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Case Report

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Primary cutaneous malignant melanoma of the breast: A case report

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ABSTRACT

Cutaneous malignant melanoma (CMM) of the breast may be classified in two categories as primary and metastatic lesions. CMM represents less than 5% of all malignant melanomas (MM). Clinical findings and diagnostic tools are similar to other MM developed in various areas of skin. Treatment should provide adequate surgical border with wide local excision. Since the presence of lymph node metastasis is a very crucial prognostic factor, lymph node status should also be evaluated. In this article, we presented a 40 year old female patient with cutaneous MM of the breast, who presented with a congenital, blue colored, raised nevus, over the right breast lower lateral quadrant periareolar area, which has been growing in recent years with color darkening and non-healing ulcer development. We aimed to present the clinical, radiologic, pathologic findings and treatment modalities of CMM of the breast with literature review.

1. Introduction

Malignant melanoma (MM) rarely affects the breast. Cutaneous malignant melanoma (CMM) of the breast includes less than 5% of all MM cases (Lee et al., 1977; Kurul et al., 2005; Alzaraa and Sharma, 2008). MM of the breast may occur in various types including primary cutaneous melanoma, primary glandular melanoma, metastatic melanoma, and in-transit metastasis to breast (Kurul et al., 2005). Differential diagnosis is crucial to treatment management. The clinical features of CMM of the breast have similarities with other melanoma types in different skin areas. It requires different treatment approaches as it presents different metastatic modalities than primary cancers of breast (Papachristou et al., 1979). Wide local excision with adequate resection borders and evaluation of lymph node status are very important for the prevention of local- regional recurrence. If adequate surgical resection can not be supplied with wide local excision, mastectomy may be required. Since MM is an immunogenic tumor, immunotherapy can be applied for high risk cases (Biswas et al., 2010). Brain, lung and liver distance metastasis may be seen with a very bad prognosis (Bassi et al., 2004). We presented a 40 year old female patient with CMM of the breast and discussed the clinicopathologic features and treatment approaches by correlating with literature.

2. Case report

A forty-year-old female patient was presented with a black pigmented skin lesion over her right breast. She had that light blue colored lesion since her birth, which was raised above the skin over her right breast lower lateral quadrant and she reported that the lesion has been growing in recent years, darkened in color, and developed non-healing ulcers in recent

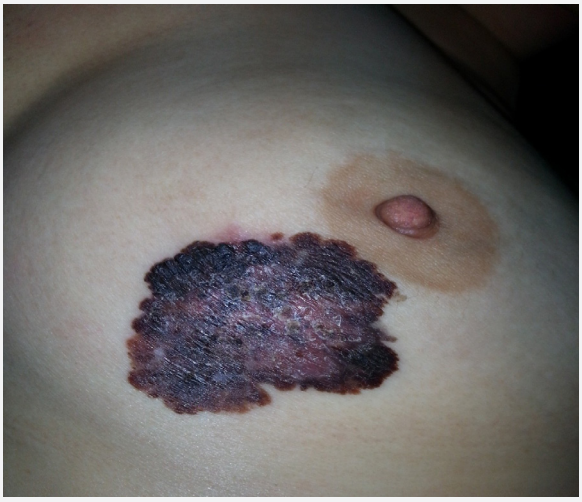

Fig. 1. A 40 year old female with a 6.0x4.0 cm sized and an ulcerative, black pigmented skin lesion in the right breast.

months. She had no history of cancer. She did not smoke. No family history of breast or other organ cancers were reported. Ulcerated, black pigmented, 6.0x4.0 cm sized skin lesion was seen over periareolar right breast lower lateral quadrant skin, no mass was palpated in her breast (Fig. 1).

No areolar discharge and retraction was detected. Right axillary lymphadenopathies were palpable. No pathology was seen during other skin area and mucosal examinations. Incisional skin biopsy was performed. There were neoplastic melonycitic nests in epidermis and stroma. There was pagetoid spread within epidermis. Intracytoplasmic brown pigment was present within epidermal neoplastic cells and extracellularly in the stroma (Fig. 2). There was cytoplasmic Melan A, HMB-45 and S-100 immunoreactivity neoplastic cells in dermis and stroma and positive cytoplasmic immunoreactivity (Fig. 3). Pathology result was reported as following; MM, Breslow: 2.4 mm, Mitosis: 3/10 high power magnification (HPM). Inferior and one lateral margin are positive (pT3b). Breast ultrasonography (US) showed 1 cm at the largest, scattered, multiple complicated simple cysts in right breast and lymph nodes in right axillary region. Mammography (MMG) was revealed a dense breast. Breast magnetic resonance imaging did not show any pathologic findings. Positron emission tomography-computed tomography did not show metastasis. Subsequently, right modified radical mastectomy (MRM) was performed due to the presence of extreme wide tumor and right axillary region lymphadenopathies. Macroscopic 5.4x5.0 cm sized, brown-gray pigmented lesion, was seen on the lower lateral quadrant skin of the MRM. Superior, medial, lateral, and inferior surgical margins were free of tumor. The closest surgical margin was inferior margin with 0.5 cm. Superficial spreading MM was detected within the skin of MRM specimen. Breslow: 3.1 mm (pT3b); no regression findings in lesion; lymphocytic infiltration (+); mitosis: 1/10 HPM. There was no tumor within breast parenchyma, fibrocystic changes was revealed. Thirty axillary lymph nodes were reactive (pN0). Based on TNM staging system of the 7th edition American Joint Committee on Cancer (AJCC) classification in 2010, she was stage IIB (T3bN0M0) (Balch et al., 2010). She was discharged without problem at postoperative 7th day. She was evaluated by medical oncology. One year high dose adjuvant immunotherapy (interferon alpha-2b) was planned since she was in stage IIB.

3. Discussion

MM incidence has been increasing in recent years and it can occur in any body part. MM is seen mostly in trunk (45%) in men, and in lower extremities in women (42%) (Balch et al., 2010). MM of the breast may be classified as primary cutaneous and glandular melanoma and metastatic melanoma from outside of the breast (Biswas et al., 2010). CMM of the breast is very rare entity and represents less than 5% of all MM (Lee et al., 1977; Alzaraa and Sharma, 2008). There are only few cases in literature (Lee et al., 1977; Papachristou et al., 1979). Kurul et al. (2005) reported that each patient with cutaneous MM of the breast showed different findings not only at the beginning but also during follow-ups.

The etiology of primary cutaneous MM could not be understood completely. There are strong association with presence of personal factors such as exposure to ultraviolet radiation, sensitivity to sunlight as a major environmental risk factor, skin pigmentation and presence of large nevus (English et al., 1997). Our patient had a congenital nevus.

Bono et al. (2003) noted that CMM chooses the upper medial quadrant of sun exposed breast. In this case, the lesion was localized over lower-lateral quadrant of right breast.

Signs and physical findings of CMM of the breast have similarities with those developed in other skin regions (Lee et al., 1977; Kurul et al., 2005). Clark's level, an indicator for anatomic invasion depth, does not show a significant difference than other regions in terms of prognosis and lymph node status (Papachristou et al., 1979; Kurul et al., 2005).

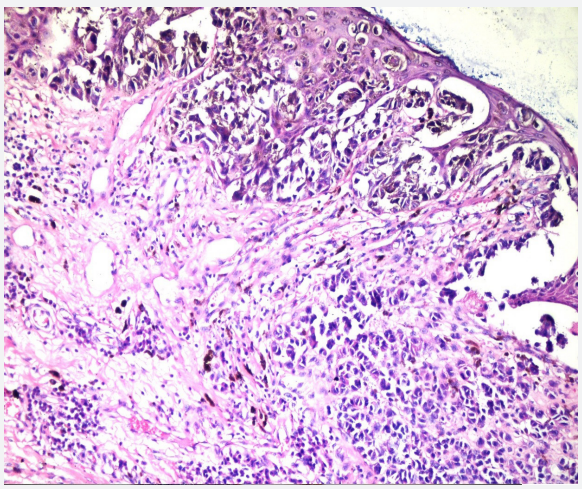

Fig. 2. Neoplastic nests within epidermis and dermis. There was pagetoid spread in the epidermis. Brown pigment in neoplastic cells in epidermis and extracellularly in the stroma (Hematoxylin-Eosin (HE), 200x).

However, CMM of the breast may be considered as a metastatic lesion in breast US and/or MMG. In our case's breast US, we observed 1 cm at the largest, scattered, multiple complicated simple cysts in right breast and lymph nodes in right axillary region.

MMG showed a dense breast. Pigmented Paget disease of the breast may sometimes imitate MM (Mitchell et al., 2006). If MM occurs in the nipple-areolar area, phagocytosis

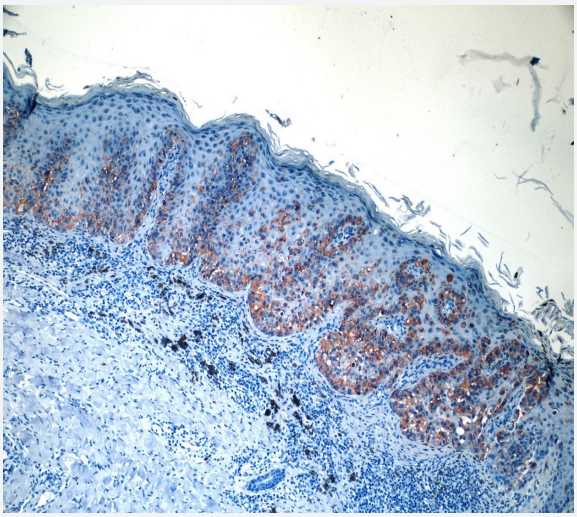

Fig. 3. Cytoplasmic HMB-45 immunoreactivity in neoplastic cells within epidermis of the breast (HE, 200x).

of melanin by Paget's cells can distinguish the MM from Paget's disease of the breast. Differentiation from pagetoid intraepithelial melanoma is based on the presence of S-100 antigen immunostaining in melanoma and carcinoembryonic antigen immunostaining in Paget's disease. Comprehensive physical examination is required for the diagnosis of primary CMM. History should be investigated for excision of pigmented lesion. In our case, there was no skin lesion in other body parts. Personal and family histories were normal. All suspected lesions should be treated with excisional biopsy. If whole lesion excision will cause very big defects, incisonal biopsy should be chosen (Tavakkolizadeh et al., 2010). Our patient had a wide lesion and we performed her incisional biopsy. Pathology revealed superficial radiating MM.

In order of decreasing frequency, the four types of melanoma are superficial spreading, nodular, lentigo maligna, and acral lentiginous (Desmond and Soong, 2003). The most common type, superficial spreading, accounts for up to 70% of melanomas. These lesions occur anywhere on the skin except the hands and feet. They are typically flat and measure 1 to 2 cm in diameter at diagnosis (Balch et al., 2001). Before vertical extension, a prolonged radial growth phase is characteristic of these lesions.

With diagnosis made, treatment of melanoma may range from simple excision to more complex lymphadenectomy or immunotherapy. Regardless of tumor depth or extension, surgical excision is the management of choice. Lesions 1 mm or less in thickness can be treated with a 1 cm margin (Essner, 2003). For lesions 1 mm to 4 mm thick, a 2 cm margin is recommended. Lesions of greater than 4 mm may be treated with 3 cm margins (Balch et al., 2001; Essner, 2003).

All clinical positive lymph nodes should be resected with regional nodal dissection. If possible, lymphatics between lesion and regional nodes should also excised together. During axillary dissection, the nodes medial to pectoralis minor muscle should certainly be excised.

Since MM is an immunogenic tumor, immunotherapy may be performed in higher risk cases. Interferon alfa-2b is the only Food and Drug Administration-approved adjuvant treatment for AJCC stages IIB/III melanoma (Kirkwood et al., 1996). In these patients, both the relapse-free interval and overall survival were improved with use of INF-a (Kadison and Morton, 2003). Side effects were common and frequently severe; the majority of the patients required modification of the initial dosage and 24% discontinued treatment (Kirkwood et al., 1996; Kadison and Morton, 2003).

Radiosensitivity of melanoma cells is low (Biswas et al., 2010). The role of chemotherapy or hormonal therapy is insignificant.

Since it still makes regional or distance metastasis despite of various aggressive systemic treatments, CMM is a life threatening disease. It most commonly metastasized to the brain. Standard treatment of that case is dacarbazine (Bassi et al., 2004).

Breast examination should be done during follow-ups. Biopsy should be performed not only in the presence of visible in-transit metastasis but also for light blue colored, freckle-like skin lesions.

In conclusion, in our case with this rare breast pathology, we performed mastectomy+level 1-2-3 axillary dissection due to the presence of wide skin lesion and clinical and radiologic axillary lymphadenopathies. As she was at AJCC stage IIB, one year- high dose interferon alpha-2b treatment was planned for postoperative term. In recent literature review, it was seen that performed treatment was appropriate to current treatment modalities.

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