

E-JCRT Correspondence

A case report of breast and liver metastases of thyroid follicular carcinoma

ABSTRACT

Papillary and follicular thyroid carcinomas (FTCs) have a slowly biological behavior. Most distant metastasis sites are lung and bones. Breast and liver metastasis from differentiated thyroid carcinomas is uncommon. To the best of our knowledge, in English literature follicular thyroid cancer that is metastasis to breast was only in two female cases and to liver was in five patients. Herein, we present a case in whose 68-year-old woman who had a history FTC metastasis to vertebrae and synchronously developed breast and liver metastases within 1 year after first diagnosis.

MINI ABSTRACT

In this article, a female patient with metastatic follicular thyroid carcinoma which has rare metastatic sites, breast and liver, synchronously and literatures were presented.

KEY WORDS: Breast, follicular carcinoma, liver, metastasis, thyroid cancer

INTRODUCTION

Differential thyroid carcinomas, papillary and follicular, grow slowly and have a biologic indolent behavior.^[1-3] In more than 80% of cases cure is obtained from total thyroidectomy, radioiodine-131 (¹³¹I) ablation and levothyroxine suppression.^[1] Recently they metastasize local lymph nodes and the most distant metastases sites are lungs and bones.^[1-3] Differential thyroid carcinomas are metastasized very rarely in brain, eye, skin, kidney, muscle, liver, and breast. In case of metastases in these sites, prognosis is worse.^[1-4]

We aimed to present a female patient with metastatic follicular thyroid carcinoma (FTC) synchronously in breast and liver and literatures in this case.

CASE REPORT

A 68-year-old female patient applied in February, 2012 to our oncology outpatient clinic due to waist, back and hip pain.

In the past history, due to hip pain she had a computed tomography (CT) scan in December, 2010 and in the right of the sacrum 47 × 34 mm in size mass that cause cortical erosion in posterior and in the left of same level, in iliac bone posterior

21 mm and in supra-acetabular 20 × 11 mm lytic focuses were observed. For the mass in sacrum, 2000 cGy palliative radiotherapy was given. Thyroid needle aspiration biopsy was done on January, 2011 and it was evaluated as cytology with suspicious malignancy.

Following an examination which was done due to neck and right shoulder pain on March, 2011, mass lesion was observed in C3 vertebra and totally excision was done. FTC metastases was diagnosed histologically [Figure 1a-c] and total 3000 cGy dosage palliative radiotherapy was given to C1-C5 level of a patient. Following this, total thyroidectomy was applied and the patient wasn't followed.

In application to oncology, common rhonchus in both lungs, paravertebral sensitivity in all vertebral column, restriction of waist and hip movement with pain, in superior quadrant of left breast palpable mass approximately 20-25 mm in size were observed.

On March, 2012 in positron emission tomography/CT examination, increased metabolic activities were observed in the 2.5 × 1.8 cm in size mass in superior interior quadrant of left breast, in multiple lesion which the biggest one is 10 mm in both lungs, hypodense lesion (SUVmax 5.2) with 15 mm

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diameter in liver right lob posterior lateral segment, 25 × 30 mm in size hypodense lesion (SUVmax 5.4) in liver caudal segment, multiple lymph nodes in mediastineum which is the biggest one has 17 mm diameter (SUV max 5.7) in subcarinal localization and in right segment of the sacrum, in lytic lesions (SUVmax 4.4-6) in near the left iliac bone sacroiliac joint right acetabulum dorsal, in lytic destructive lesion (SUVmax 5.6) which is situated soft issue throughout left acetabulum and ischium [Figure 2a-e]. In the liver, a few pieces of metastatic lesions, the largest diameter of 2 cm, were observed by ultrasonographic examination [Figure 3]. Liver biopsy was not performed due to she did not want to this examination. In addition, she did not go for radioiodine scintigraphic imaging due to severe bone pain and nearest center to our hospital for scintigraphic imaging was 250 miles away.

Thyroglobulin was observed as 456 ng/ml (normal range: 1.15-50). In breast biopsy by totally excision FTC metastases was diagnosed, which has histological Grade 1 and nested follicular and colloidals locals and as immunohistochemical negative p63, calponin, chromogranin-A, smooth muscle antigen, estrogen receptor (ER) and progesterone receptor (PR), her2 receptor whereas was strongly positive in thyroid transcription factor-1 (TTF-1) [Figure 1d-f]. She was referred to the nuclear medicine department for radioactive iodine therapy.

DISCUSSION

In this article, a female patient with metastatic FTC which has rare metastatic sites, breast and liver, synchronously and literatures were presented.

In previous studies, the ratio of breast metastases among all breast tumors has been reported as 0.5-2.0%. To our knowledge, in English literature FTC that is metastasis to

breast was only in two female cases.^[5,6] These two cases were disseminated but liver metastases were not reported. In a case which is presented by Chisholm *et al.*,^[5] a 75-year-old female patient with follicular adenoma of borderline malignancy diagnosis were diagnosed as FTC 6 years later from the first diagnosis. Three years later from the cancer diagnosis, recurrence in thyroid log and metastases in skeletal muscle and breast were detected. Metastatic mass which demonstrated no abnormalities in xeromamogram of the opposite breast, was in right breast, partial fixed to the chest wall and ER was painted weak positive and PR was painted positive. In other case, Cristallini *et al.*^[6] reported a case in whose 57-year-old woman that had a FTC metastasis to breast and synchronously diagnosed follicular carcinoma by totally thyroidectomy. Except this, in literature one of the cases which was non-medullary thyroid carcinoma metastasized to breast was a female patient who has Hurthle-cell variant FTC and four of them were female patients with papillary thyroid carcinoma.^[4]

In metastases of thyroid carcinoma to breast, there is a mass which is usually in superior external quadrant, superficial and fixed to the thorax wall. Axillary lymph node shall be held. It can be distinguished from primer breast cancer by micro-calcification in mammography, but main distinguishing diagnosis is immunohistochemical examination. In our case, contrarily from the literature the mass in breast was superficial, but it didn't show micro-calcification in mammography and in internal quadrant. As immunohistochemically, TTF-1 was strongly painted and had microscopic property in patient with FTC, we excluded second primer breast cancer.

The most important finding was TTF-1 strongly painted property that shows the mass in breast was FTC metastases as immunohistochemically. TTF-1 regulates thyroid specific gene transcription in thyroid follicular cells. Furthermore, it activates thyroglobulin and thyroperoxidase gene transcription in thyroid carcinomas.^[7] It is expressed from epithelial cells

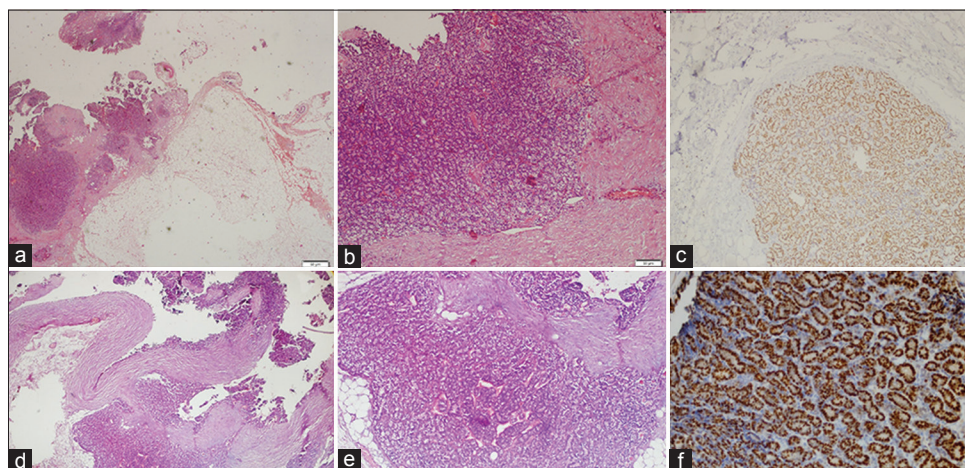


Figure 1: (a) Follicular thyroid carcinoma (FTC) metastasis to vertebra ×4, H and E; (b) follicular tumor pattern in vertebra ×10, H and E; (c) thyroid transcription factor-1 (TTF-1) expression in vertebral metastasis from FTC, ×10; (d) FTC metastasis to breast, ×4, H and E; (e) follicular tumor pattern in breast, ×10, H and E; (f) TTF-1 diffuse expression in breast metastasis from FTC, ×10

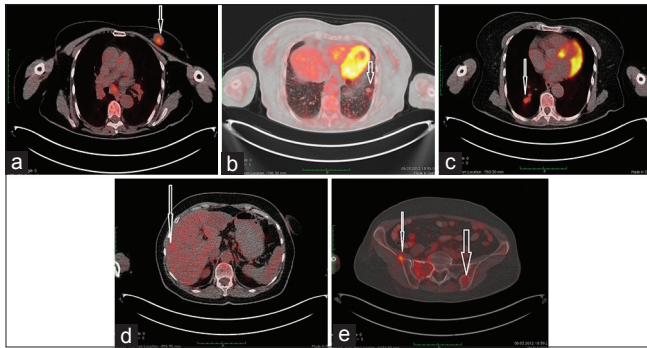


Figure 2: (a) The mass in the left breast; (b) lung metastases in the left lung parenchyma; (c) lung metastases in the right lung parenchyma; (d) liver metastasis (e) ischium and sacral bone metastases in positron emission tomography/computed tomography (PET/CT); (in PET/CT examination, the Siemens Biograph 16 TruePoint HD and 16 slices PET/CT brand equipment was used. Fluorine-18 fluorodeoxyglucose were used as a 262 MBq [7.08 mCi] dose and 50 mas care dose)

and in previous studies, this ratio was observed as 72% in lung adenocarcinoma.^[7,8] It is not used only for FTC diagnosis. It is definite as expression in medullary thyroid carcinomas. In our patient, chromogranin-A negative finding removed the medullary thyroid carcinoma diagnosis. Although in previous studies, TTF-1 was observed negative, only in some cases, there were TTF-1 expression in small cell breast cancer.^[8] In our case, microscopic findings were similar with FTC cells of patient in cervical vertebrae excisional biopsy and they showed strongly TTF-1 painting property. So our case was diagnosed as FTC that metastasized to breast.

In previous studies, liver metastases were rarely reported in patients with thyroid carcinoma and its frequent was 0.5%.^[1,2] In English literature, only five cases with FTC were reported.^[1,2,4] It has been reported that liver metastasis was asymptomatic and non-dysfunction in liver, recently multiple and diffused and with other distant metastases. In our case, there were multiple liver metastases and liver dysfunction was not observed.

As a result, we have presented the patient with metastatic FTC in breast and liver due to it is rare case. Although there is a primer cancer diagnosis, we wanted to remind that it could

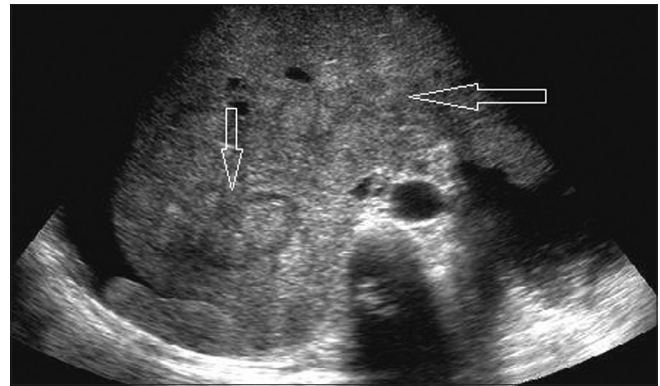


Figure 3: Ultrasonographic examination of the liver lesions

be distinguished from another second primer cancer with immunohistochemical examination.

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