A Case of Malignant Melanoma Presenting as a Breast Mass

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Malignant melanomas arising in the skin, buccal mucous membranes. and retina are encountered frequently. A malignant melanoma characteristically disseminates widely but infrequently metastasizes to the breast, and primary melanoma of the breast is even rarer. Primary melanomas can arise in the glandular tissue of the breast. We report a case of malignant melanoma either primary in the breast or metastatic from an unknown primary that presented initially as a left breast mass without a detectable cutaneous lesion. **(Journal of Korean Breast Cancer Society 2003; 6:35-38)**

Key Words: Breast, Malignant melanoma

INTRODUCTION

Approximately 5% of all malignant melanomas originate from primarily noncutaneous sites. They are preferentially distributed along the choroid, the meninges, the subserous space of the esophagus. and the intestinal tract. Little is known about their biological behavior, and the prognosis is generally less favorable than that of primary cutaneous malignant melanomas because noncutaneous melanomas are often not discovered until they are at an advanced stage. Breast metastases from nonmammary malignant neoplasms account for approximately 2% of breast tumors.(*1*) Apart from hematopoietic neoplasms, malignant melanomas and lung carcinomas are the most commmonly reported primary tumors to metastasize to the breast.(*2-4*) Primary malignant melanomas of the breast and cutaneous melanomas arising in the skin of the breast have been reported.(*4-6*) We report a case of malignant melanoma that presented initially as a left breast mass without cutaneous lesion.

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Received: February 5, 2003 Accepted: March 16, 2003

CASE REPORT

A 56-year-old woman presented to Soonchunhyang University Chunan Hospital in December 2002 with a mass in the left breast that had first been detected 4 months previously. She also complained of left shoulder pain. She had four children. There was not family history of breast cancer. The breast was flat, and small in diameter. On physical examination, she was found to have a 5×5 cm, firm, well-defined, and tender mass in the upper outer quadrant of the left breast that was not attached to the skin. The presence of an enlarged lymph node in the left axilla was doubtful. A physical examination revealed no cutaneous lesions. Mammography of the left breast revealed a lobular high density mass with microlobulated margins (Fig. 1). Sonograms showed a lobulated heterogeneous hypoechoic

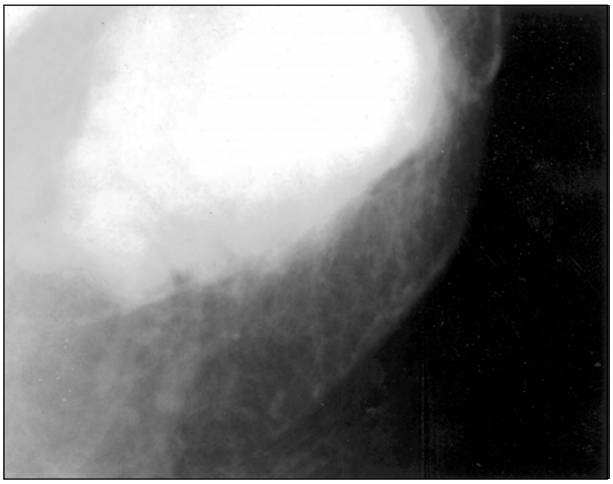

Fig. 1. Left mediolateral oblique mammogram shows a lobular high-density mass with microlobulated margins.

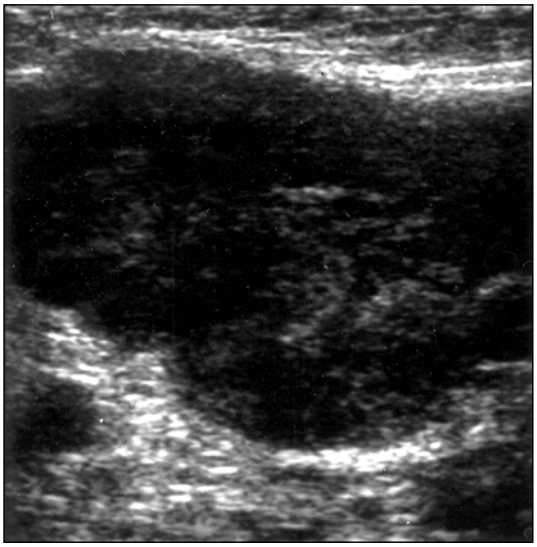

Fig. 2. Transverse sonograms show a lobulated heterogeneous hypoechoic mass and a daughter nodule in the axillary tail portion of the left breast.

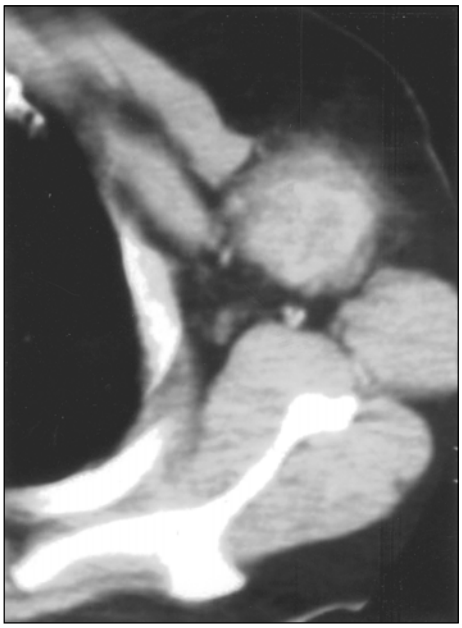

Fig. 3. Contrast-enhanced CT scan shows an irregular heterogeneously enhanced mass in the axillary tail portion of the left breast.

mass and a daughter nodule in the axillary tail portion of the left breast (Fig. 2). A contrast- enhanced CT scan showed an irregular heterogeneously enhanced mass in the axillary tail portion of the left breast (Fig. 3). Fine-needle aspiration cytology of the mass suggested that it was a malignant carcinoma. The patient underwent a mastectomy and axillary lymph node

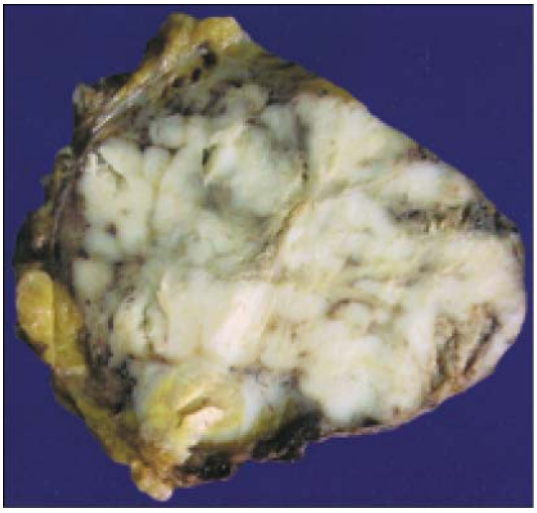

Fig. 4. The gross specimen was well circumscribed, measured 5× 4 cm and the cut surface of the tumor appeared white.

dissection. The material removed during the mastectomy contained a well-circumscribed 5-cm mass disconnected from the overlying skin, and the cut surface of the tumor appeared white (Fig. 4). Microscopic examination of the excised specimen revealed it as a malignant melanoma of the breast. The tumor cells showed pleomorphism with clear cytoplasm, and nucleoli were prominent and frequent mitoses were observed, but melanin pigment was not seen on H&E staining (Fig. 5A, B). The HMB-45 and S-100 immunostaining was strongly positive in the tumor cells (Fig. 6, 7). ER and PR were negative, and the surrounding lymph nodes contained no tumor cells. The patient was examined for evidence of a primary melanoma. Careful examination of the skin and mucous membranes revealed no areas suggestive of a primary malignant melanoma nor even a suspicious nevus. She subsequently received systemic chemotherapy.

DISCUSSION

A breast lesion is a rare manifestation of a nonmammary malignant neoplasm. Recent series have shown that metastatic lesions account for 2.7～5.1% of breast malignancies, as diagnosed by fine-needle cytology. Excluding metastasis from tumors of the opposite breast, melanomas and lymphomas are the most common sources of metastases.(*6,7*) The metastatic lesion often appears as a painless, solitary, well-circumscribed lesion in breast regions rich in glandular tissue, but local tenderness and multiple nodules involving one or both breasts have also been reported.(*2,8-10*) Mammographically, metastatic

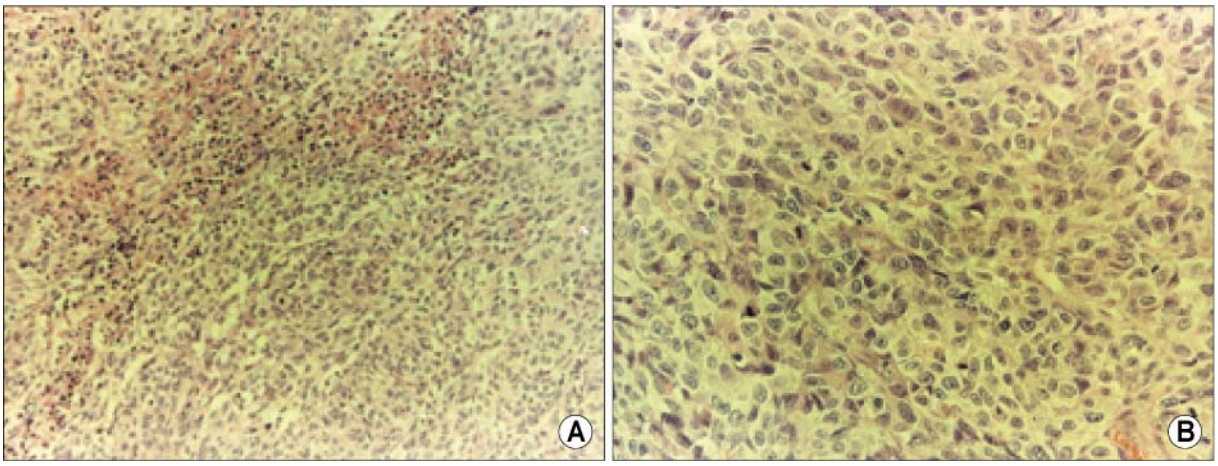

Fig. 5. (A) The tumor mass shows necrosis, and is composed of round cells with no specific organoid appearance. Melanin pigment is not seen (H&E stain, ×100). (B) The tumor cells show pleomorphism with clear cytoplasm. Nucleoli are prominent and frequent mitoses are observed. Melanin pigment is not seen (H&E stain, ×400).

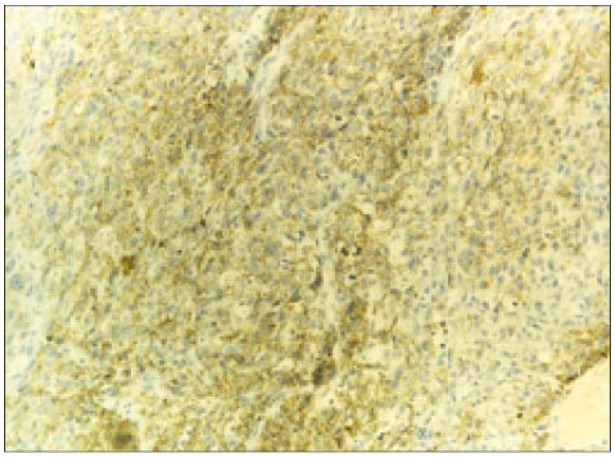

Fig. 6. HMB-45 immunostaining was strongly positive in the tumor cells.

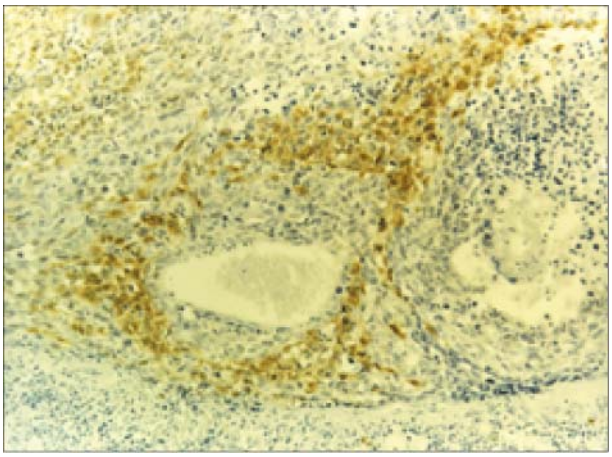

Fig. 7. S-100 immunostaining was strongly positive in the tumor cells.

lesions tend to be discrete round shadows without spiculation, similar to circumscribed primary breast carcinomas such as papillary, medullary, and mucinous tumors.(8,*10*) Breast metastases from a melanoma may be more common in younger women because the vascularity of their breasts is greater than that in older women. Metastatic melanoma to the breast frequently occurs as a solitary nodule in the upper outer quadrant, which has the most abundant glandular tissue and consequently the best blood supply.(*1*) Histologically, a metastatic melanoma is often surrounded by breast parenchyma that shows little or no hyperplasia and no in situ carcinoma. (3,*11*) Immunohistochemical studies could be helpful in cases mimicking primary carcinoma. The prognosis depends on the histologic type of the tumor involving the breast. With a metastatic carcinoma or melanoma, metastases at other organs develop rapidly, and the majority of patients die within 1 year. (*1,3,8,10*) The median survival time is 10～11 months, although a few long-term metastatic melanoma survivors have been reported. Breast metastases in malignant melanoma denote a poor prognosis, with a survival of ＜1 year.(*1*) Metastases from cutaneous malignant melanomas represent the majority of cases of melanoma of the breast; however, only a few primary cases have been described.(*12*) A few cases purported to be primary malignant melanoma of the breast have appeared in the literature, although a primary malignant melanoma may arise in the areola of the breast.(*2-4*) primary malignant melanoma of the breast is a relatively unusual neoplasm. in 1956, Gatch (*13*) described a 52-year-old-woman who had noted an en-

larging breast tumor over a 2-year period. A simple mastectomy was done, and the diagnosis was malignant melanoma. No cutaneous or mucosal lesions were present, and no evidence of melanoma was found at autopsy. Recently a histopathological stimulator of malignant melanoma in the breast has been identified, and is included in the differential diagnosis of pigmented lesions in the breast. A comprehensive physical checkup found no evidence of primary malignancies at other locations in this case, as is required for this diagnosis. In an autopsy series,(*14*) the skin was the major primary site in 79% of such neoplasms, with 7% being from unknown sites. Any history of previous removal of pigmented lesions must be investigated and reviewed if present. It is also important to remember that a melanoma can undergo spontaneous regression and may not be detected even in a thorough physical examination. Our case was a malignant melanoma presenting as a breast mass without skin lesion. We searched the entire skin of the patient for pigmented moles, but this revealed no areas suggestive of a primary malignant melanoma nor even a suspicious nevus. instead, it might have been a metastasis from a minute and undiscovered tumor of the skin or eye, or even from a tumor that had disappeared spontaneously. These possibilities make it almost impossible to prove that a melanoma of the breast is not a metastasis. Many authors have proposed that a primary melanoma must be a large papillary or polypoid tumor arising from a single pedicle at the mucosal surface.(*15,16*) To distinguish primary from metastatic melanomas it is important to identify a junctional component consisting of clustered melanocytes at the mucosal-submucosal junction adjacent to the tumor mass. Some investigators consider this feature the most convincing histologic evidence for primary melanomas of unusual locations.(*16*) A junctional component was not identified in our case. The existence of melanocytes in the breast and subsequent development of a primary tumor at this site is indeed possible. Melanocytes derive from cells of the neural crest and can migrate throughout the body. They have been definitively identified as of endodermal origin. Although the majority of cases of melanoma metastatic to the breast can be interpreted correctly on fine-needle aspiration smears, some cases are diagnostically challenging. As in breast cancer, the cytologic findings in cases of malignant melanoma metastatic to the breast also can show loosely cohesive clusters and dispersed single cells with eccentric, and prominent nuclei. In our case fine-needle aspiration cytology suggested a malignant carcinoma. In conclusion, this case illustrates the need to include metastatic melanoma in the differential diagnosis of primary malignant melanomas of the breast. Not only are such lesions encountered infrequently, but without the knowledge of a primary lesion, the possibility of a metastasis can be easily overlooked. A thorough history and physical examination and the inclusion of immunostaining for S-100 and HMB-45 are crucial to an accurate diagnosis.

REFERENCES

1) Vergier B, Trojani M, de Mascarel I, Coindre JM, Le Treut A. Metastasis to the breast: differential diagnosis from primary breast carcinoma. J Surg Oncol 1991;48:112-6.
2) Silverman JF, Feldman PS, Covell JL, Frable WJ. Fine needle aspiration cytology of neoplasms metastatic to the breast. Acta Cytol 1987;31:291-300.
3) Hajdu SI, Urban JA. Cancers metastatic to the breast. Cancer 1972;29:1691-6.
4) Bernardo MM, Mascarenhas MJ, Lopes DP. Primary malignant melanoma of the breast. Acta Med Port 1980;2:39-43.
5) Papachristou DN, Kinne DW, Rosen PP, Ashikan R, Fortner JG. Cutaneous melanoma of the breast. Surgery 1979;85:322-8.
6) Roses DF, Harris MN, Stern JS, Gumport SL. Cutaneous melanoma of the breast. Ann Surg 1979;189:112-5.
7) Sneige N, Zacharia S, Fanning TV, Dekmezian RH, Ordonez NG. Fine-needle aspiration cytology of metastatic neoplasms in the breast. Am J Clin Pathol 1989;92:27-35.
8) McCrea ES, Johnston C, Haney PJ. Metastases to the breast. Am J Roentgenol 1983;141:685-90.
9) 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.
10) Toombs BD, Kalisher L. Metastatic disease to the breast: clinical, pathologic, and radiographic features. Am J Roentgenol 1977;129:673-6.
11) Kelly C, Henderson D, Corris P. Breast lumps: rare presentation of oat cell carcinoma of the lung. J Clin Pathol 1988;41:171-2.
12) Pressman PI. Malignant melanoma and the breast. Cancer 1973;31:784-92.
13) Gatch. A melanoma, apparently primary in the breast. Arch Surg 1956;73:266-8.
14) de la Monte SM, Moore GW, Hutchins GM. Patterned distribution of metastases from malignant melanoma in humans. Cancer Res 1993;43:3427-33.
15) Verbanck JJ, Rutgeerts LJ, van Aelst FJ, Tyloat JH, Decoster JM, Novez DN, et al. Primary malignant melanoma of the gallbladder, metastatic to the common bile duct. Gastroenterology 1986;91:214-8.
16) Deugnier Y, Turlin B, Lehry D, Pennarun JR, Verger P, Launois B, et al. Malignant melanoma of the hepatic and common bile ducts. Arch Pathol Lab Med 1991;115:915-7.