Case Reports

Myxoid Malignant Fibrous Histiocytoma of the Breast: Report of a Case

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Abstract

Malignant fibrous histiocytoma (MFH) is the most common type of soft tissue sarcoma, but it rarely develops as a primary tumor in the breast. Furthermore, no case of the myxoid variant of MFH in the breast has ever been documented. We report the case of a 52-year-old woman with a breast tumor that was immunohistochemically confirmed to be myxoid MFH. She underwent a radical mastectomy and is currently well with no evidence of local recurrence or metastatic spread after 3 years of follow-up.

Key words Malignant fibrous histiocytoma · Breast · Radical mastectomy · Immunohistochemistry

Introduction

Malignant fibrous histiocytoma (MFH) probably represents the most common soft tissue sarcoma of middle and late adulthood and characteristically affects men. This neoplasm is a pleomorphic sarcoma that contains two cell types: fibroblast-like cells and histiocyte-like cells.1,2 As each tumor contains varying proportions of these two cell types, a wide range of histologic features is possible. As a result, MFHs have been characterized into five major subtypes: storiform-pleomorphic, myxoid, giant cell, inflammatory, and angiomatoid.3,4 The myxoid subtype is the second most common variant, after the storiform-pleomorphic variant.5 This tumor most frequently arises from the deep fascia or skeletal muscle in an extremity, and its primary development in the breast, not in combination with any other malignancies such as cystosarcoma phylloides, or secondary to radiation therapy, is extremely rare. This report describes a case of myxoid MFH of the breast.

Case Report

In June 1997, a 52-year-old postmenopausal woman was admitted to our Department of Surgery for investigation and treatment of a left breast mass. She had first noticed the mass 4 years previously, and it had gradually become increasingly tender. Physical examination revealed a lobulated giant tumor in the left breast, 20 × 20 cm in size, with ulceration (Fig. 1).

Mammography showed a homogeneous mass shadow with no microcalcification or spiculation replacing the mammary gland (Fig. 2). Computed tomography (CT) demonstrated a hypodense lesion with tumor necrosis and muscle invasion (Fig. 3). The tumor marker carbohydrate antigen (CA)-125 was elevated, at 85 U/ml (normal <35 U/ml), but carcinoembryonic antigen, CA19-9, and CA15-3 were within normal limits. The patient also had myoma uteri and anemia.

No other lesions were seen on chest X-ray, bone scintigraphy, or CT of the chest and abdomen. Aspiration biopsy cytology showed only necrotic tissue and therefore, a primary malignant tumor of the breast was clinically diagnosed.

On June 6, radical mastectomy (Bt + Ax + Mj + Mn) with skin transplantation was performed. At the same time, hysterectomy with bilateral oophorectomy was also carried out because of the myoma uteri and elevated CA-125. No further treatment was given. After 3 years of follow-up, the patient is doing well with no signs of local recurrence or metastatic spread.

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An elastic-firm tissue mass measuring $22.0 \times 20.0 \times 11.5\, \text{cm}$ was examined histopathologically.

The additional sections were comprised of lobules separated by fibrous tissue. In each lobule, there was diffuse proliferation of small tumor cells and delicate collagen fibers with a myxoid matrix, and fine and dilated capillary vessels (Fig. 4). In some parts, degeneration or necrosis of tumor cells was present, but other histologic features, such as a mixture of neoplastic bone and cartilage, were not seen, and there were no epithelial components. The tumor cells and plump nuclei, most of which showed scant cytoplasm, while others were eosinophilic. Mitotic figures were rare.

Immunoperoxidase staining with monoclonal antibodies, CD34, desmin, HHF35, α-smooth muscle actin, and S-100 protein was performed using the peroxidase-antiperoxidase technique, on formalin-fixed paraffin-embedded tissue blocks. The previous specimen revealed that the tumor cells were positive for CD34 (Fig. 5) and negative for myogenic markers (desmin, HHF35, α-smooth muscle actin) and S-100 protein. The features were those of myxoid sarcoma, consistent with myxoid malignant fibrous histiocytoma. There was no evidence of metastasis to the lymph nodes, and both estrogen receptor (ER) and progesterone receptor (PgR) were negative.

**Discussion**

MFH is a tumor of mesenchymal tissue origin, the true incidence of which is not known. Despite a greater understanding of its pathologic characteristics and biologic behavior, this tumor is frequently confused with other sarcomas that display a similar degree of cellular pleomorphism. In particular, the myxoid variant of MFH must be distinguished from myxoid liposarcoma, myxoid embryonal rhabdomyosarcoma, myxoid neurogenic sarcoma, nodular fasciitis, and myxoma. Myxoid MFH is characterized by myxoid stroma comprising at least half of the entire tumor, fewer areas of cellularity resembling pleomorphic MFH, and a more favorable biologic behavior. The tumor from our patient closely resembled myxoid liposarcoma, embryonal rhabdomyosarcoma, and neurogenic sarcoma, because of the prominent myxoid background. Myxoid liposarcomas contain a loose myxoid background with a thin