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Case report

Malignant fibrous histiocytoma of the female breast A case report

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Abstract

Malignant fibrous histiocytoma (MFH) of the breast is very rare. Sonographic findings of MFH of the breast have not been reported before. We herein report a case of a 46-year-old woman with a histologically proved MFH of her right breast. Ultrasound examination revealed a 6-cm tumor mass with solid and cystic components, which were attributed after histological examination to hypercellularity and hemorrhage within the tumor. Histopathological diagnosis was compatible with MFH of the breast.

Keywords: Breast; Malignant fibrous histiocytoma (MFH); Ultrasound

1. Introduction

Malignant fibrous histiocytoma (MFH) is the most common soft-tissue sarcoma of middle and late adulthood and characteristically affects men [1]. This neoplasm is a pleomorphic sarcoma that contains varying proportions of two cell types: fibroblast-like and histiocyte-like cells. The tumor most frequently arises from the deep fascia or skeletal muscle in an extremity. Primary MFH of the breast is extremely rare.

To our knowledge, sonographic findings of MFH of the breast have not been reported before. In this report, we describe such a case in a 46-year-old woman, with ultrasound examination and histological diagnosis.

2. Case report

A 46-year-old woman complained of a newly growing mass in the outer lower quadrant of her right breast in the past 3 months. Pain and tenderness over the mass were noted. The patient had a history of uremia and underwent hemodialysis. The patient was a mother of one child and denied any family history of breast cancer.

Physical examination revealed a bulging hard mass in the right breast. There was no nipple discharge and no skin distortion and there were no palpable lymph nodes in the axillar area. Ultrasound examination (HDI 3500, ATL, Bothell, WA) of the right breast using a 5–12 MHz linear-array transducer showed a huge soft-tissue mass in the 5 to 10 o'clock direction, 0.5 cm from the nipple. The tumor was well demarcated, with cystic and solid components (Fig. 1A). On the Doppler ultrasound, the solid component of the tumor exhibited increased blood flow, suggestive of hypervascularity (Fig. 1B and C). The patient did not complete X-ray mammography because of pain during compression of the diseased breast.

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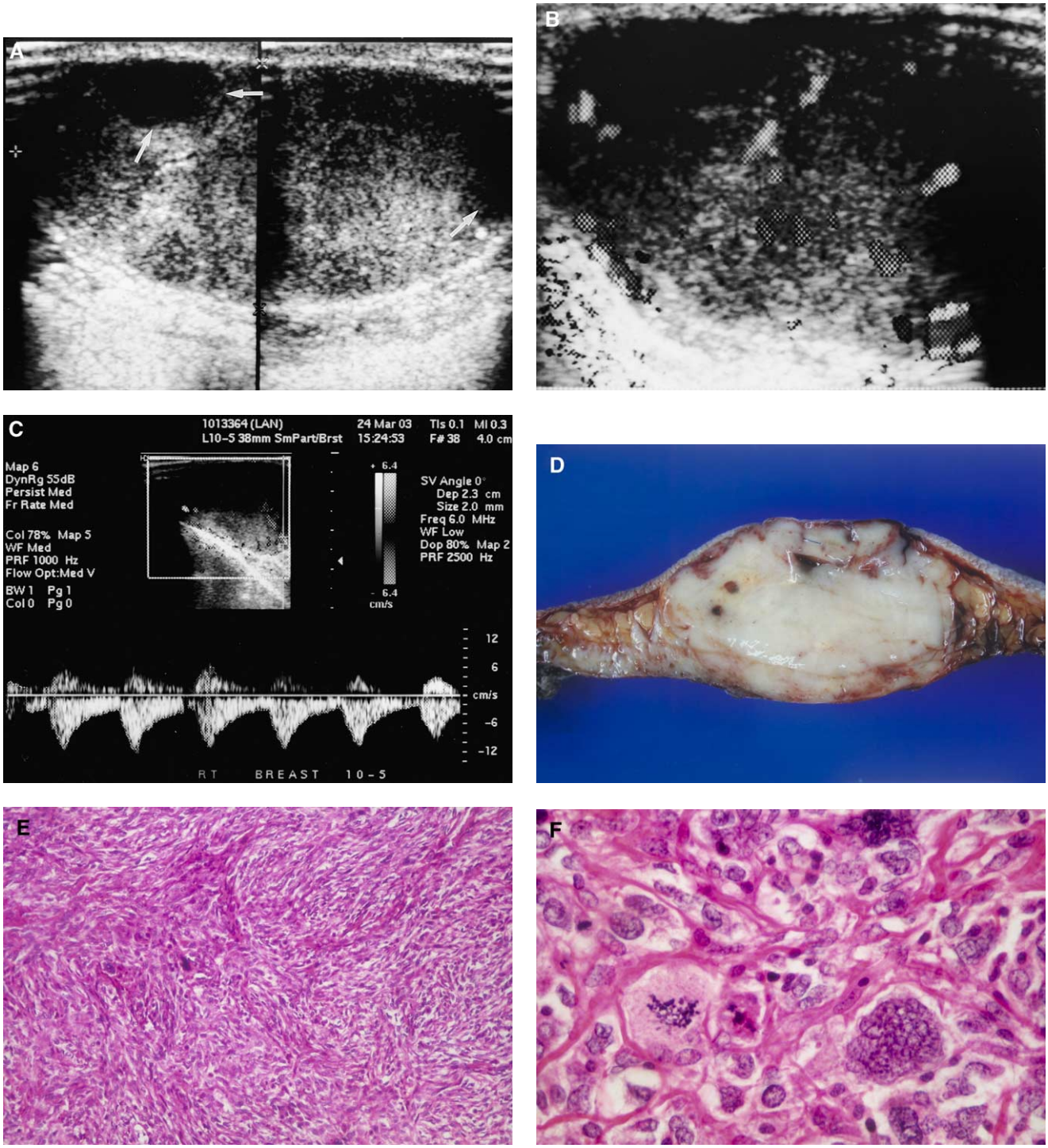

Fig. 1. (A) Sonography of right breast demonstrates a well-demarcated isoechoic to hypoechoic mass lesion in the 5 to 10 o'clock direction, beneath the nipple. Focal cystic change (arrows) with posterior enhancement is noted. (B) Color Doppler sonogram of right breast reveals hypervascularity with color flow signals in the breast mass. (C) Color Doppler and spectral Doppler of the breast mass show pulsatile arterial blood flow inside the lesions. (D) Grossly, the tumor has a circumscribed border. The cut surface is yellow to white and soft in appearance. Focal hemorrhage is seen. (E) The tumor exhibits characteristic storiform growth pattern and is composed of spindle cells (H&E × 100). (F) Multinucleated giant cells and mitoses are easily seen (H&E × 400). (G) The tumor cells are immunoreactive for vimentin (× 200). (H) The tumor cells are negative for cytokeratin (× 200).

After 7 days, the patient received an incisional biopsy followed by modified radical mastectomy. The histology of the biopsy confirmed it to be a malignant spindle cell tumor. The specimen from mastectomy revealed a well-defined tumor, measuring 6×5×3 cm, which occupied most of the breast parenchyma. The tumor mass was yellow to white. Focal hemorrhage was seen (Fig. 1D). On microscopy, the breast tumor showed a picture of a

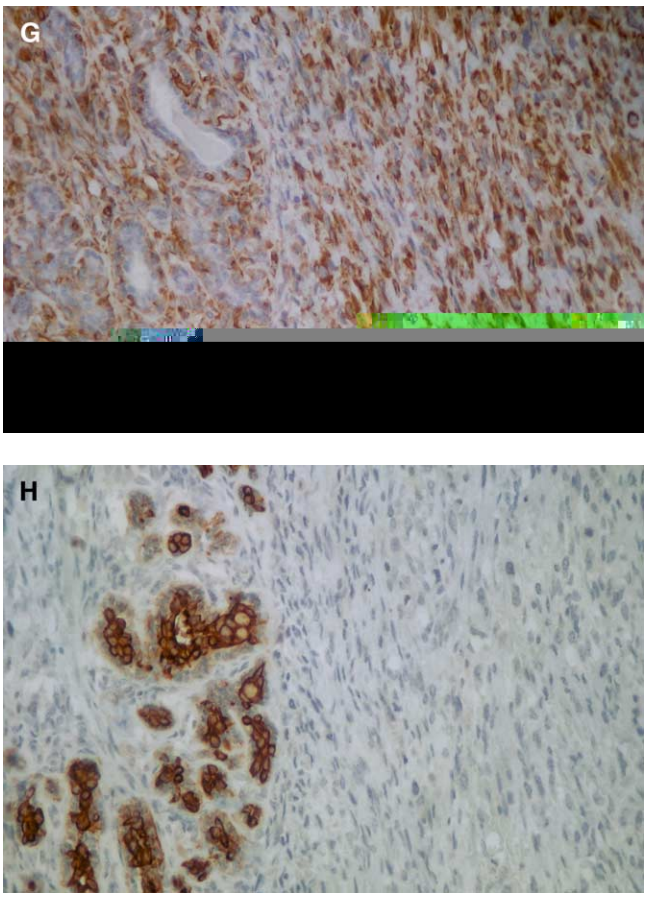

Fig. 1. (*continued*)

storiform-pleomorphic type of MFH. It was composed of hypercellular spindle cells arranged in a distinct storiform pattern (Fig. 1E). Many multinucleated giant cells and frequent mitoses were seen (Fig. 1F). No epithelial component or other sarcomatous differentiation was found in the tumor. The immunohistochemical stain was positive for vimentin (Fig. 1G) and negative for cytokeratin (Fig. 1H) and actin. None of 10 dissected axillary lymph nodes showed metastatic sarcoma.

The patient had no evidence of local recurrence or distant metastases in the 8 months after her operation.

3. Discussion

MFH is the most common adult soft-tissue sarcoma in the deep connective tissue of the extremities, abdominal cavity, and retroperitoneum. The incidence of MFH in the mammary gland is low. O'Brien and Stout [2] first reported four cases of so-called "malignant breast fibroxanthoma" out of a total of 52 mesenchymal tumors in their reviews. MFH is a tumor of mesenchymal tissue origin and has possibly been described as malignant breast fibroxanthoma [2] and stromal sarcoma [3] in the past. However, MFH can be easily confused with other sarcomas with a similar degree of cellular pleomorphism.

In the extremities, the sonographic appearance of MFH is usually nonhomogeneous and hypoechogenic, with areas of necrosis [4]. The sonographic findings of MFH in the liver can reflect an internal architecture of abundant fibrosis, myxoid degeneration, and/or hemorrhagic necrosis on histology [5].

MFH of the breast has similar sonographic appearance as appears in the other organs. The tumor in our case had cystic components with posterior enhancement, whereas the solid component showed hypervascularity on the Doppler sonogram. These sonographic findings may be attributed to the hypercellular tumor and focal hemorrhage, as documented on our histology.

The sonographic findings of MFH of the breast are nonspecific and may be similar to those of phyllodes tumor and lymphoma. Most of the phyllode tumors have been reported to be lobulated masses with smooth margins, heterogeneous hypoechoic internal echoes and no microcalcification [6]. Phyllodes tumors commonly have thin and irregular cystic spaces. Lymphoma generally is a circumscribed or irregular hypoechoic mass. The mass may simulate a cyst or can appear as a pseudocystic serpentine mass [7]. Lymphoma commonly presents with many enlarged lymph nodes. In MFH of the breast, metastases are mainly hematogenous, and axillary lymph node involvement is not common [8–10]. When lymph node involvement is present, it is a sign of widely disseminated disease [8].

In a previous report of MFH, X-ray mammography had revealed a large tumor of greater density than the rest of the breast with no microcalcification or speculation [11]. However, our patient felt pain during compression of the breast, and, therefore, the mammographic examination was not completed.

On microscopy, primary MFH has been categorized into five major subtypes: storiform-pleomorphic, myxoid, giant cell, inflammatory, and angiomatoid [12]. The storiform-pleomorphic subtype is the most common variant of MFH. It should be noted that findings of fine needle aspiration from MFH may resemble those of phyllodes tumor [8,13]. The treatment of choice for breast MFH is modified radical mastectomy and axillary lymph node dissection. Overall, the median survival of patients with breast MFH was 58 months [14]. There was no correlation between the size of the primary tumor and the risk of recurrence or death from disease [14]. The role of adjuvant chemotherapy and radiation in breast MFH is unclear.

In summary, we report the first case of MFH of the breast with findings from sonography. MFH should be considered in the differential diagnosis of a huge tumor mass in the breast with progressive growth in a short period of time, but lack of axillary lymph node involvement or distant metastasis at presentation.

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