Adrenal Mass: An Unusual Presentation of Metastatic Follicular Carcinoma of Thyroid

Mohshi Um Mokaddema, Fatima Begum, Nurun Nahar, Mizanul Hasan, Faridul Alam
National Institute of Nuclear Medicine and Allied Sciences, Dhaka, Bangladesh.

Address for correspondence: Mohshi Um Mokaddema, Medical Officer, National Institute of Nuclear Medicine and Allied Sciences, BAEC), BSMMU campus, Dhaka, Bangladesh, Telephone: 88 01711661696, Fax No. 8802 8625112, E-mail:mohshi_tithi@yahoo.com.

ABSTRACT

Patients with follicular carcinoma of thyroid may have asymptomatic involvement of adrenal gland and associated metastases to other organs, which may remain undetected for long time if not diagnosed, treated and followed up properly. A very rare case of adrenal metastasis from follicular carcinoma of thyroid, five years after total thyroidectomy is presented. The patient also had synchronous involvement of bones including an unusual site in upper end of left tibia. Here, emphasis is given on awareness of the possibility of unique metastatic deposits of follicular carcinoma of thyroid at unexpected sites as this has a significant impact on clinical decision-making and prognosis of the patients.

KEY WORDS: Thyroid gland, Follicular, carcinoma, metastasis.

INTRODUCTION

Papillary and follicular carcinomas of thyroid (PCT, FCT) are the most common differentiated thyroid carcinoma (DCT) (1). They are characterized by indolent biological behavior with good prognosis and survival rates. FCT is slightly more aggressive than PCT (2). FCT has a propensity for haematogeneous metastasis most commonly to lungs

and bone (usually found in flat bones) (3). However, rare site of metastases are liver, brain, skin and even adrenals (1).

Adrenal gland is an uncommon site for metastasis of FCT. Only five cases are documented in the literature (1). A rare case of metastasis of FCT presented as adrenal mass along with an unusual site of bone metastasis is presented.

CASE REPORT

A 56 years old lady presented with weight loss and palpable axillary lymph nodes five years after a history of total thyroidectomy for histopathologically diagnosed case of multinodular goiter. Ultrasonography and CT scan of abdomen revealed a large heterogeneous mass (10 cm x 9 cm) in left adrenal region with multiple abdominal enlarged lymph nodes with splenomegaly (Figure1)

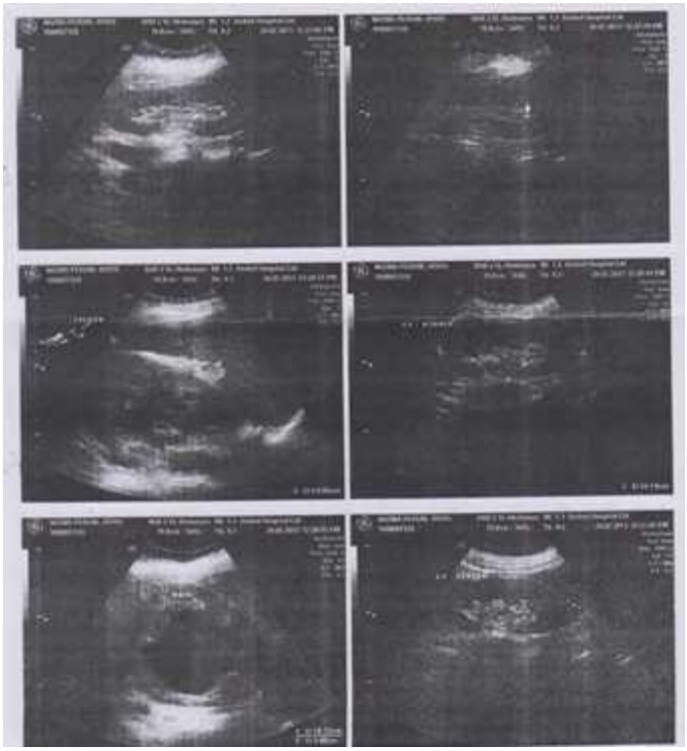

Figure 1: USG showing adrenal mass.

FNAC from the adrenal mass revealed metastatic FCT. She was biochemically hyperthyroid without any thyroid replacement therapy. Her thyroglobulin (Tg) level was high and no thyroid tissue was found in thyroid bed on Tc-99m thyroid scan.

She underwent left adrenallectomy and splenectomy with excision of lymph nodes. Histopathology and immunohistology (Thyroid Transcription Factor 1: positive) confirmed metastatic FCT in adrenal mass with no evidence of metastases in abdominal lymph nodes. CT scan of chest revealed secondary nodular lesions in both lung fields. PET-CT whole body scan showed multiple bony lesions in T4 vertebra, left 3rd rib posteriorly with a large complex mass (6 cm x5 cm) nin upper end of left tibia which was osteolytic on X-ray (Figure 2). FNAC of the mass in tibia diagnosed it as metastatic FCT.

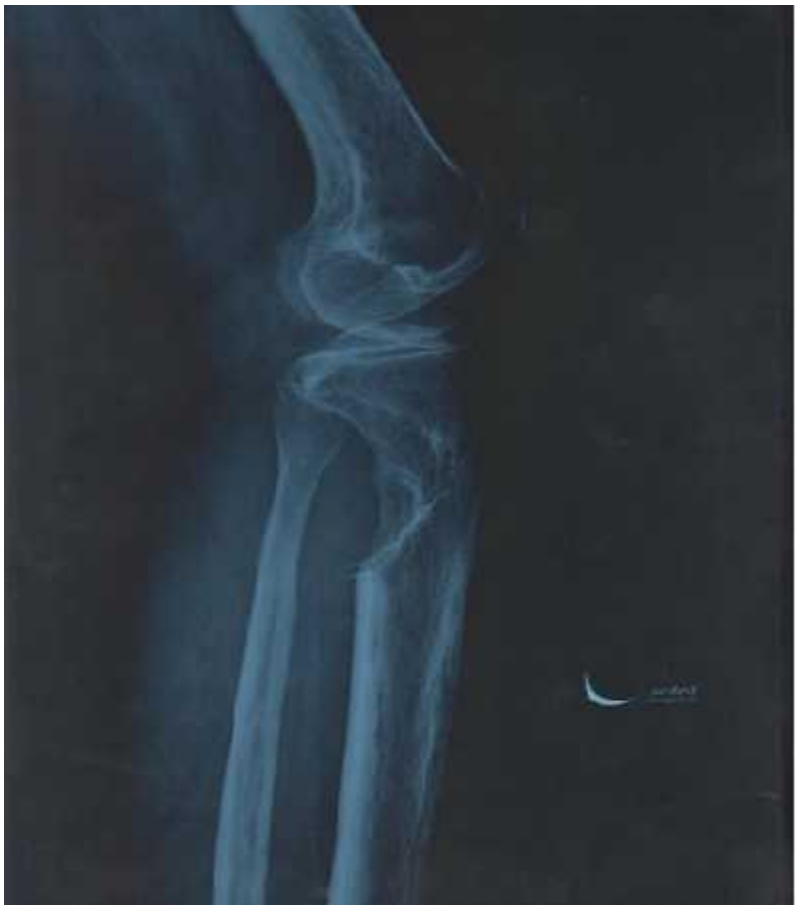

Figure 2: X-ray of upper end of the left tibia showing osteolytic lesion

Patient was treated with radioiodine therapy with 150 mCi. As patient had radiological evidence of lung metastases, 150 mCi ^{131}I was considered for therapy. In post therapy whole body scan two foci of radio tracer concentration (RTC) was seen in thyroid bed but no abnormal RTC seen in chest or abdominal region (Figure 3)

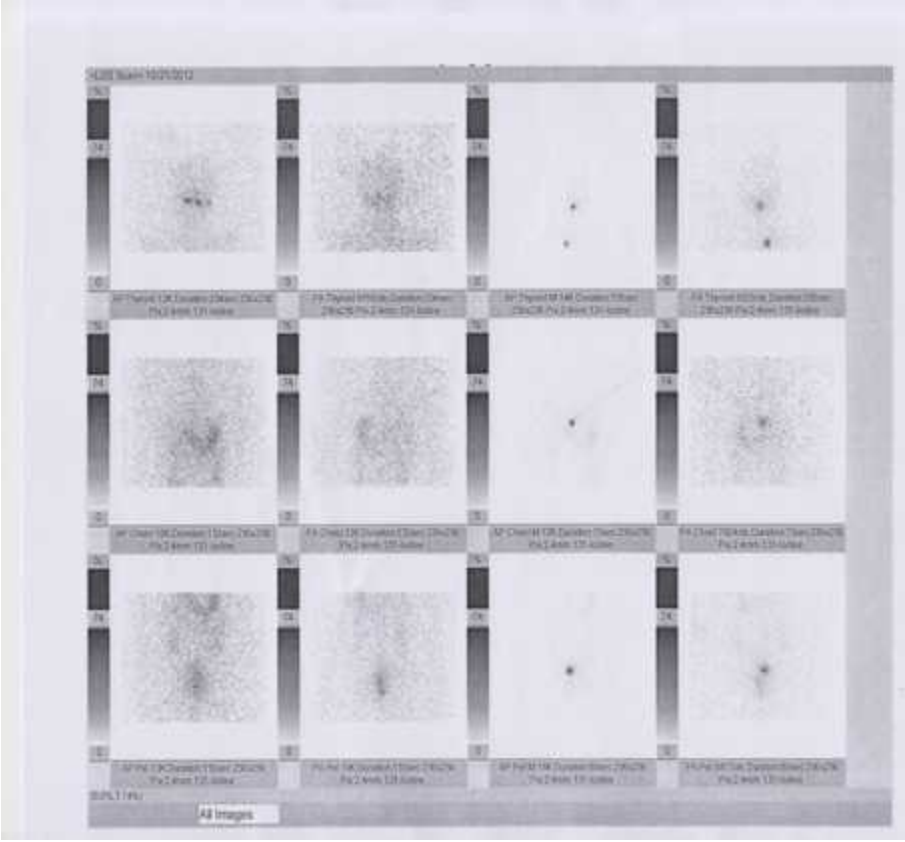

Figure 3: Post therapy whole body scan after 1st ^{131}I therapy with 150mCi

Three months after ^{131}I therapy, Tg raised to 450 ng/dl. Patient was referred to orthopedic surgeon for excision of the mass in the tibia followed by 2nd dose of ^{131}I. Surgeons refused surgery and advised for neoadjuvent radiotherapy. Patient completed radiotherapyand received2nd ^{131}Itherapy of 250 mCi. This time, post therapy scan showed single focus of RTC in left upper chest probably in rib and a big area of intense RTC in left knee (upper tibia). Diffuse hepatic activity is also noted (Figure 4)

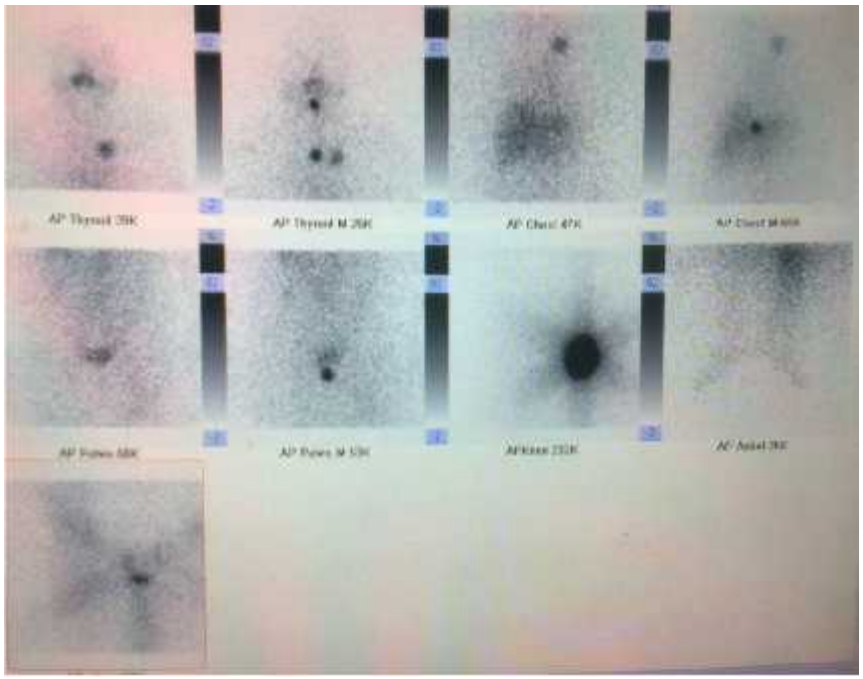

Figure 4: Post therapy whole body scan after 2nd 131I Therapy with 250 mCi

DISCUSSION

Distant metastases are found at diagnosis or follow-up in 10%–15% of patients with DCT. Bone is the second most common site of metastasis after lung. Incidence of bone metastasis from follicular thyroid cancer is 7-28% (4, 5).The median time to form bone metastasis after thyroid removal is 3.44 years(6). The great majority of bone metastasis occurs in regions where blood flow is high, such as the axial skeleton (80%), red marrow in vertebrae, ribs and hips. Tumor cell adhesive molecules bind the tumor cells to marrow stromal cells and bone matrixallowing them to grow and produce angiogenic and bone-resorbing factors. The bony lesions are mostly osteolytic, with new bone forming in response to the bone destruction (5).

FCT rarely spread to involve other organs such as liver, brain, kidneys, skin or adrenals. Adrenal gland is an uncommon site for DCT metastases, only five cases of adrenal metastasis from FCT are documented in the literature. In this case, patient had metastatic follicular thyroid neoplasm in left adrenal gland along with multiple secondary bony lesions including an osteolytic lesion at a very rare site at upper end of left tibia.No such case of FCT with metastasis to adrenal gland and upper end of tibia was found in the literature.

In this case, adrenal metastasis was solitary and unilateral though most adrenal metastases are multiple and bilateral. The mode of spread of FCT to distant metastases is usually haematogenous. However, the phenomenon of unilateral and isolated metastases may be explained bythe possibility of the tumour having spread through minor venous collaterals between the thyroid and adrenal gland (2). Adrenal metastasis from DCT is generally asymptomatic and is often associated with lung or bone metastases (1). In the presenting case patients was asymptomatic for a long time and then had complaint of weight loss only and the adrenal mass was detected on routine Ultrasound examination. She also had evidence of lung and bone metastases on X ray &CT of chest and PET CT whole body scan. However, after ^{131}I therapy, post therapy scan did not reveal any abnormal activity in either lung and / or osseous sites like ribs or vertebrae (Figure 4).

In this case, patient had history of total thyroidectomy five years before diagnosis of adrenal metastases. Unfortunately, histopathology revealed it as multinodular goiter. The incidence of carcinoma in multi nodular goiter is reported to range between 4 – 17%. Occasionally the primary lesion of FCT appears to be entirely benign, but distant metastases are found. Invasion of vessels or the capsule, apart from the metastasis is the only reliable criterion of malignancy. This variety has been called the benign metastasizing struma or malignant adenoma. It has a more prolonged course than other varieties of follicular tumour and has best opportunity for use of radioiodine therapy (7).

FCT has unusual metastatic presentations and patterns. Adrenal metastases have almost always appeared in patients with advanced disease and are often associated with poor prognosis but overlooked in clinical practice (1). Earlier and proper recognizing them has a significant impact on prognosis of the patients and clinical decision-making.

Management of DCT patients with adrenal metastases includes surgical resection of the metastatic foci combined with repeated high-dose radioiodine therapies, followed by a suppressive dose of Levo thyroxine (8).

In these cases, the role of radioiodine therapy is primarily aimed at palliation that might prolong their survival, probably reduce further spread and thus improve the overall quality of life.

CONCLUSION

This is a rare case of FCT which was diagnosed from the metastatic lesion in adrenal gland and recurrence also occurred in multiple bony sites especially in tibia. Only few such cases could be found in literature. This case highlights on meticulous histopathological survey and awareness of the possibility of unique metastatic deposits of FCT at unexpected sites.

REFERENCES

1. Song HJ, Xue YL, Qiu ZL, Luo QY. Uncommon metastases from differentiated thyroid carcinoma.Hell J Nucl Med 2012; 15(3): 233-240.
2. Kumar A, Nadig M, Patra V, Srivastava N, Verma K and Bal S. Adrenal and renal metastases from follicular thyroid carcinoma. Br JRadiol. 2005; 78:1038-1041
3. Rodrigues G, Ghosh A. Synchronous bony and soft tissue metastases from FollicularCarcinoma ofthe Thyroid. J Korean Med Sci. 2003; 18: 914-916.
4. Bernier MO, Leenhardt L, Hoang C, Aurengo A, Mary JY, Menegaux F et al. Survival and therapeutic modalities in patients with bone metastases of differentiated thyroid carcinomas,J Clin Endocrinol Metab2001; 86 (4): 1568–1573.
5. Muresan MM, Olivier P, Leclère J, Sirveaux F, Brunaud L, Klein M et al. Bone metastases from differentiated thyroid carcinoma. Endocr Relat Cancer 2008;15:37–49.
6. Satcher RL, Lin P , Harun N , Feng L , Moon BS , and Lewis VL. SurgicalManagement of Appendicular SkeletalMetastases inThyroid Carcinoma. Int J Surg Oncol2012; 2012: 417086-98.
7. Thyroid neoplasia.In: De Groot LJ, Larsen PR, Hennemann G, editors. The thyroid and its disease. 6th ed. New York, Churchil Livingstone Inc., 1996:647-682.
8. Niederle B, Roka R, Schemper M, Fritsch A, Weissel M, Ramach W. Surgical treatment of distant metastases in differentiated thyroid cancer: Indication and results. Surgery 1986; Dec 100 (6):1088–1097.