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Breast Metastasis as a Presentation of Malignant Melanoma

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Rezumat

Metastaze mamare din melanom malign

Majoritatea leziunilor mamare maligne sunt tumori primare, cu originea în țesutul mamar. Cancerele mamare primare metastazează de regulă în ganglionii limfatici, plămâni, oase și creier. Metastazele în sân din cancere ale altor organe sunt foarte rare, dar au fost întâlnite la pacienți cu melanom malign, tumori carcinoide sau carcinom pulmonar. Prezentul articol raportează un caz de metastază mamară din melanom malign.

Cuvinte cheie: cancer mamar, melanom malign, antigenul de melanom

Abstract

The majority of malignant breast lesions are primary tumors originated from breast tissue. These primary breast cancers usually metastasize to lymph nodes, lungs, bones and brain. Metastases from cancers of other organs to the breast are very rare, but have been encountered in patients with malignant melanoma, carcinoid tumors or lung carcinoma. The present paper reports a case of mammary metastasis from malignant melanoma.

Key words: breast cancer, malignant melanoma, melanoma antigen

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Introduction

The differential diagnosis of malignant lesions in the breast skin or parenchyma includes primary or metastatic neoplasm. Although the presence of metastatic cancer in the breast from other remote primary cancers is a rare phenomenon, primary breast cancer remains one of the leading causes of death in women. Trevithick reported the first case of extramammary breast metastasis in 1903 (1). The most commonly reported primary site for breast metastases is the contralateral breast (2). Other cancers known to metastasise to breast may include malignant melanoma (MM), renal adenocarcinoma, haematological malignancy, melanoma and prostate. MM is a very aggressive neoplasm, with unpredictable evolution and a low survival rate. In fact it is accountable for 75% of skin cancer deaths (3). Metastatic disease is noticed in 20% of MM cases (4), it may disseminate via haematogenous or lymphatic streams.

Case Report

A 57-year-old female patient was seen in breast

clinic for triple assessment. She presented with a recent history of lump in her left breast, however also she reported a history of significant back pain for few months. She had no other significant previous medical history.

Examination revealed she had a 3 cm suspicious left breast lump in the upper outer quadrant. The subsequent mammogram revealed a 25 mm lobulated mass lesion in this region of the left breast that was surrounded by numerous other smaller lesions (Figs. 1, 2). Breast ultrasound revealed further smaller lesions in the lower outer quadrant of the left breast (Fig. 3). These were highly suspicious of multi-centric malignancy. The breast imaging-guided biopsy showed cores of breast tissue infiltrated by sheets of poorly differentiated malignant neoplasm. The tumour cells were composed of moderately abundant pale eosinophilic cytoplasm containing large pleomorphic nuclei, some intra nuclear vacuoles and others with prominent nucleoli (Figs. 4, 5).

Staining for MeIA "Melanocyte specific cytoplasmic protein called Melanoma Antigen" (Figs. 6, 7) and E-Cadherin "Epithelial calcium-dependent cell adhesion protein" was positive.

Figure 1. Left mammogram CC view-25 mm lobulated mass lesion surrounded by numerous other smaller lesions in the left breast upper outer quadrant

Figure 2. Left mammogram MLO view-25 mm lobulated mass lesion surrounded by numerous other smaller lesions in the left breast upper outer quadrant

Figure 3. Left breast ultrasound showing 25 mm lobulated mass lesion surrounded by numerous other smaller lesions in the left breast upper outer quadrant

Staining for ER “Oestrogen Receptor” (Fig. 8), PR “Progesterone Receptors” (Fig. 9), Cytokeratin AE1/AE3 “Keratin cocktail that detects CK1 -8, 10, 14 -16 and 19 “(Fig. 10) and CAM 5.2 “Commonly used antibody to cytokeratins 8 and to a lesser extent CK7 “ (Fig. 11) was negative. The Ki-67 proliferative index was high (Fig. 12). The immune-profile was consistent with metastatic melanoma. Staging CT scan showed multiple liver and bone metastases in addition to multiple small metastatic lung deposits (Figs. 13, 14, 15). An MRI spine also showed multiple deposits in the spine, in keeping with metastatic disease. Furthermore there was a biconcave pathological fracture of L2. The patient has been referred for palliative oncology management. CT head wasn't requested in this case as the patient has had no neurological

Figure 4. H&E. Cores of breast tissue infiltrated by sheets of poorly differentiated malignant neoplasm. The tumour cells are composed of moderately abundant pale eosinophilic cytoplasm containing large pleomorphic nuclei, some intra nuclear vacuoles and others with prominent nucleoli. X10

Figure 5. H&E. Cores of breast tissue infiltrated by sheets of poorly differentiated malignant neoplasm. X20

Figure 6. Tumour cells are MelA positive. X10

Figure 7. Tumour cells are MelA positive. X20

Figure 8. Tumour cells are ER negative

Figure 9. Tumour cells are PR negative

Figure 10. The tumour is AE1/AE3 negative 10x

Figure 11. The tumour is CAM 5.2 negative

Figure 12. The Ki-67 proliferative index was high

symptoms initially then her general condition deteriorated rapidly.

Figure 13. Coronal view of CT abdomen & pelvis: multiple deposits in the liver

Figure 14. Axial view of CT abdomen showing multiple deposits in the liver

Discussion

Malignant melanoma (MM) is the second most aggressive skin cancer after Merkel cell carcinoma (5) and is known to have the most rapidly rising incidence. Even though it accounts for just 5 % of all malignant skin tumours, 75% of skin cancer deaths are related to MM (3). The incidence is increasing about 5 % per year worldwide (6) and metastatic disease occurs in 20% of patients with MM (4). The reported sites for metastasis are lymph nodes (7), brain (8), breast (9), lung (10), pleura (6,11), bone (12) and myocardium (13). Metastatic disease is usually associated with poor prognosis.

MM is originated from melanoblasts or melanocytes. In addition to the skin, MM is also found in the eyes, ears, mouth, gastrointestinal tract, genital mucosa, and leptomeninges (14). Histologically melanoma in the breast could arise primarily in the breast skin or parenchyma, as metastasis in the breast parenchyma, or in-transit metastases to breast tissue or breast skin (15). Primary malignant melanomas observed on the breast skin account for 5% of all malignant melanomas (16,17).

The breast itself is recognised as an unusual site to harbour a metastatic disease from other remote tumours. In fact breast metastasis from extra-mammary sites presents only in

Figure 15. Sagittal view of CT abdomen & pelvis: Multiple deposits in the liver and spine with biconcave pathological fracture of L2

Figure 16. MRI spine (Sagittal view) with biconcave pathological fracture of L2

1.3%-2.7% of all malignant mammary tumours (18). Hence the contralateral breast is reported to be the most common source of primary cancer to metastasise to the breast. The other extra-mammary cancers known to metastasise to breast may include haematological malignancy malignant melanoma (MM), appendicular carcinoid, malignant

mesotheliomas, epidermoid cervical carcinoma, renal, lung (19), gastric, pancreatic, rectal (20) ovarian (21), tongue, thyroid (22) and prostate carcinomas. Contrastingly, rhabdomyosarcoma is the most common cancer to metastasise to the breast in paediatric age group (23).

Breast metastases from MM often affect pre-menopausal females (22,24), a considerably younger cohort than patients affected by other tumours with breast metastatic involvement. The upper outer quadrant (UOQ) of the breast is involved in about 50% of cases. This is explained by good blood supply and more dense glandular tissue (4,10,18,25). The breast UOQ is also known to be a frequent site for primary breast malignancy (26), and in absence of features of remote primary cancer in case of breast metastases, this may complicate the diagnosis process.

With some patients, knowing the primary site will not change the management plan, In addition to that, the patient may deteriorate very rapidly and no time for further investigations. CT head wasn't requested in this case as the patient has had no neurological symptoms initially then the general condition deteriorated rapidly. The decision was to offer her the best supportive care immediately.

The presentation of remote cancers with breast metastasis is mostly with symptoms from the primary tumour, however patients may present with breast lesions as the first symptom (20).

Metastatic MM has a very poor prognosis, with a 5-years survival rate between 5-19%, and is dictated by the location and the number of metastases (27).

Conclusion

The presence of disseminated metastatic malignancy including breast lump, may be associated with a remote primary other than breast origin. Metastases from malignant melanoma to the breast could reflect a widespread disease and a high possibility of poor outcome. prognosis is rather poor in cases with diagnosed malignant melanoma metastasis to the breast.

Authors' Contributions

Conceived, designed, analysed and collected data. Performed analysis, wrote paper.

Conflict of Interest

All author declare that they have no conflict of interest.

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