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Case Report

Cytodiagnosis Of Follicular Carcinoma Thyroid From Metastatic Sites: A report Of Three Cases

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ABSTRACT

Background: Follicular thyroid carcinomas (FTC) usually have a relatively benign clinical course, with good long-term prognosis. The most common sites of metastases are lung and bone. Fine needle aspiration cytology (FNAC) plays an important role in the diagnosis and early detection of metastatic FTC. It is important to identify the presence of distant metastasis as it is the most important prognostic indicator (associated with 50% mortality). **Case history:** We report three cases who presented with multiple swellings and bony involvement at different sites. In all the three cases, aspiration cytology revealed the diagnosis of metastatic follicular thyroid carcinoma. **Conclusion:** Cytologic diagnosis of metastatic FTC has been reported rarely. Epithelial cells arranged in repitative microfollicular pattern aids in making the diagnosis of metastatic FTC. It's significant as this has a direct bearing upon the management of the patient. Hence more awareness is required for both pathologist and clinicians regarding the diagnosis of metastatic FTC.

Key words: Occult primary, Metastasis, Follicular thyroid carcinoma, FNA, Cytodiagnosis.

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INTRODUCTION

Thyroid cancers account for around 0.5% of all cancers in males and 1.5% of all cancers in females. FTC is the second most common cancer of thyroid gland after papillary carcinoma. A common mode of presentation is a solitary thyroid nodule. Reported incidence of distant metastasis is between 11 to 25%, but it is very uncommon for the disease to present with distant metastasis at initial presentation itself[1] FTC commonly metastasizes to lungs, bones, brain, and liver. Skeletal metastasis of FTC are usually multiple and have a predilection for shoulder girdle, sternum, skull and iliac bones.[2] Rarely they can be the only presenting symptom.[1,3] When diagnosed early, FTC with metastatic disease has relatively better prognosis as compared with other forms of metastatic malignancies.[3] We report three cases of metastatic FTC which were diagnosed by FNAC.

CASE REPORT

Case-1

A 58-year-old female presented with complaints of swelling over the occipital area and back pain since 10 months [Figure 1a]. On examination, the occipital swelling measured approx. 5 x 4 cm, firm, non-tender. There was no history of fever weight loss or trauma. X-ray of the skull showed irregular osteolytic lesion in the right occipital area with separation of diploic space and enlarged feeding vessels [Figure 1b]. X-ray spine revealed collapse of D8 vertebrae [Figure 1c]. Radiologic features were suggestive of metastases/ lymphoma.

Case-2

A 60-year female came to OPD with anterior neck swelling with a huge mass over left arm since 1 year. On examination the thyroid swelling was about 11 x 10 cm nodular, firm, moves with deglutition, non-tender. The left arm swelling was measuring 15 x 13 cm, with engorged veins in the overlying skin, tender, soft, with restricted movements of left arm [Figure 2a]. X-ray left shoulder joint shows a lytic lesion with erosion of the cortex. Shows a expansile lytic [Figure 2b]. There was no history of trauma.

Case-3

A 54-year-old male presented with an enlarged thyroid gland and swelling over frontal area of the scalp. Thyroid swelling was present since 3 years and swelling over scalp was since 6 months. X-ray revealed a lytic lesion in frontal area.

FNAC was done in all three cases from the swellings and thyroid. The slides were stained with Diff-quick and H&E stains. Cytosmears showed many sheets of thyroid follicular cells having monotonous enlarged hyperchromatic nuclei, repetitive micro-follicular Marginal vacuoles [Fire flare] appearance was seen in some follicular sheets [Figure 3]. Diagnosis of Metastatic FTC was given. Following which total thyroidectomy was done and the post-operative period was uneventful and levothyroxine suppression along with nuclear iodine scan was done which

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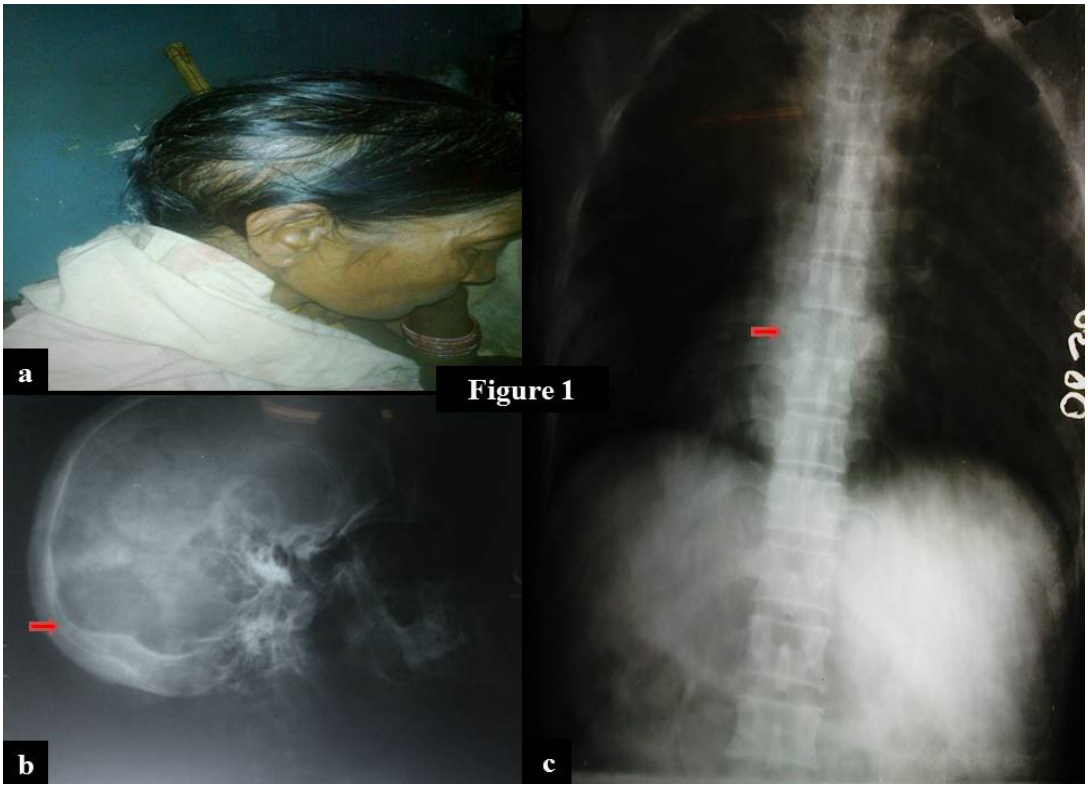

Figure 1 a,b,c: 58-year-old female with swelling over the occipital area. X-ray of the skull showing irregular osteolytic lesion in the right occipital area with separation of diploic space and enlarged feeding vessels. X-ray spine shows collapsing D8 vertebrae.

Figure 2: 60-year female with anterior neck swelling and huge mass over left arm. X-ray left shoulder joint shows a lytic lesion with the erosion of the cortex.

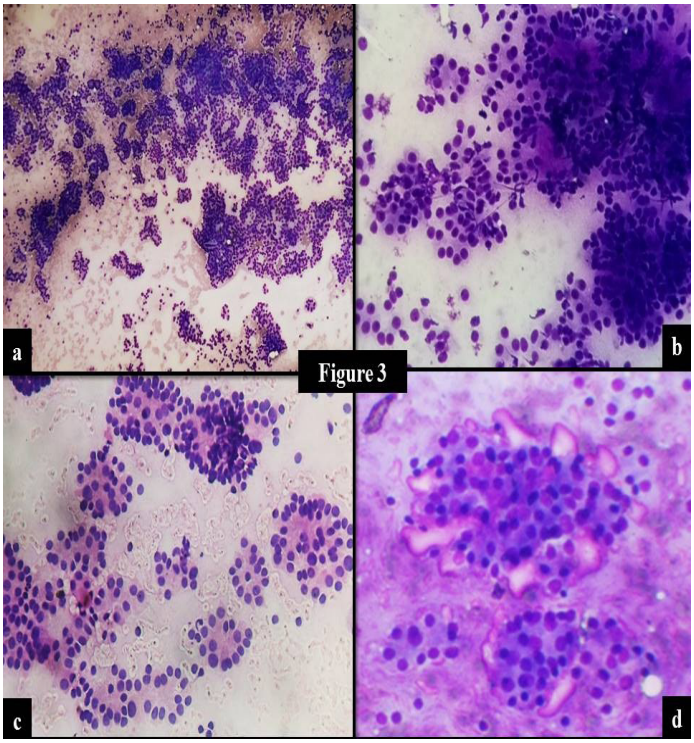

Figure 3: Cytosmears are cellular (3a) showing many syncytial sheets of thyroid follicular cells having monotonous enlarged hyperchromatic nuclei, repetitive micro-follicular pattern(3b,c) and some TFCs with marginal (fire-flare) vacuoles (3d). (Geimsa, x400)

showed iodine avid metastasis. Hence the patients were subjected to ablation with radioactive iodine. All the patients were kept under follow up and routinely assessed with clinical examination and serial thyroglobulin estimation.

DISCUSSION

Thyroid carcinomas are the most common endocrine cancers, the prevalence of which is about 5% of thyroid nodules.[4] The most common type is papillary carcinoma and the second being follicular carcinoma.[5]

Follicular carcinoma, when compared to papillary carcinoma, occurs in older patients, has hematogenous spread rather than lymphatic and FTC has a higher propensity to have distant metastasis at presentation.[5,6] These are slow growing tumours and are associated with a favourable prognosis except when they present with metastasis, which is usually to lungs or bones. Bone metastases from FTC tend to be multiple and more often to the ribs, vertebrae and sternum. Skull is a rare site for metastases but if at all occurs occipital region is the most common location of the skull and usually presents as a soft, painless lump.[7] Metastatic tumours to the skull are most often from malignancies of the lung, breast and prostate and rarely from thyroid cancers. In a series of 473 patients with thyroid cancers, Nagamine et al reported skull metastases in only 2.5 to 5.8% of cases.[8] In almost all the reported cases of follicular thyroid carcinoma metastasizing to the skull, metastases occurred long after the diagnosis and institution of treatment for primary cancer and there have been only a handful of cases in the literature in which solitary skull metastasis was the presenting feature of an occult FTC.[9] Two well-defined anatomic-clinical forms of FTC are known: an encapsulated or microinvasive form that has little tendency to metastasize and a widely invasive form with marked vascular invasion with a tendency to metastatic dissemination. Minimal invasive follicular carcinomas have a very low long-term mortality (3–5%) with survival curves approaching those of the normal population; widely invasive follicular carcinomas, on the other hand have a long-term mortality of about 50%, with a high probability of metastatic disease.[1-3] FTC can have a follicular (micro, macro or normo-follicular) or trabecular pattern on cytosmears. The cells generally show scant or moderate nuclear atypia and the criteria for malignancy rely on demonstration of capsular or vascular invasion or metastases at a distance.[10,11] The presence of abundant blood in the smears rather than being related to poor technique may be of help in the cytodiagnosis because follicular neoplasms are highly vascularized.[10]

FNA serves as a screening tool for the diagnostic triage of follicular lesions. It should exclude those with a non-neoplastic diagnosis and select follicular neoplasms. The non-neoplastic cases do not require surgery but may require clinical and/or cytological follow-up to avoid false negative diagnosis. The neoplasms require surgical excision and histological examination to make the definitive diagnosis of an adenoma or carcinoma on the basis of the architectural features. The triage relies primarily on the appreciation of the degree of cellularity of the specimen and its relationship with the amount of colloid present.[12]

Histologically these lesions can demonstrate well differentiated follicular adenocarcinoma. Immuno-histochemical studies of Thyroid Transcription Factor-1 (TTF-1) and thyroglobulin (TG) are useful for distinguishing between metastasis from thyroid carcinoma and other adenocarcinomas. These lesions are osteolytic on skull X-ray and CT scan and highly vascular on angiographic assessment.[13]

The differential diagnosis of follicular neoplasm includes hypercellular nodules, follicular variant of papillary carcinoma, parathyroid adenoma/carcinoma and metastatic clear cell carcinoma of the kidney.[10,12]

Recently, the therapeutic approach to patients presenting with distant metastasis is essentially well defined. These include total thyroidectomy with radioiodine administration and TSH suppressive therapy.[5] Five-year survival for stage IV FTC is less than 50% compared to 95% for patients with tumor confined to the thyroid gland.

CONCLUSION

FTC occasionally presents as a metastatic disease with an occult primary. Metastatic thyroid carcinoma should be included in the differential diagnosis when evaluating a pulsatile lytic lesion of bone. Clinical examination, early detection and evaluation of thyroid nodules may help to diagnose thyroid cancer before distant metastasis occur.

ETHICS APPROVAL

All procedures performed in studies involving human partipitcants were in accordance with the ethical standards of the institutinal research committee.

CONSENT FOR PUBLICATION

Written informed consent was obtained from the patient for publication of case report & accompanying images.

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Not applicable

CONFLICT OF INTREST

No conflict of interest are declared.

AUTHOR'S CONTRIBUTIONS

TS carried out concepts & design, literature search, participated in clinical study, data acquisition, data analysis & manuscript preparation will stand as guarantor also. MP carried out concepts & design, literature search. AB participated in clinical study, manuscript review & data ac-

quisition. NP participated in concepts & design, manuscript review & data analysis. All the authors have read & approved the final manuscript.

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