

An unusual case of solitary parotid metastasis from early stage breast carcinoma

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ABSTRACT

Invasive ductal carcinoma is the most common histological pattern of breast cancer. Breast cancer metastasis has been observed at various sites but solitary metastasis to parotid gland is rare. Around 15 cases have been reported so far. We report a case of 61-year-old lady with early breast carcinoma metastasizing to ipsilateral parotid gland. She underwent breast conservation surgery with axillary dissection. Pathological stage was pT2(m) N0. Immunohistochemistry revealed hormone receptor positive, HER2-neu negative. She received adjuvant chemotherapy, radiotherapy, and hormonal therapy. Seven months later, she had parotid gland metastasis. She underwent superficial parotidectomy and right neck dissection. Hormonal therapy was changed to 2nd line.

Key words: Carcinoma breast, parotid metastasis, solitary metastasis

INTRODUCTION

The most common sites of distant metastasis from invasive ductal carcinoma (IDC) of the breast are bone, lung, liver, and brain. Parotid gland metastasis of breast primary is extremely rare, only few cases are reported so far in the literature. The parotid glands are the largest of the major salivary glands and contain intraglandular lymph nodes.^[1] Metastasis to the parotid gland usually arises from primaries in the head and neck. Metastatic involvement of the parotid accounts for about 9–14% of all parotid tumors.^[2] The parotid gland is divided into paraglandular lymph nodes, intraglandular lymphatics, and parenchyma. The paraglandular and intraglandular lymphatics are common sites for metastasis from squamous cell carcinoma and melanoma of the scalp, ear, and the forehead by direct lymphatic drainage. On the other hand, parenchymal metastasis is considered to occur via hematogenous rather than lymphatic spread.^[3,4]

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In early breast cancer treated with appropriate surgery, chemotherapy, adjuvant radiation therapy (RT) and hormonal treatment if locoregional control is achieved, solitary parotid lymph node metastasis is an exceptional finding.

Here, we report an extremely rare case of solitary parotid metastasis from IDC with controlled primary disease 7 months after the completion of treatment. Given the rarity of solitary parotid metastasis, the recommended treatment is still unclear, and must be individualized.

CASE REPORT

A 61-year-old lady noticed a painless lump in right breast for 3 months gradually increasing in size. She had a family history of breast cancer in mother and brother. She was diagnosed with IDC right breast (index stage c T2N0M0) on cytology of breast lump. She underwent right breast conservation surgery and axillary lymph node dissection levels I–III in August 2014. Histopathological examination (HPE)

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reveals two tumors with a separation of 2.1 cm. Sizes of the two tumors were 2.3 cm × 2.2 cm × 1.2 cm and 2.5 cm × 2.1 cm × 2 cm. Microscopic examination suggestive of invasive duct carcinoma with mucinous areas, Grade 2 (MBR score 3 + 2 + 2 = 7). Ductal carcinoma *in situ* (DCIS) was present but extensive intraductal component was absent. No skin or skeletal muscle invasion was seen. All margins were uninvolved by invasive carcinoma and by DCIS. Lymphovascular invasion was present. Twenty-five axillary lymph nodes were identified in the surgical specimen and all were negative for metastasis (0/25). Pathological stage was pT2(m) N0. Immunohistochemistry (IHC) revealed estrogen receptor 80% and progesterone receptor 60% positive while HER2-neu was negative by fluorescent *in situ* hybridization. BRCA1 and BRCA2 were negative. She received six cycles of adjuvant chemotherapy with 5-fluorouracil 500 mg/m², epirubicin 100 mg/m², and cyclophosphamide 500 mg/m² from September 2014 to January 2015. She was given adjuvant radiotherapy to whole breast, axilla, and supraclavicular fossa 4240 cGy in 16 fractions, 5 fractions in a week by 6 MV photon followed by boost to the lumpectomy cavity 1000 cGy in 5 fractions by electron (from February 9, 2015 to March 9, 2015) [Figure 1]. Then, she was prescribed adjuvant hormonal therapy with aromatase inhibitor tablet anastrozole 1 mg daily. She was on follow-up when she noticed a swelling measuring 2.5 cm × 2.5 cm over the right preauricular area in October 2015. Fine needle aspiration cytology from the preauricular swelling was positive for malignant cells. Review of the slides shows metastatic poorly differentiated adenocarcinoma. Positron emission tomography-scan revealed a mildly fluorodeoxyglucose-avid enhancing soft tissue nodular region in right parotid gland (SUVmax = 2.2) [Figure 2]. There was no evidence of any locoregional recurrence in breast or axilla. The possible differential diagnosis were pleomorphic adenoma, metastasis from squamous cell carcinoma from unknown primary of head and neck region, lymphoma, and metastasis from breast carcinoma.

She underwent superficial parotidectomy and right neck dissection levels II and III in October 2015 [Figure 3]. Postoperative HPE report showed metastatic poorly differentiated carcinoma involving single intraparotid lymph node. Ten neck nodes were dissected which were negative for malignant cells. IHC was positive for CK7, GATA3 while negative for mammaglobin, CK20, TTF-1, and PAF-8 suggesting metastatic adenocarcinoma metastasis from primary breast. The hormonal therapy was changed to 2nd line, i.e., exemestane and everolimus.

Patient tolerated the treatment well and was asymptomatic on last follow-up.

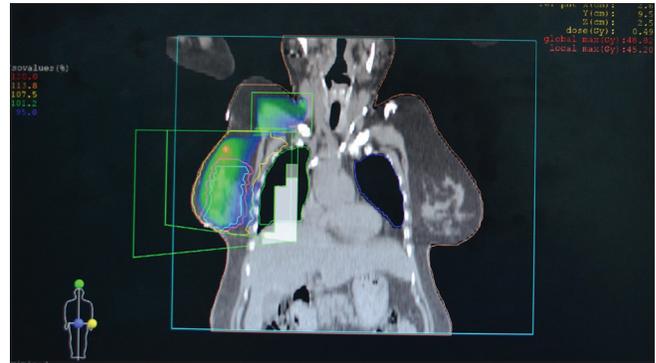


Figure 1: Dose distribution for three-dimensional conformal radiation therapy to right breast and supraclavicular region

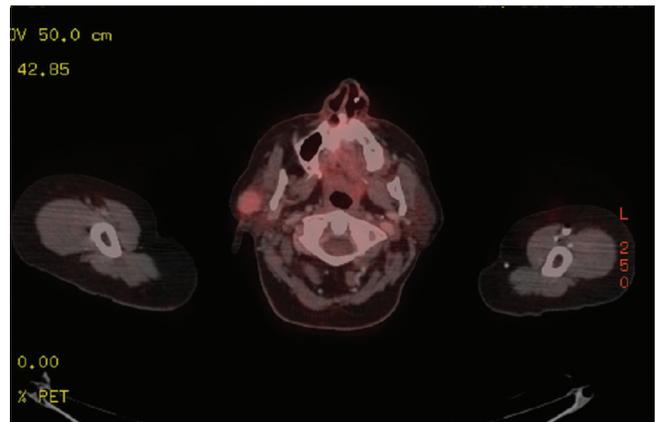


Figure 2: Fluorodeoxyglucose-positron emission tomography computed tomography scan showing fluorodeoxyglucose avid soft tissue enhancement at the right parotid region



Figure 3: Postparotidectomy scar

DISCUSSION

Worldwide breast cancer is the most common cancer in women. In developing countries such as India, one in eight women will be diagnosed with breast cancer at some point in their lifetime. IDC is the most common histological pattern of breast cancer. Breast cancer metastasis has well

recognized patterns. About 2/3rd of the first recurrences after surgery are systemic and the remaining 1/3rd are locoregional.^[5] Distant spread through the lymphatic route occurs to the mediastinal and supraclavicular lymph nodes. Moreover, hematogenous spread occurs and leads to metastasis to lung, liver, bone, adrenals, and brain.^[2] The most common areas of systemic metastasis are bone, lung, liver, and brain in decreasing order of frequency. The timing of breast cancer recurrence deserves special attention. Recurrence is likely to occur earlier in women with large, node positive disease than those with small, node negative disease. First time recurrences typically occur between the 2nd and 5th year after treatment.^[6] Five years survival varies from 98.5% to 84.6% in localized and regional disease, respectively, to 25% in distant metastatic disease as outlined by the surveillance, epidemiology, and end results database.^[7]

In a review of autopsy series of 167 cases of breast cancer, only one case of metastasis to the parotid gland was detected.^[8] Siefert *et al.* retrospectively studied 10,944 patients with parotid tumors, of these 75 were metastases from other primary cancers. Of these only two were breast cancer.^[9]

Nuyens *et al.*^[10] retrospectively studied 520 parotid masses, 171 of them were malignant, of which 120 were primary parotid gland malignancies, ten were lymphoma, and seven were direct invasion from surrounding tissues. Metastasis from distant tumors was found in 34 cases, and only two of them were metastasis of ductal breast carcinoma. Both of these patients had total parotidectomy, ipsilateral level II–III neck dissection, and underwent adjuvant radiotherapy.

In locally and regionally controlled breast cancers, it is believed that metastatectomy may be beneficial for survival in cases with oligometastasis. In our case, as the metastatic lesion was small, thus superficial parotidectomy was performed and second line hormone therapy was started.

The route of spread from breast to parotid is perhaps hematogenous as none of the 25 axillary nodes removed showed metastasis and patient was offered locoregional radiotherapy to infraclavicular and supraclavicular regions also besides the whole breast followed by boost to lumpectomy cavity.

Perhaps the patient required postparotidectomy adjuvant RT to postoperative area but despite efforts to convince,

patient refused further treatment. Based on our clinical experience and review of literature, although it is a very rare possibility in a patient of parotid swelling to harbor the metastasis from breast cancer, still we advise not to overlook these cases.

CONCLUSION

Although rare solitary parotid metastasis can occur in case of IDC of the breast. Treatment is parotidectomy and RT followed by hormonal therapy in hormone receptor positive patients. The route of spread from breast to parotid is perhaps hematogenous in the reported case as none of the 25 axillary nodes removed showed metastasis. Despite treatment as per the standard recommendations, solitary metastasis developed but after complete metastatectomy and second line hormone therapy available, prognosis remains good.

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Conflicts of interest

There are no conflicts of interest.

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