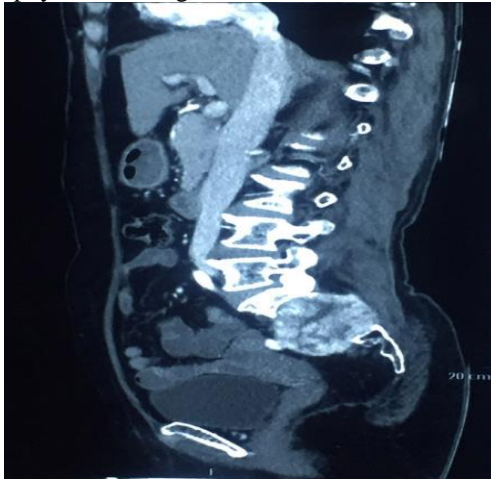


Fig 1:CT Scan of lytic lesion in right side sacrum



Fig 2:CT Scan of left chest wall swelling, 2<sup>nd</sup> and 3<sup>rd</sup> rib

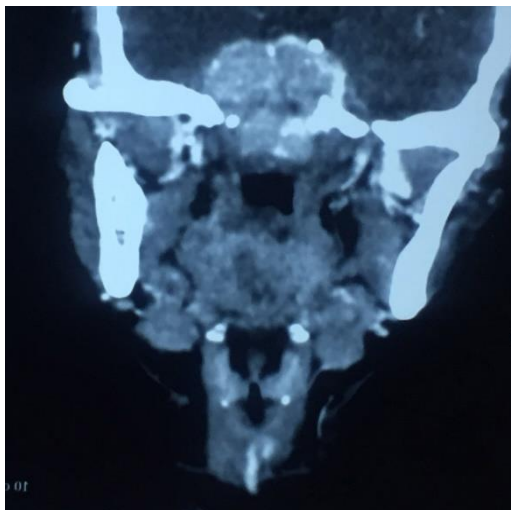


Fig 3:CT Scan of lesion in pituitary fossa, extending into nasopharynx, sphenoid sinus cells

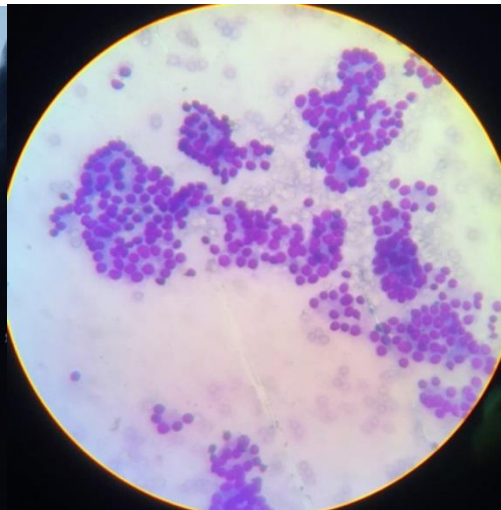
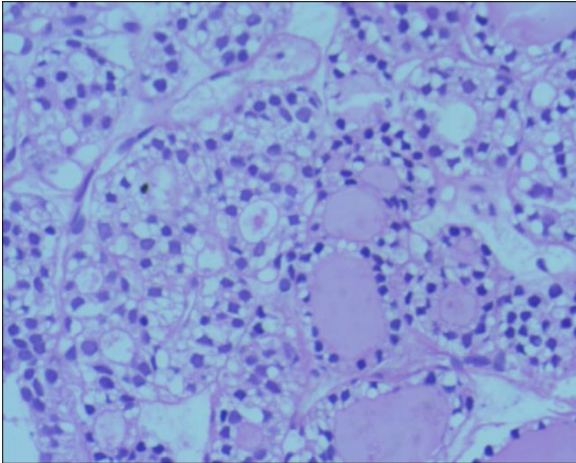
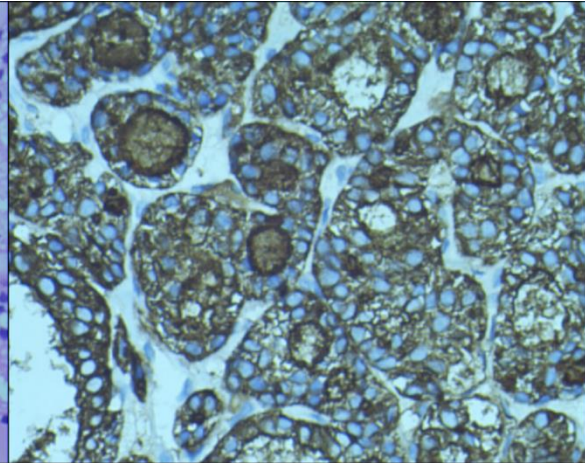


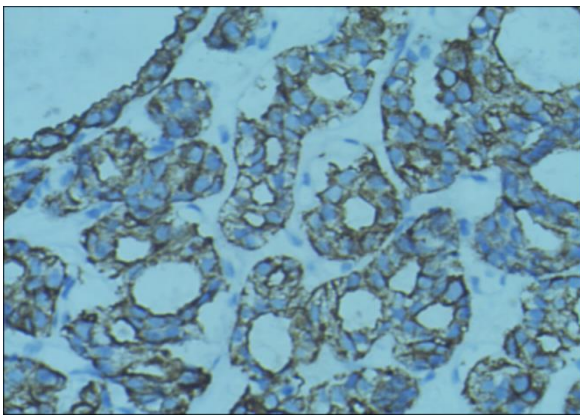
Fig 4:Giemsa stain, 40 X, Cytosmear shows microacinar pattern of round cells and pinkish background



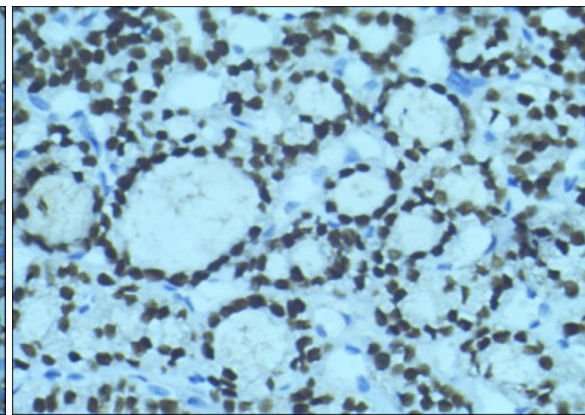
**Fig 5:Biopsy, H &E , 40 X, acinar pattern with positivity in tumour cells**



**Fig 6:Thyroglobulin, 40 X, diffuse strong colloid**



**Fig 7:CK 7 , 40 X, Diffuse strong positivity in tumour cells**



**Fig 8: TTF1, 40 X, Diffuse strong positivity in tumor cell**

## Discussion

Incidence of Follicular carcinoma thyroid is less than Papillary carcinoma but FC accounts for more deaths than PC [9]. Follicular carcinoma occurs in older age, has hematogenous spread, is more aggressive unlike papillary carcinoma which presents in younger age, has lymphatic spread and is less aggressive than FC [10,11]. FC is the second most prevalent of thyroid carcinomas with an incidence of 10-20%. Hematogenous metastases are commonly to lung, bone, other solid organs. Lymphatic spread is seen in 10% cases of F.C. Patients with differentiated thyroid carcinoma (DTC) have a 10 year survival rate of 80-95%. However, 10 year survival rate is 4% with presence of distant metastases [12]. Bone metastases in F.C. occurs in 7-28% of patients involving long bones such as femur and flat bones mainly pelvis and sternum [13].

Staging of Follicular carcinoma thyroid is based on age of the patient. Older than 45 years of age and younger than 45 years of age. Staging for patients younger than 45 years, it is stage I if carcinoma is confined to only the thyroid with no lymph node involvement or metastases and stage II for patients with distant metastases.

Adverse prognostic factors in patients with metastases to lung &/or bone are multiples of sites, older patients age at time of metastases and absence of radioactive iodine uptake by the metastases [14]. There are few case reports for differentiated thyroid carcinoma metastasizing to uncommon sites like brain, eye, parapharyngeal, breast, esophagus, liver, pancreas, intestine, renal adrenal, ovarian, uterus, muscle and skin [15]. Brain metastases are extremely rare, occurring more frequently in the cerebral



hemispheres, less frequently in the pituitary, cerebellar hemisphere, cerebello-pontine angle. Brain metastases in most cases are asymptomatic, with few having symptoms like headache and numbness of feet. Brain metastasis is a negative prognostic factor with a tendency for recurrence [15]. F.C. primarily metastasizes via the blood whereas P.C. primarily metastasizes via the lymphatic system [16] which explains the lower incidence of cervical lymphadenopathy in F.C. than in P.C. In the present case, the cervical lymph nodes were not infiltrated. FC has greater preponderance than PC for cutaneous metastases. Common sites of cutaneous metastases are scalp, face, chest wall, abdomen, back, thigh, pelvic region as tumor emboli are trapped from circulation for formation of metastatic foci [17].

### Conclusion

FNAC is a cost effective and minimally invasive method of detecting malignancy in thyroid nodules. FC cannot be confirmed on FNAC but in the present case malignant behavior of FC was confirmed by cytomorphology of metastatic lesion. FC often presents at a higher tumor stages. As in present case, presenting symptom was swelling in skull and chest wall. FNAC from chest wall lesion showed metastases of Follicular carcinoma of thyroid though FNAC from intra thyroid lesion did not yield cellularity as it was calcified. The cytological diagnosis was confirmed histologically and by Immunohistochemistry by taking core needle biopsy of chest wall lesion.

The present case was diagnostically challenging as there were no symptoms of the primary tumor.

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**Conflict of Interest: None**

**Source of Support: Nil**