

Case Report

Malignant melanoma of breast: a case report

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ABSTRACT

Malignant melanoma rarely affects the breast. Malignant melanoma of breast is divided into two categories: primary and metastatic lesions. Primary melanoma involves the skin and less commonly the glandular parenchyma of the breast. Differentiating them is very important in deciding on treatment strategies. This case report aims to increase awareness of unusual neoplasms of the breast which requires a different surgical and adjuvant therapeutic approach.

Keywords: Breast, Malignant melanoma, Rare

INTRODUCTION

The breast is an uncommon site for malignant melanoma. Primary cutaneous melanoma of breast is similar to cutaneous melanoma elsewhere. Metastatic melanoma to the breast can easily be misdiagnosed as primary ductal carcinoma due to histologic patterns that mimic ductal carcinoma and to a lack of suspicion on the part of pathologist and clinician. Clinical history may be unavailable or unknown in most of the cases. Attention to unusual histological findings, even if focal can help prevent misdiagnosis and inappropriate therapy.

CASE REPORT

A 65 year old woman was admitted with lump breast on the left side since 6 months rapidly increasing in size. She had three children with regular menstrual history and attained menopause fifteen years back. Clinical examination showed a well circumscribed lobulated mass of 9x5cm occupying all the four quadrants of the breast with normal nipple, areola and surface skin. A single lymph node of 1cm size was palpable in the left axillary region. No organomegaly was noted on abdominal examination. Fine needle aspiration showed discohesive

clusters of ductal epithelial cells with high nuclear cytoplasmic ratio, coarse chromatin and nucleoli in the background of red blood cells. The diagnosis offered was ductal carcinoma. Aspiration of left axillary lymph node showed features of nonspecific lymphadenitis. The lymph node enlargement subsided after antibiotic therapy. Ultrasound abdomen was normal except for mild fatty change in the liver. Hematological and other relevant investigations were within normal limits.

We received a mastectomy specimen of 18x14x11cm size. On external examination nipple, areola and surface skin was normal. Cut section showed 11x10x8cm well circumscribed lobulated mass occupying all the four quadrants of the breast, black in color with hemorrhagic areas and clear excised margins (Figure 1). Microscopic examination showed loosely arranged tumor cells with blood filled cavernous spaces and wide areas of hemorrhage (Figure 2). Individual tumor cells are pleomorphic with prominent nucleoli and scant amount of brown pigment within the tumor cells. (Figure 3, Figure 4). The following possibilities were considered basing on the morphological features. 1. Malignant melanoma 2. Epitheloid angiosarcoma.



Figure 1: Gross: 18x14x11cm mastectomy specimen. C/s: 11x10x8cms circumscribed lobulated tumour, black in color with hemorrhagic areas not involving the skin and posterior resected margin.

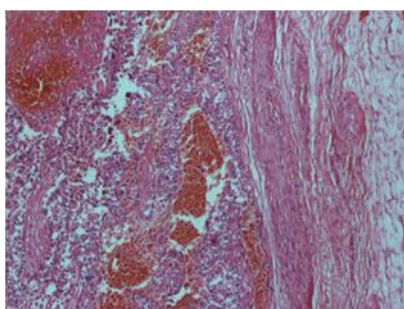


Figure 2: Photomicrograph shows loosely arranged tumor cells with areas of hemorrhages (H&E 100X).

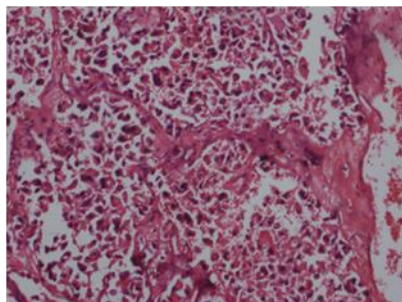


Figure 3: Photomicrograph shows sheets of pleomorphic tumour cells (H&E 100X).

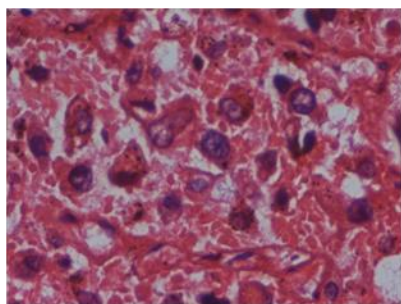


Figure 4: Photomicrograph shows individual cells are pleomorphic with prominent nucleoli and scant brown pigment (H&E 400X).

The sections were further subjected to special stains. The special stains done were reticulin stain, perl's stain for hemosiderin pigment and Fontana masson stain and bleaching with potassium permanganate for melanin pigment. Reticulin stain did not offer much information, perl's stain showed blue granular deposits in the hemorrhagic areas (Figure 5) and Fontana masson stain showed brown pigment within the tumor cells (Figure 6) and the pigment got bleached with potassium permanganate. Basing on the special stains the possibility of malignant melanoma was considered. The sections were further subjected to immunohistochemistry. HMB 45 was strongly positive in the tumor cells (Figure 7) and negative for CD 31 ruling out the possibility of angiosarcoma. There was no clinical history of cutaneous melanoma elsewhere. On histopathology metastatic melanoma to the breast is usually rich in normal glandular tissue surrounding the tumor cells which is not seen in our case. Hence the final diagnosis considered was Primary malignant melanoma of the breast.

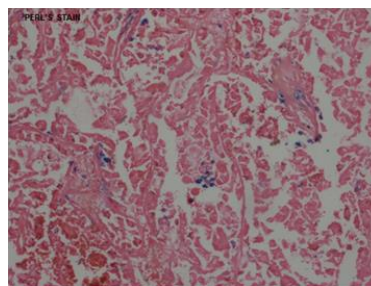


Figure 5: Perl' stain: hemosiderin pigment (blue granular deposits) in the hemorrhagic areas (100X).

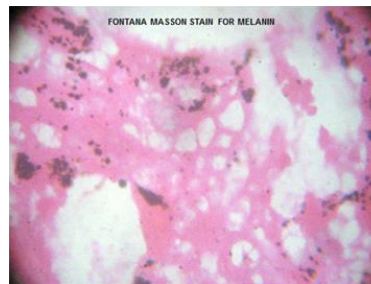


Figure 6: Fontana masson stain: brown pigment within tumor cells (100X).

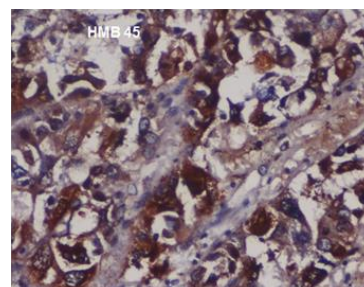


Figure 7: IHC-HMB 45 strongly positive in the tumor cells (400X).

DISCUSSION

Malignant melanoma of the breast can be primary melanoma of the breast skin or parenchyma and melanoma metastasis to the breast from extramammary site.¹ Melanoma of the breast accounts for less than 5% of all malignant melanomas.^{2,3}

Primary melanoma of the breast is rare and offers diagnostic challenge both to the histopathologist and the clinician.

Primary melanoma of the breast has to be differentiated from metaplastic carcinoma of breast with melanocytic differentiation, pigmented Paget's disease of the breast, epitheloid angiosarcoma of breast and metastatic malignant melanoma from extra mammary site.

In metaplastic carcinoma of the breast, melanocytic differentiation is just one of the several lineages of differentiation concomitantly present in the tumor. It has components of both ductal carcinoma and melanoma with morphological transition. The carcinoma component is positive for epithelial membrane antigen and CA 19-9, whereas the melanoma component is positive for HMB45 and vimentin.^{4,5}

Our case was strongly positive for HMB45 and negative for epithelial membrane antigen.

Epitheloid angiosarcoma can present as mass breast greater than 4cm in size without associated lymphedema. On histopathology the tumor cells mimic malignant melanoma associated with wide areas of hemorrhage as seen the present case. Reticulin stain typically reveals a tubular vasoformative architecture which is not seen in the present case. On immunohistochemistry the tumor cells are positive for factor VIII related antigen and CD31 in almost all cases.⁶ In the present case the tumor cells were negative for CD31.

Pigmented Paget's disease where the paget cells have phagocytosed melanin pigment, in 35% - 50% of patients will have associated invasive ductal carcinoma of breast mimicking melanoma. Clinically in almost all the cases the nipple and areola are involved. The tumor cells in Paget's disease have positive staining for PAS diastase resistant mucins and low molecular cytokeratins on immunohistochemistry.⁷

In the present case the nipple and areola was totally normal.

Primary melanoma of the breast has to be differentiated from metastatic melanoma breast from extra mammary site. Metastasis to breast is rare. Melanoma is however, among the most commonly reported primary tumors to metastasize to the breast. Metastatic tumor is commonly localised in the upper quadrant of the breast and present at a younger age group. Metastatic melanoma to the

breast can easily be misdiagnosed as primary ductal carcinoma (poorly differentiated type - grade 3) on histology. On histopathology metastatic tumor will be rich in glandular tissue with lack of elastosis and calcification. Primary ductal carcinoma usually shows elastosis and commonly associated with in situ carcinoma. In the present case there was no history of cutaneous melanoma elsewhere, however the possibility of metastatic melanoma breast from burnt out primary cannot be ruled out. Metastatic melanoma from an unknown primary site accounts for 4-5% of all melanomas and its occurrence in breast is rare possibility. Melanoma is a capricious neoplasm associated with autoregression where the occult primary may disappear spontaneously. Differentiation from primary and metastatic tumor is difficult, however it requires clinical correlation.

Ravdel et al.⁸ in a retrospective review of melanoma registry from 1975-2005 identified 27 patients with mammary metastasis from melanoma. Seventy percent of patients were in the perimenopausal group and 82.6% had primary lesion in the upper hemibody.

CONCLUSION

Malignant melanoma of breast is an unusual tumor and rare. It can be mistaken for poorly differentiated ductal carcinoma (grade 3) based on histology alone. Immunohistochemistry is confirmatory. Attention and awareness of rare tumors prevents misdiagnosis of primary ductal carcinoma and save the patient from unnecessary or inappropriate therapies.

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