

Case Report

Malignant Giant Cell Tumor of the Breast Associated with Infiltrating Duct Carcinoma

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Summary. We present a case of a 59 year old female with a giant cell tumor (osteoclastoma) of the breast metastasizing to the lungs, the pleura, the thyroid gland and the myocardium. An infiltrating duct carcinoma was found at the margin of this breast tumor, but was absent from the metastases.

The gross and microscopic features of the lesions are described and the literature is briefly reviewed.

Key words: Giant cell tumor – Osteoclastoma – Breast carcinoma – Giant cells

Introduction

Malignant giant cell tumors of the mammary gland are very rare. In our case a giant cell tumor was associated with an adenocarcinoma of the same breast without evidence of this adenocarcinoma in the metastases of the giant cell tumor. To the best of our knowledge such a combination has not been previously reported.

History

N.T., a 59 year old woman, complained of a left breast mass. One month before medical consultation she felt a pain in her left breast and noticed a rapidly growing nodule.

Physical examination revealed a tumorous mass in the upper inner quadrant of the left breast, painful to the touch. The tumor was tense, “as large as a tangerine” and not fixed to the chest wall or to the skin. No palpable axillary lymph nodes. Eleven days later, biopsy, mastectomy according to the method of Patey and axillary staging were performed. We diagnosed a malignant giant cell tumor associated with adenocarcinoma. There was no tumor in the axillary lymph nodes. Skeletal involvement was excluded by roentgenographic and scintigraphic examination. Subsequent local radiotherapy was interrupted because of rapid growth of lung metastases. The patient died of the tumor three months after onset of symptoms. At autopsy we found multiple confluent metastases in the lungs (diameter up to 7 cm) and the pleura (diameter up to 1 cm). Single metastases

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were found in the thyroid gland (diameter 0.5 cm) and the myocardium (diameter 1 cm). At autopsy all other organs were free of any tumor.

Results

Macroscopy

The breast tumor was $10 \times 7 \times 4$ cm in size, well circumscribed and soft in consistency. The cut surface presented a variegated appearance, gray to tan areas of viable tumor alternating with brownish crumbly areas of necrosis. At one margin the tumor contained a firm nodule of 2 cm in diameter with a white and glassy cut surface (Fig. 1).

Light Microscopy

In all of our specimens from the soft part of the tumor we noticed the presence of numerous benign appearing multinucleated osteoclast-like giant cells, the hallmark of this tumor (Fig. 2). The giant cells were round to oval and contained as many as thirty or more uniform vesicular nuclei. The cytoplasm was abundant, poorly outlined, acidophilic and homogenous. Small vacuoles were often seen in the cytoplasm. The background consisted of mononuclear spindle cells. These spindle cells contained pleomorphic nuclei with a coarse chromatin, mitotic figures were abundant. The cytoplasm was scanty and ill defined. The tumor showed high vascularisation, haemorrhages and haemosiderin deposition were

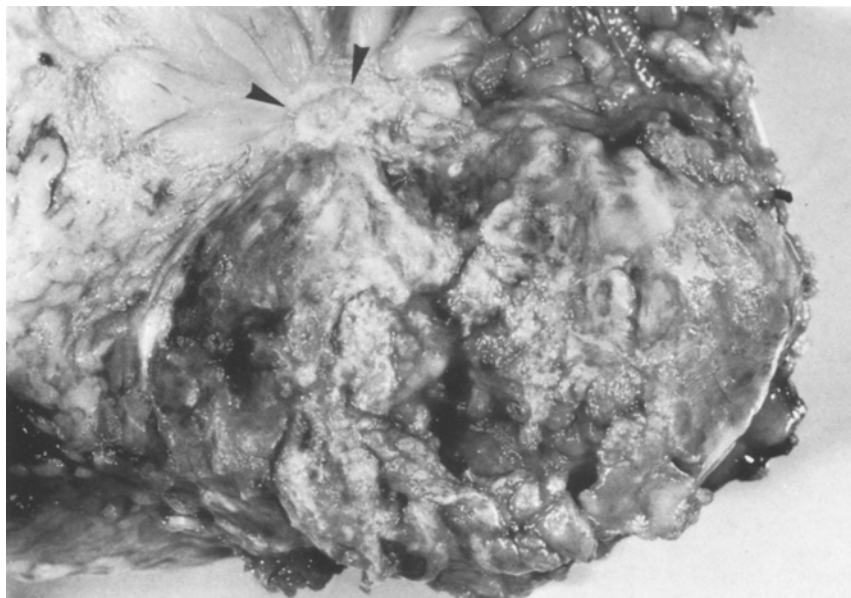


Fig. 1. Macroscopic appearance of mastectomy specimen. Note the adenocarcinoma (arrow) at the margin of giant cell tumor

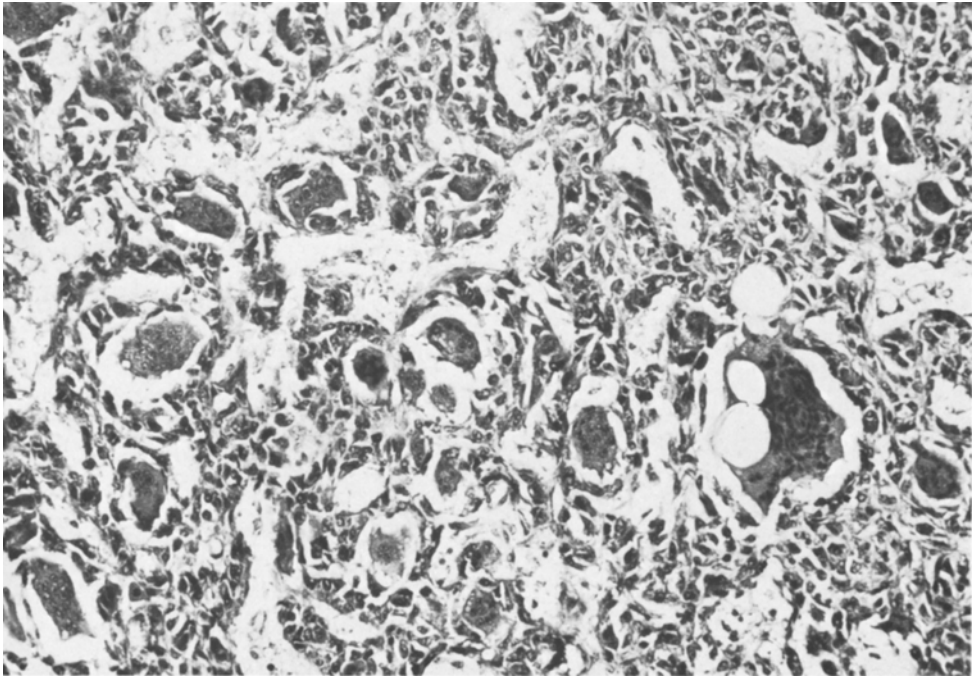


Fig. 2. Histological appearance of giant cell tumor of the breast. (van Gieson $\times 200$)

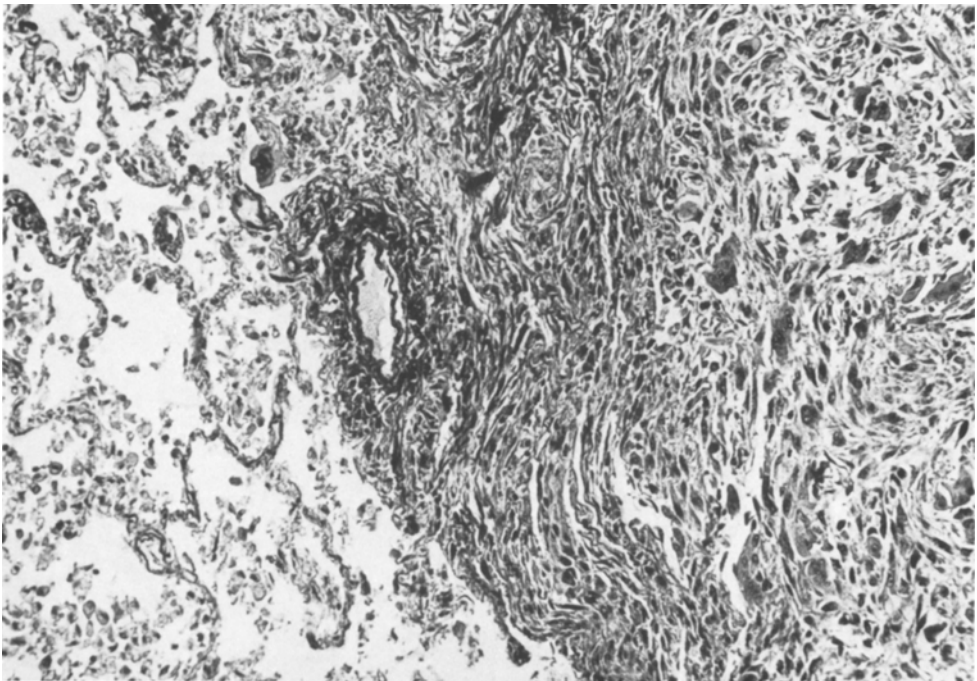


Fig. 3. Histological appearance of giant cell tumor of lung metastases. (van Gieson $\times 100$)

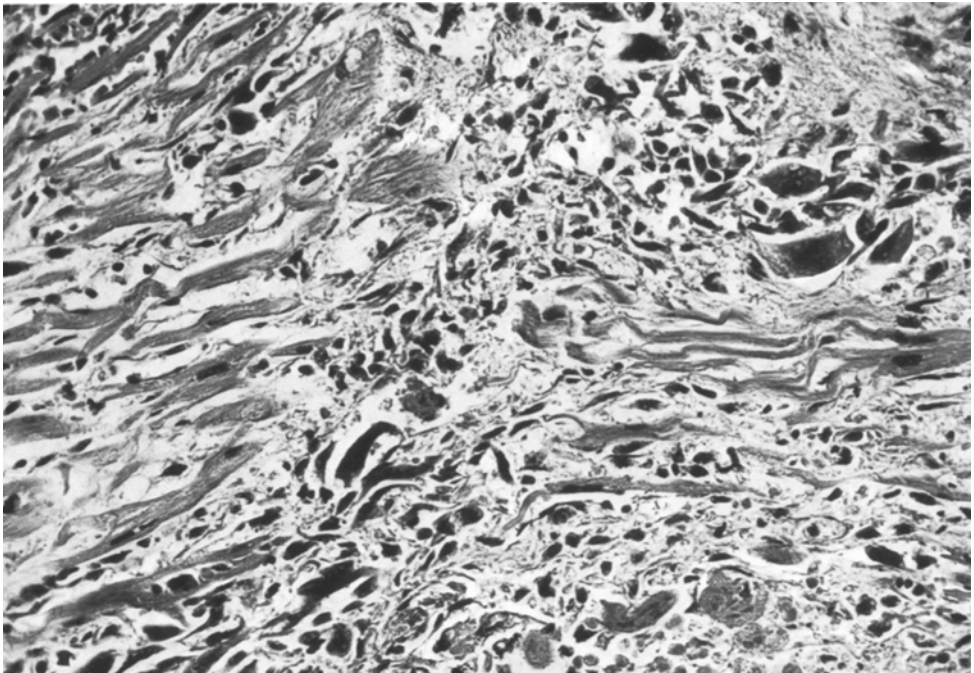


Fig. 4. Histological appearance of giant cell tumor of myocardial metastases. (van Gieson $\times 150$)



Fig. 5. Histological appearance of adenocarcinoma of the breast. (van Gieson $\times 150$)

rare. Single foci of osteoid formation were observed, calcified bony trabeculae and cartilage were absent.

All of our several specimens from the metastases showed microscopic features similar to the soft part of breast tumor. Epithelial foci were completely absent (Figs. 3, 4). The firm nodule was an infiltrating duct carcinoma consisting of anaplastic duct lining cells arranged in a glandular pattern and a fibrous stroma (Fig. 5). Other adenocarcinomatous tumor was excluded at autopsy. Although the adenocarcinoma was at the margin of the giant cell tumor we could establish neither transitional elements between the two tumors nor epithelial elements in the giant cell tumor.

Comment

While true giant cell tumors of the breast are extremely uncommon, mammary tumors containing osteoclast-like giant cells have been described in several reports.

In a good attempt to classify these neoplasms Factor (1977) divided breast tumors containing giant cells into three categories: (1) metaplastic carcinomas, (2) infiltrating carcinomas containing reactive stromal giant cells and (3) extraskeletal osteoclastomas, also referred to as giant cell tumors.

(1) Primary breast carcinomas containing varying amounts of calcified bony trabeculae, uncalcified osteoid, cartilage and giant cells have been described by Stewart (1950), Gonzales-Licca (1967), Smith (1969), Huvos (1973), Llombart-Bosch (1975) and Kahn (1978). Based on convincing transitions from carcinoma, the heterotopic elements have been interpreted as a metaplastic transformation.

(2) Typical of the second group is an intimate association of giant cells and clearly carcinomatous elements without transitional forms. These features distinguish these tumors from osteoclastoma and from metaplastic carcinoma. Cases of this type have been described by Leroux (1931), Duboucher (1933), Binkley (1940), McDivitt (1968), Factor (1977), Karas (1977) and Agnantis (1979). Several authors speculated that the giant cells might be part of a stromal reaction but neither the histogenesis nor the prognostic value of giant cells has been determined.

(3) The third group consists of tumors simulating giant cell tumor of bone, also referred to as extraskeletal osteoclastoma. The only similarity between the two categories described is the presence of the characteristic giant cells. In the mammary gland only single cases have been described. Fry (1927) described a case of a 55 year old woman. Five months before consultation the patient felt a slowly growing lump in the left breast. Radical amputation of the breast revealed an osteoclastoma, measuring 4 × 5 cm in diameter. Axillary staging was negative. Ten months after operation the patient died of lung trouble, the cause is unknown. The author reviewed the literature back to 1860 and found three similar tumors, one of which was metastatic. In another historical review Rottino (1945) tabulated 25 cases of "giant cell sarcoma". Although clinical data were incomplete it was concluded that the usual site of metastases were the lungs and that the majority of patients died within one year. From

knowledge of other soft part locations (Guccion 1972) it is apparent that giant cell tumors of the mammary gland may have a highly malignant course.

The histogenesis of such lesions is a focus of controversy (Bässler 1978). The coexistence of giant cell tumor and adenocarcinoma as a new observation may stimulate this discussion.

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