

Granular Cell Tumor of the Breast

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Abstract

We report a case of granular cell tumor of the breast presenting as a spiculated lesion mimicking carcinoma on mammography and ultrasonography (US).

Key Words: Breast neoplasm, granular cell tumor, breast US, mammography

INTRODUCTION

Granular cell tumor of rare neural origins primarily affects the tongue and occasionally occurs in the breast. Although it is a well-established entity, it is frequently confused clinically and radiologically with breast carcinoma.

We report a case of granular cell tumor of the breast presenting as a spiculated lesion mimicking carcinoma on mammography and ultrasonography (US), and a brief review of the literature.

CASE REPORT

A 46-year-old woman presented with a palpable mass in the upper inner quadrant of the left breast. Physical examination revealed a 3×4 cm-sized, firm mass without skin alteration or nipple discharge. Mammography showed a 2-cm isodense-piculated mass without microcalcification (Fig. 1A). US showed a 2-cm-diameter hypoechoic, poorly-marginated mass with an irregular border and posterior acoustic shadowing (Fig. 1B). US-guided core biopsy was performed for tissue diagnosis.

The small nests or sheets of uniformly-rounded to polygonal cells with small round nuclei and granular cytoplasm were demonstrated on microscopic exami-

nation (Fig. 1C). Immunohistochemical staining showed a positive reaction to S-100 protein, but negative reaction to cytokeratin. The pathologic diagnosis was granular cell tumor. Subsequent mass excision was performed. The cut surface revealed an ill-defined, whitish-gray solid mass (2 cm in diameter) with a somewhat infiltrate border. Microscopically, the tumor infiltrated the fat tissue arranged in infiltrating cords and clusters at the edge of the lesion (Fig. 1D).

DISCUSSION

Granular cell tumor is an uncommon tumor that may occur throughout the body.¹ It is most common in the tongue, accounting for about 30% of all cases. Approximately 6% of granular cell tumors arise in the breast. It is most often encountered in middle-aged, premenopausal women and occurs more frequently in the upper inner quadrant of the breast, in contrast to breast carcinoma, which is found more commonly in the upper outer quadrant.²

Granular cell tumors are generally circumscribed when bisected, but some have ill-defined, infiltrative borders. Microscopically, the tumor is usually infiltrative at its margins, an appearance that correlates with the US and mammographic characteristics. The tumor is composed of compact nests or sheets of uniformly-rounded or polygonal cells that have a coarsely granular cytoplasm and small centrally located round nuclei.¹ Many carcinomas are immunoreactive to cytokeratin and epithelial membrane antigen, whereas granular cell tumor is not. In addition, granular cell tumor is estrogen receptor negative and strongly immunoreactive to S-100 protein. This

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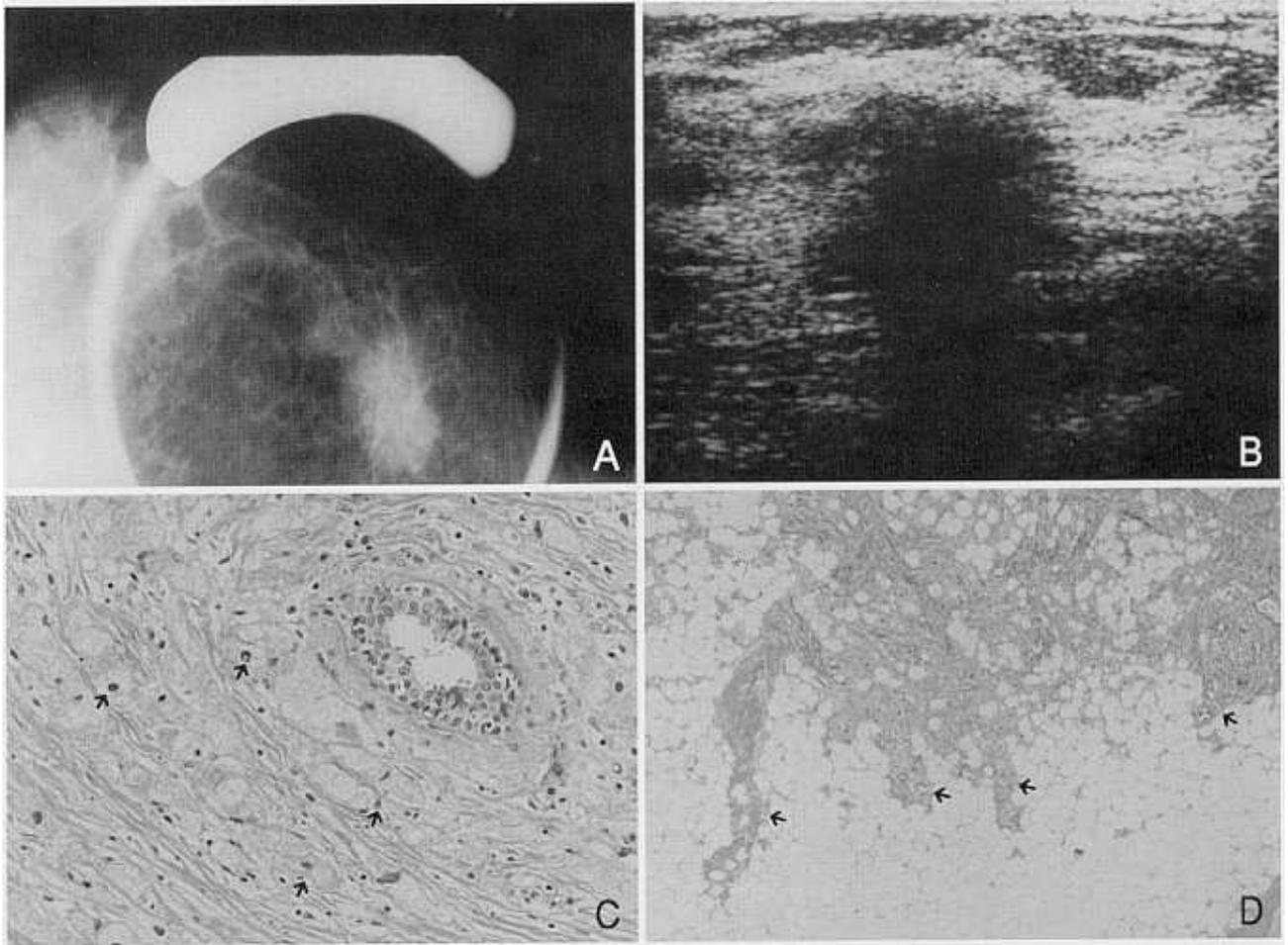


Fig. 1. 46-year-old woman with palpable left breast mass. (A) Spot compression (C) mammograms of the left breast show a 2-cm size spiculated mass in the upper inner quadrant. No associated microcalcifications or skin thickening were observed. (B) US shows a 2cm diameter, hypoechoic, irregular shaped mass with posterior shadowing. (C) Microscopically, granular cell tumor is composed of small irregular islands or solid nests of uniform rounded or polygonal cells with granular eosinophilic cytoplasm and small dark nuclei (arrows) (H & E, $\times 200$). (D) The tumor displayed a stellate, infiltrating pattern mimicking carcinoma at the edge of the lesion (arrows) (H & E, $\times 40$).

positive immunoreaction to tumor cells with S-100 protein has established the neural origin of granular cell tumors.³

A few cases have been reported describing the features of fine-needle aspiration of granular cell tumor, these have emphasized their cytological features, which are cellular uniformity and cytoplasmic granularity. However, granular cell metaplasia can mimic granular cell tumor in cytologic specimens. Therefore, when breast aspirates reveals granular cell changes, excisional biopsy should be undertaken for definite diagnosis.⁴

Granular cell tumor of the breast may clinically and radiologically simulate breast cancer, particularly scirrhous carcinoma, due to its infiltrative growth

pattern associated with fibrosis, which results in fixation to the pectoral muscle and skin retraction.⁵ There are a few reports about the imaging findings of granular cell tumor.^{2,6} At mammography, it is often a small (< 3 cm), spiculated mass without microcalcifications.⁶ At US, it may show hypoechoic mass with posterior shadowing.⁶ The necessity of histologic confirmation before surgery is necessary to avoid needless radical mastectomy on the basis of clinical and mammographical findings suggesting malignancy.

Granular cell tumor must be included in the differential diagnosis of a mammographic spiculated lesion and preoperative tissue diagnosis is necessary to avoid needless radical mastectomy.

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