HJOG
An Obstetrics and Gynecology International Journal

Case Report

Melanoma metastatic to the breast

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Abstract

Metastatic tumors to the breast are rare. A case of a 49-year old female patient with a fast growing breast lump, that proved to be metastatic melanoma from an earlier treated cutaneous melanoma of the lower extremity, is presented. Treatment suggestions are made considering the dismal prognosis of these patients.

Key words: malignant melanoma; pregnancy; treatment

Primary malignant tumors of the breast are common. Metastatic malignancies such as leukemia, lung cancer and melanoma, however, are rare[1]. Their incidence has been reported to be 0.43% - 1.2%[2,3]. A literature review between 1955 and 1998 revealed a total of 431 cases of tumor metastasis to the breast[4]. Several case series have shown metastatic melanoma to be the most common solid organ malignancy to metastasize to the breast[4,5]; other studies, however, included no melanomas[6], or showed other solid tumors (e.g. gastric carcinoma) to be the most common neoplasm of origin[7]. Aim of the present study was to report on a case of melanoma metastasis to the breast and briefly review the literature.

Case Report

A 49 - year old female patient presented with a painful, fast growing lump of the upper lateral quadrant of the right breast, which she had noticed a few weeks earlier. The patient had a history of a cutaneous malignant melanoma of the left posterior tibia, which had been surgically removed 5.5 years previously. The melanoma was of the superficial spreading type with a Breslow thickness of 1.34mm and Clark III level of invasion. The sentinel node biopsy (left inguinal region), conducted directly after wider excision of the primary lesion, was negative. The patient had been operated on at later stages (3.5 and 5 years after initial diagnosis) for surgical removal of distant lymph node, cutaneous and solitary pulmonary metastases. She had refused administration of adjuvant therapy.

Clinical examination revealed a 4 x 3.5cm mobile, hard mass palpable in the upper lateral quadrant of the right breast. The ultrasound and the MRI (T2 sequence, fat suppressed) showed a well demarcated, solid, almost round and of high signal intensity nodular lesion in the right breast suggestive (possibly) of metastatic melanoma (Figure 1). Given the patient's history and symptoms list, a wide excision of the symptomatic breast lump was decided. The operation was carried out under local anesthesia (Figure 2). The postoperative course was uneventful and the patient was relieved of her pain. Macroscopic

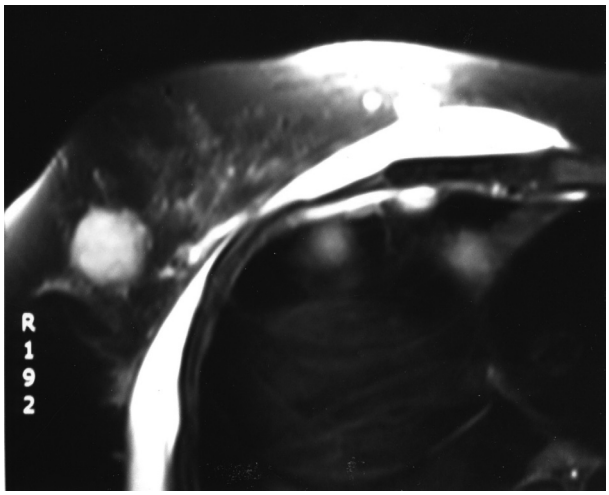

Figure 1. MRI (T2 sequence) showing a well demarcated, round, hyperintense, nodular lesion in the right breast suggestive (possibly) of metastatic melanoma

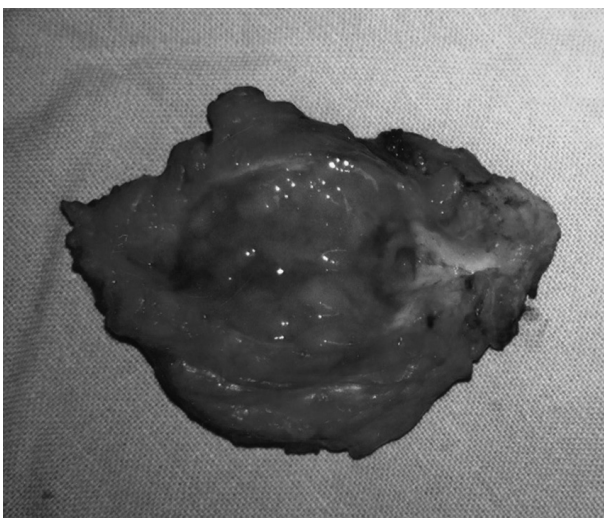

Figure 2. The tumor after surgical removal has been opened up to show the contents and its regular border

examination of the specimen (4.7 x 3.1 x 2.7cm) revealed in central position a well circumscribed, solid, white - greyish tumor with a maximum diameter of 2.9cm. Microscopically, the tumor showed expansive and not infiltrative growth. There were no pathological changes in the surrounding parenchyma ruling out primary breast pathology (Figure 3). There was enhanced cellularity, intense nuclear

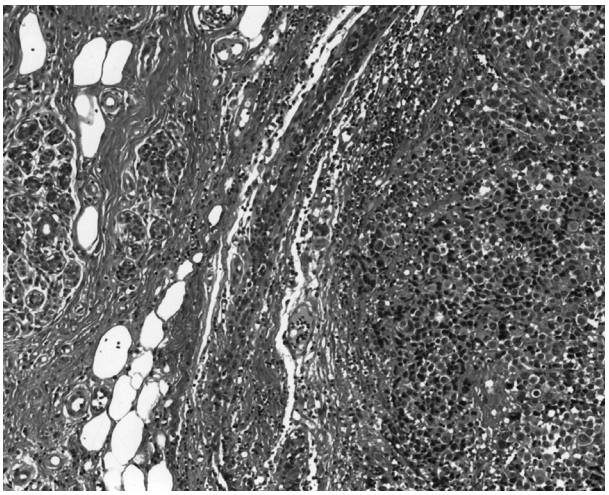

Figure 3. Microscopic illustration showing normal mammary ducts (left), normal parenchyma and the cell rich tumor (right) (HE, x 100)

atypia and evident nucleoli. The neoplastic cells expressed immunosensitivity for HMB - 45 (Figure 4) and MART - 1 (Figure 5). Morphological and immunohistochemical features were consistent with metastatic melanoma.

The patient once again refused any adjuvant treatment. Unfortunately her situation deteriorated three months later. She presented extensive lung metastases and finally succumbed to her disease five and a half months after diagnosis of her breast metastasis.

Discussion

Breast metastases from extramammary malignancies are rare, constituting under 2% of all breast tumors. Breast metastasis may be confused with primary benign or malignant neoplasms of the breast. An accurate diagnosis of the lesion is important because the treatment and outcome of primary and secondary malignancies of the breast are totally different. Malignant melanoma is most frequently responsible for intramammary metastasis (IM). From 463 IM, 138 (29.8%) were due to a primary malignant melanoma, according to a recent literature review[8]. Melanoma metastases to the breast occur mainly (70%)[9] in premenopausal women (medi-

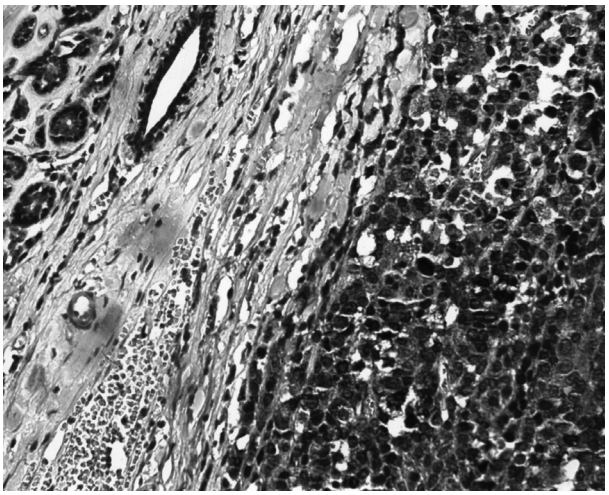

Figure 4. The tumor stained positive for HMB 45 (x 100)

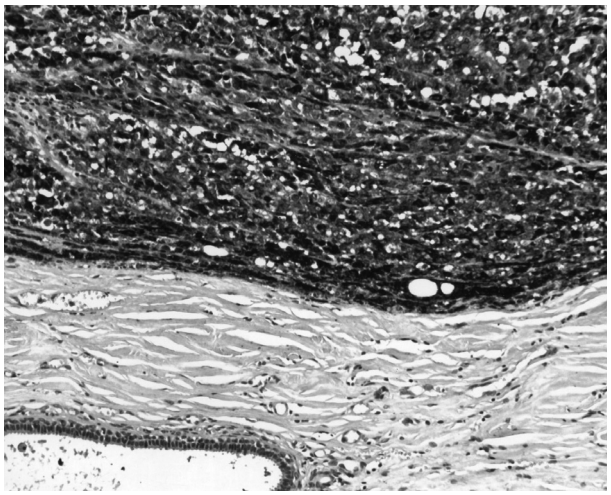

Figure 5. The tumor stained positive for MART - 1 (x 200)

an age 48-50) and are most frequently metachronous[8]. Mean interval between diagnosis of the primary melanoma and metastasis is between 50 and 60 months (range 13 - 180 months)[9,10]. The upper lateral quadrant is more frequently involved (62%)[2]. The majority of patients present with a palpable breast lump, and more than half of them complain of discomfort and pain[2,5]. The gross size of the lesions varied according to one study from 0.5 to 9cm in diameter, with an average of 4cm[2]. Tumors were round or oval, well circumscribed, non - encapsulated, firm and eventually multinodular. In about half of the cases, they were superficially located in the subcutaneous and the immediate adjacent tissues or were adherent to the overlying skin. None of the tumors were fixed to the chest wall. Nipple retraction or discharge was not observed[2]. Most cases are metastases from primaries of the trunk and upper extremity (>80%)[9,11]. Less than 18% of the primaries were located on the lower extremity. The case described in this report presented most of the above clinical features. The location of the primary on the left tibia was one of its less common features.

Metastasis of the breast shows a wide range of mammographic and ultrasonographic appearances, resembling both benign and malignant lesions[12]. Several authors who have retrospectively examined mammographic findings agree that the calcifications are exceedingly rare in patients subsequently diagnosed with breast metastasis[5]. In patients with a known history of melanoma, a solitary or multiple mass(es) in the absence of calcifications on a mammogram should raise suspicion of metastatic disease to the breast[5]. An ultrasound, followed by a biopsy, is recommended in order to establish tissue diagnosis. In the present case routine mammographic study 6 months previously had revealed no pathology. The rapid development of the breast mass and the ultrasound findings were suggestive of a metastatic neoplasm and no new mammogram was considered necessary. The MRI was done as a routine follow up imaging study.

Diagnosis is generally set by means of preoperative fine needle aspiration cytology (FNAC) or open biopsy of the breast mass[13]. The presence of unusual cytomorphologic patterns on breast FNAC should alert the cytopathologist to the possibility of a metastatic breast neoplasm, even if not suspected clinically[14]. Cangiarella et al[15] reported that the cytological findings of malignant melanoma metastatic to the breast are usually straightforward on aspiration cytology. Bacchi et al[16], however, drew attention to the extraordinary phenotypic plasticity of metastatic melanoma. Awareness of this pattern variance is

essential to avoid inappropriate treatment, especially in a case simulating a triple negative, poorly differentiated carcinoma of the breast. A combination of complete clinical history, attention to the cytological features and suspicion in case of metastatic disease beyond the axilla should allow most cases of metastatic breast masses to be suspected, and suitable material for ancillary confirmation testing to be obtained[17]. Metastatic melanoma can mimic a variety of cellular and architecture phenotypes. Immunohistochemistry allows a correct diagnosis; tumor cell immunoreactivity for S100, HMB - 45 and MART - 1 proves useful in differentiating it from other malignant tumors.

Excisional biopsy (lumpectomy) under local anesthesia, with the patient's consent, was decided in the present case as the easiest and most comfortable method to obtain diagnosis and relieve the patient from her pain. We would suggest direct lumpectomy in such cases, when melanoma patients have been troubled by multiple operations and the findings are strongly suggestive of a breast metastasis.

The majority of patients also have other metastases at the time of diagnosis of a breast metastasis[9-11]. The latter is associated with a poor prognosis. The median survival after diagnosis has been reported between 6 and 12.9 months[5,9,18]. The patient described in this report was no exception and she succumbed to her disease 5.5 months after initial diagnosis of the metastatic melanoma to her right breast.

In conclusion melanoma metastasis of the breast is an uncommon finding. However, patients with a previous history of cutaneous malignant melanoma who present with a breast mass should raise the suspicion of a metastasis, even several years after treatment of the primary neoplasm. Prompt and correct diagnosis is important, so that unnecessary therapeutic measures can be avoided, considering the poor prognosis of these patients.

References

1. Kurul S, Taş F, Büyükbabani N, Mudun A, Baykal C, Camlica H. Different manifestations of malignant melanoma in the breast: a report of 12 cases and a review of the literature. Jpn J Clin Oncol 2005;35:202-6.
2. Hajdu SI, Urban JA. Cancers metastatic to the breast. Cancer 1972;29:1691 - 6.
3. Georgiannos SN, Chin J, Goode AW, Sheaff M. Secondary neoplasms of the breast: a survey of the 20th century. Cancer 2001;92:2259 - 66.
4. Alva S, Shetty - Alva N. An update of tumor metastasis to the breast data. Arch Surg 1999;134:450.
5. Williams SA, Ehlers RA 2nd, Hunt KK et al. Metastases to the breast from nonbreast solid neoplasms. Cancer 2007;110:731 - 7.
6. Yeh CN, Lin CH, Chen MF. Clinical and ultrasonographic characteristics of breast metastases from extra mammary malignancies. Am Surg 2004;70:287 - 90.
7. Lee SK, Kim WW, Kim SH et al. Characteristics of metastasis in the breast from extramammary malignancies. J Surg Oncol 2010;101:137 - 40.
8. Koch A, Richter-Marot A, Wissler MP, Baratte A, Mathelin C. Mammary metastasis of extramammary cancers: current knowledge and diagnostic difficulties. Gynecol Obstet Fertil 2013;41:653 - 9.
9. Ravdel L, Robinson WA, Lewis K, Gonzalez R. Metastatic melanoma in the beast: a report of 27 cases. J Surg Oncol 2006;94:101 - 4.
10. Loffield A, Marsden JR. Management of melanoma metastasis to the breast: case series and review of the literature. Br J Dermatol 2005;152:1206 - 10.
11. Arora R, Robinson WA. Breast metastases from malignant melanoma. J Surg Oncol 1992;50:27 - 9.
12. Noguera J, Martinez - Miravete p, Idoate F et al. Metastases to the breast: a review of 33 cases. Australas Radiol 2007;51:133 - 8.
13. Akcay MN. Metastatic disease in the breast. Breast 2002;11:526 - 8.
14. Shukla R, Pooja B, Radhika S, Nijhawan R, Rajwanshi A. Fine-needle aspiration cytology of extramammary neoplasms metastatic to the breast. Diagn Cytopathol 2005;32:193 - 7.
15. Cangiarella J, Symmans WF, Cohen JM, Goldenberg A, Shapiro RL, Waisman J. Malignant melanoma metastatic to the breast: a report of seven cases

diagnosed by fine needle aspiration cytology. Cancer 1998;84:160 - 2.
16. Bacchi CE, Wludarski SC, Ambaye AB, Lamovec J, Salviato T, Falconieri G. Metastatic melanoma presenting as an isolated breast tumour: a study of 20 cases with emphasis on several primary mimickers. Arch Pathol Lab Med 2013;137:41 - 9.
17. Wood B, Sterrett G, Frost F, Swarbrick N. Diagnosis of extramammary malignancy metastatic to the breast by fine needle biopsy. Pathology 2008;40:345 - 51.
18. Majeski J. Bilateral breast masses as initial presentation of widely metastatic melanoma. J Surg Oncol 1999;72:175 - 7.