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Metastatic breast neuroendocrine tumor from the rectum—a needle in hay stack

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ABSTRACT

Neuroendocrine tumors metastasing to the breast are exceedingly rare and account for less than 2% of tumors in the breasts. They are usually initially diagnosed as primary breast carcinoma and the correct treatment is delayed. Accurate preoperative identification of the tumor will result in the avoidance a major surgery including axillary lymphnodal clearance. We here report a case of a metastatic neuroendocrine deposit in the breast following a Laparoscopic Anterior Resection (for neuroendocrine tumor of rectum) and Right Hepatectomy (for synchronous liver metastasis).

Keywords: Metastatic breast neuroendocrine tumor; liver metastases; immunohistochemistry; rectum.

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Case Report

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INTRODUCTION

Breast metastases from non-mammary malignant neoplasms are rare, accounting for less than 2% of all breast tumors. Neuroendocrine metastases to the breast are clinically, radiologically, and pathologically very easily mistaken for a primary breast carcinoma. The proper recognition of such tumors is very important owing to the different clinical management of these patients. We here report a case of metastatic breast NET originating from a primary rectal neuroendocrine tumor.

CASE PRESENTATION

A 39-year-old lady who had undergone a laparoscopic anterior resection and a right hepatectomy for a neuroendocrine tumor 2 years back with liver metastasis presented with a palpable mass in the right breast, associated with mild pain. There was no history of nipple discharge, fever or change in colour of the skin over the lump. No palpable axillary lymph nodes bilaterally.

Figure 1: Elastography with mammography of left breast showing hypoechoic lesion 17x 10 mm with distal enhancement and intense internal vascularity

A review of her history demonstrated that she had a rectal neuroendocrine tumor, which was resected elsewhere by laparoscopic Anterior resection 2 years ago along with right hepatectomy for synchronous liver metastases. The preoperative CECT abdomen showed low rectal polypoidal, enhancing eccentric tumour about 75 mm from anorectal angle, with peri rectal fat stranding and multiple mesorectal nodes and right internal iliac nodes, multiple arterial enhancing lesions in liver largest in segment 6 and 7 —suggestive of metastases [T3N2M1]. Preoperative colonoscopy revealed large polypoidal friable mass measuring 3.5 cm with wide base causing partial...
luminal obstruction 8 cm from anal verge, rest of colonic mucosa and vascular patterns were normal. Only the pathology report was available which showed grade 2 well differentiated, strong chromogranin ad synaptophysin positive NET, 7/26 nodes were positive, Ki 67% was 5, lymphovascular invasion was present, and no histopathology material could be retrieved.

At present the mammogram (Figure 1) revealed a well-circumscribed mass that measured 1.7 x 1 cm. Her FNAC showed High-grade carcinoma. A trucut biopsy with IHC showed features consistent with NET metastases. A GA 68 DOTATAC PET SCAN showed somatostatin receptor positivity (Figure 2).

After consent a lumpectomy was performed and microscopic evaluation showed multiple linear cores of breast parenchyma showing an invasive tumor arranged in trabaculae, nests, sheets and perivascular pseudorossettes. The tumor cells revealed round hyperchromatic nuclei with inconspicuous nucleoli and a moderate degree of eosinophilic cytoplasm (Figure 3) No evidence of ductal carcinoma in situ could be identified. Immunohistochemical analysis of the same showed that the tumor cells were strongly positive for the neuroendocrine markers, cytokeratin (AE1 /AE3) and synaptophysin, negative for ER receptors and chromogranin A. Mib proliferative index is approximately 30-35 % in the hotspots (Figure 4, Figure 5, Figure 6)
usually indistinguishable from primary invasive spiculated lesion detected on mammography and is consistency. Radiologically they can appear as a or multiple.

Metastatic breast NET may present clinically as single or multiple well-circumscribed lumps, with a firm consistency. Radiologically they can appear as a spiculated lesion detected on mammography and is usually indistinguishable from primary invasive breast carcinoma, or as well-circumscribed lesions that can mimic fibroadenomas, mucinous carcinoma or medullary carcinoma. Morphologic distinction from primary ductal carcinomas is sometimes difficult, however a plasmacytoid appearance, salt- and-pepper stippled chromatin, and inconspicuous nucleoli on FNA should raise the possibility of a neuroendocrine origin.

Fishman et al. has shown in a review 61.5% (8 of 13) patients with metastatic breast NETs were initially misdiagnosed as primary breast carcinoma and were subjected to modified radical mastectomy. Metastatic breast carcinoid can show estrogen receptor positivity, creating additional problems.

Metastatic breast NET should be considered when features such as a well-circumscribed lesion, the absence of an intraductal component, and the frequent presence of many lymphatic emboli are present. Carcinomas of mammary origin characteristically strongly express CK7 and will not express CK20, whereas in metastatic carcinoid, both CK7 and CK20 will be negative.

There are no clear guidelines on management of metastatic neuroendocrine breast tumors. Initially they were managed with a mastectomy along with axillary dissection, lumpectomy alone. There have been significant developments in drug therapy of advanced NETs. Long acting octreotide, m-TOR inhibitors (everolimus), and VEGF tyrosine kinase inhibitors (sunitinib) are becoming standard treatments for patients with advanced NETs. So, accurate diagnosis of metastatic NET is of paramount importance.

CONCLUSION

We here wish to highlight the presence of a neuroendocrine metastasis to the breast in order to highlight not all tumors arising in the breast are that of primary breast carcinoma. Accurate preoperative identification of the tumor will result in the avoidance a major surgery including axillary lymph nodal clearance. With the advent of effective drug therapy for NET is now possible to do as minimum surgically and still offer them a high quality of life even in a metastatic setting.

REFERENCES


