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Follicular Thyroid Skull Metastasis Masquerading As Intra Diploic Meningioma: An Interesting Case

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Abstract:
Background:
Follicular thyroid carcinoma is a malignant epithelial tumour arising in both eutopic thyroid gland and/or heterotopic thyroid tissue. In thyroid cancer only 2.5 % cases show skull metastases. Very few cases have been reported with occult follicular thyroid carcinoma presenting as skull metastasis
Report:
Here in this case a 55 year old lady presented with progressive, painless mass in right frontal region reaching upto midline later on associated with headache and no neurological deficit with history of thyroid surgery 15 years back with no reported malignancy in the tissue analysis that time. Lesion with typical findings of an intradiploic meningioma of right frontal region on radiology as well as macroscopic appearance on intraoperative findings which has been found to be metastatic follicular carcinoma thyroid on final histopathological analysis. It's a rare presentation.
Conclusion:
Single tumours, confined to the dura with osteolytic features often favour a metastatic focus in the skull. Differential diagnosis of metastatic follicular thyroid carcinoma should be kept in mind always when dealing with osteolytic skull masses

Key Words: *Follicular carcinoma thyroid, metastasis, skull lytic lesions, intradiploic meningioma.*

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I. Introduction

Follicular carcinoma of thyroid is a well differentiated thyroid malignancy. It is slow growing in nature and tends to metastasize to remote organs in advanced stage by hematogenous route. Metastatic tumours to skull are most often from lung, breast, and prostate malignancies and rarely from thyroid cancers. [(1)] According to literature, the reported incidence of distant metastasis from thyroid malignancies is between 10% and 25% as a whole [(2)], while specifically for skull metastasis as per the series of Nagamine*et al.* its 2.5% of cases. [(3)]Isolatedforms have radiological features that strongly suggest a primary tumour, and furthermore, theirmacroscopic appearance during surgery may even be taken for a meningioma.[(4)] We report a case of follicular thyroid metastasis to skull bone masquerading as intra diploic meningioma radiologically and macroscopy.

II. Case Report

A 55 year old female resident of Delhi, educated up to 12th standard home maker by occupation and on mixed diet in eating habits presented with chief complaints of palpable swelling in right high frontoparietal region for last 8 months and headache for last 3 months.

The swelling was located in right high frontoparietal region near midline, insidious in onset, gradually progressive in size from a smaller size to its current size as per the patient associated with no pain over swelling. No h/o any discharge, warmth over swelling, any swelling in other parts of body, any vomiting, fever or seizure episodes, any change in skin overlying the swelling, any loss of weight or appetite.

Patient also complaints of headache for last 3 months insidious in onset, to start with headache was mainly in right frontoparietal region later on progressed to be holocranial at presentation, gradually progressive in nature, dull aching, moderate intensity, on and off in nature, relieved with analgesic medications, non pulsatile, no diurnal variation, no aggravating factor, not associated with any history of unconsciousness, nausea, vomiting, speech disturbances, numbness, paraesthesias, photopsia, blurring of vision, congestion or any aura, fever, any weakness.

There has been history of no involuntary movement of body parts at rest or doing activities, no numbness or changes in sensations, no seizure episodes, no involuntary passage of urine/ faeces, no changes in social behaviour/personality changes, no difficulty in speech, no hearing difficulties/impairment, no difficulty in walking, no recent weight loss/weight gain, no cough/ fever/ chest pain/ palpitation, no haemoptysis/ haematuria/ Malena and no episodes of remission/ recovery of above symptoms

There was a past history of thyroid surgery 15 years back but no documents available at presentation but according to patient it was some swelling of thyroid and it was not documented as malignancy in her reports.

No history of any chronic illness, any drug allergy, any chronic drug intake. No significant family history

She had attained menopause 5 years back.

On Examination, the patient was average built with no cyanosis/ icterus/pallor/edema/ lymph node enlargement. A scar mark of previous surgery over neck, no localised palpable swelling in neck. Vitals were stable with rest of the systemic examination essentially normal. No neurological deficit was present on examination.

Over local examination, a single swelling with rounded margins, smooth surface over right high frontoparietal region just reaching beyond the coronal suture and crossing the midline over its medial limits with size 6x4 cm, soft to firm in consistency with restricted mobility on transverse and vertical plane, non tender, non pulsatile in character, non yielding on pressure, non compressible and not reducible, no cough impulse, no bruit on auscultation, with overlying skin normal in texture, temperature and appearance with overlying skin not absolutely free from swelling, underlying palpable bony defect felt at the margins of swelling.

All routine investigations including thyroid profile of the patient were essentially normal. Chest X ray was also normal. USG neck yielded bilateral thyroid lobe swelling about 1 cc in dimensions with increased vascularity but planes were preserved and no invasiveness documented with few sub centimetric left cervical lymph nodes documented. FNAC from this region under USG guidance documented to be a benign lesion.

Radiologically, CT showed a contrast enhancing lesion at high frontal region over right side just reaching the midline, expanding in between both the tables of right high frontal bone with lysis of bone reaching over dura. (Figure 1)

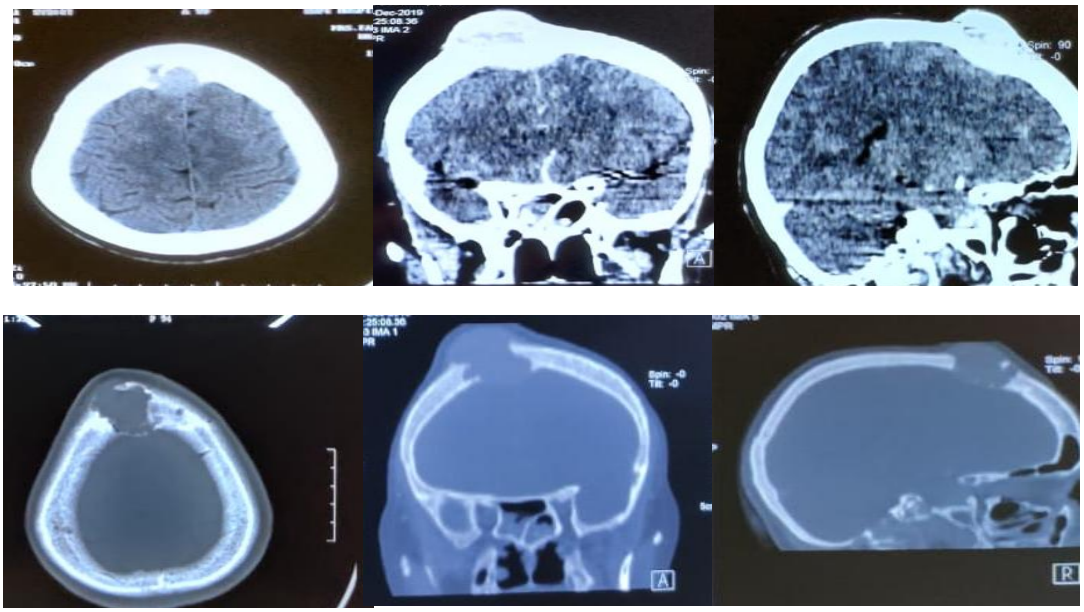

Figure 1: CT imaging of the lesion showing osteolytic lesion over right frontal region expanding both the tables reaching up to underlying dura.

CEMRI brain (figure 2) showed presence of contrast enhancing lesion in midline more over right side reaching up to the duramatar and also seems to be reaching upto anterior superior sagittal sinus (SSS) although on MR Venography of brain no flow void seen in SSS suggesting that sinus was pushed by the tumour but not involved by tumour invasion.

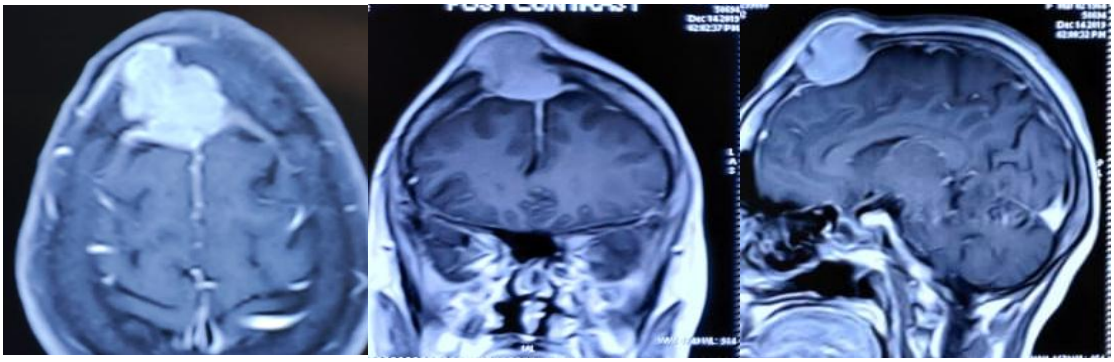

Figure 2 : CEMRI brain showing contrast enhancing well defined lesion in midline more to right side reaching upto dura and anterior superior sagittal sinus.

Based on clinical scenario and imaging finding our first differential was meningioma with intradiploic origin with in the tables of frontal bone mainly on right side.

During surgery, a curvilinear incision was given and skin flap was raised, tumour was lying just below the skin, bone was breached and involved, a well defined totally extradural lesion was there with firm consistency, high vascularity. There was a small rent in the outer wall of sinus on removal of tumour and this rent was repaired primarily. (Figure 3)

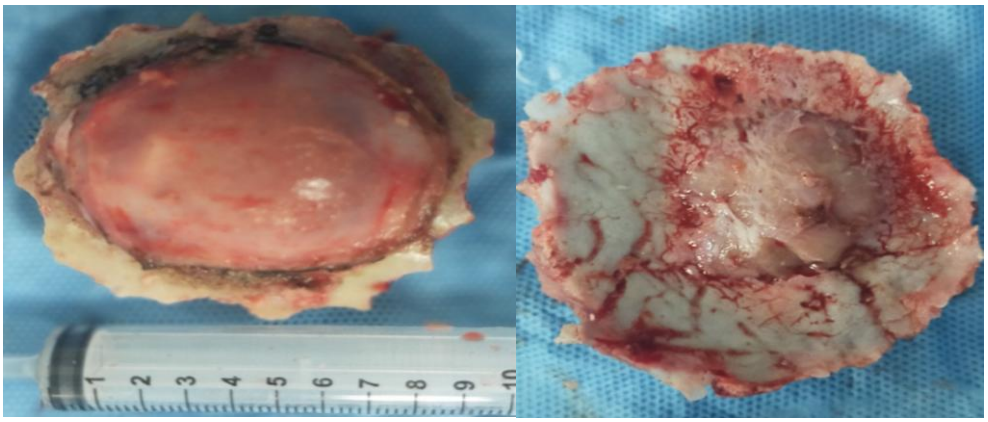

Figure 3 : Showing operative picture of excised lesion with superficial tumor with lysis of bone and tumour also breaching the inner table to compress over underlying dura.

Tissue sent for histopathology showed the result of presence of thyroid follicle of various sizes filled with colloid suggestive of a metastasis from follicular carcinoma thyroid. (Figure 4)

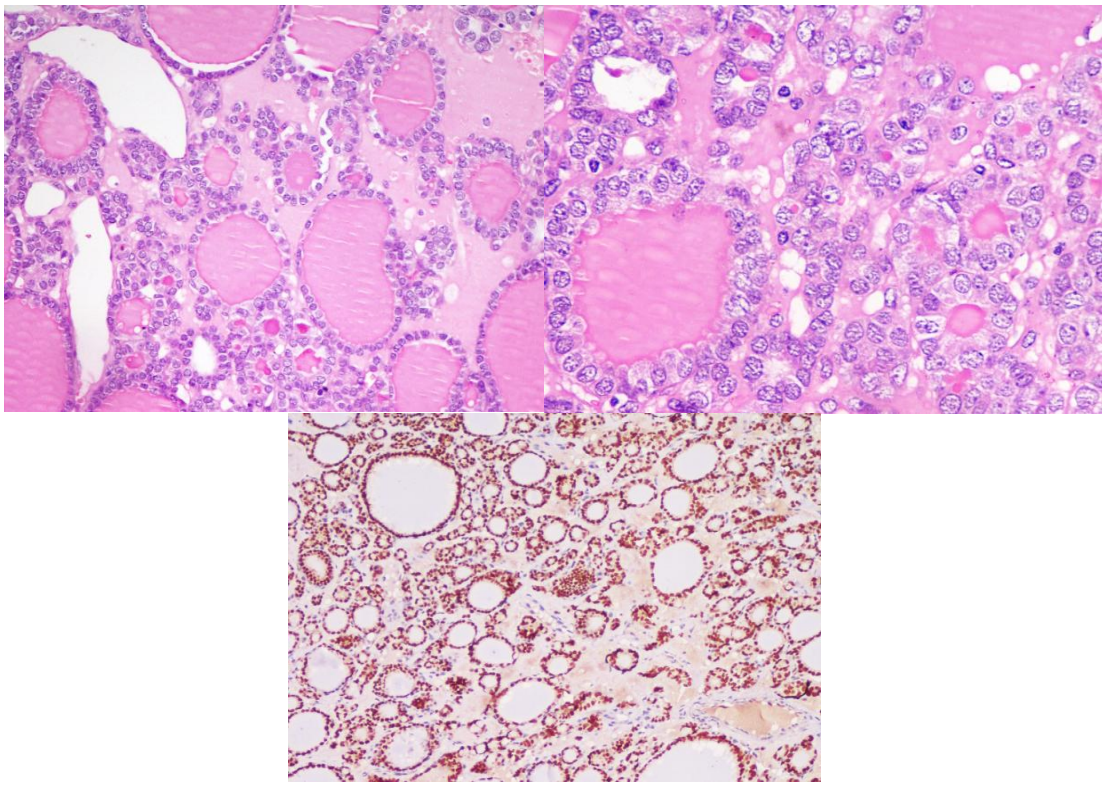

Figure 4 : HPE slides showing colloid filled follicles of different sizes suggestive of thyroid follicles and lesion being a metastasis from thyroid follicular carcinoma. IHC with thyroglobulin showed positive staining.

After this finding a general surgery opinion was sought to look for primary thyroid and patient was subjected to PET CT which shows presence of hot spot in thyroid region (SUV max being 7.9 and 2.5 over left and right side respectively). Rest no other suspicious lesion was there in whole body. Patient was transferred under general surgery care after uneventful recovery from our side and later on subjected to completion thyroidectomy with presence of diffusely enlarged gland at surgery with not well defined tissue planes. Tissue analysis of this sample suggested of follicular carcinoma thyroid with no tumour tissue at resected margins of the sample. Patient was planned for a radio iodine scan on a later date post discharge with uneventful recovery for thyroid surgery but patient was lost in follow up after discharge post thyroid surgery.

III. Discussion

Follicular thyroid carcinoma is a subtype of thyroid cancer with incidence of about 10% [(2)]of all thyroid malignancies, which is slow growing and is associated with a good prognosis. However, in the presence of distant metastasis the prognosis is often poor.[5] Lung and bone are the two most common sites of metastases.[6] Bone metastases from follicular thyroid carcinoma tend to be multiple and more often to the ribs, vertebrae, and sternum.[7] Skull is a rare site for metastases; and if this occurs, are most commonly located in the occipital region. The most common route of spread of follicular carcinoma thyroid is hematogenous. Skull metastasis infact bone metastasis per se is commoner in woman as compared to men with increased prevalence in 5^{th} to 7^{th} decade of life. [(3)] Presenting features of skull metastasis usually include a palpable scalp tumour ,though unusual presentations with exophthalmos, disturbance of consciousness, hemiparesis, and headache have also been reported. These lesions are osteolytic on skull X-ray and CT scan and highly vascular on angiographic assessment. [(1,8)]

Radiological features of metastatic FTC are often difficult to distinguish from meningioma, as both have overlapping features. These lesions are osteolytic on X-ray and CT scan, and show high vascularity on angiographic assessment. On MRI single lesions, invading the subcutaneous tissue but limited by the duramater, round or oval lesions with osteolytic features, favour a metastatic carcinoma over meningiomas [(4,9).]

In our case, patient presented with painless progressive palpable skull mass with history of thyroid surgery with no proven malignancy in previous biopsy and no distant metastasis to other part of body till date while she was operated 15 years back for thyroid swelling. No lymph node involvement was found on imaging and final tissue analysis with skull lesion showing typical features of thyroid metastasis which is not only a rare phenomenon but also resembles the radiological and macroscopic appearance of meningioma. For single skull lesion however treatment recommended in excision only however external beam radiotherapy and radio iodine

have been tried for multiple metastasis which was not there in our case. Follicular carcinoma thyroid is probably induced by chronically elevated thyroid stimulating hormone (TSH) levels, although these were normal in our case. There may be a possibility of subtle changes in residual thyroid tissue which later converted to neoplastic cells and first presented as a skull metastasis only which again makes this case a unique and noteworthy.

IV. Conclusion

Skull metastasis of follicular carcinoma thyroid can mimic meningiomas both clinically and on neuroimaging. Single tumours, confined to the dura with osteolytic features often favour a metastatic focus in the skull. Differential diagnosis of metastatic follicular thyroid carcinoma should be kept in mind always when dealing with osteolytic skull masses. The optimum treatment being resection for solitary lesion whereas widespread and multiple lesions respond to external beam radiotherapy and radioiodine.

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