Case Report

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Imaging Findings of Axillary Granular Cell Tumor in a Patient with Breast Cancer History: A Case Report

유방암 과거력을 가진 환자에서 액와부 과립세포종의 영상 소견: 증례 보고

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Granular cell tumors (GCTs) are rare soft tissue tumor, originating from neural or perineural cells. We present a case of axillary GCT in a 69-year-old woman with breast cancer history and discuss the various radiologic findings. US revealed a circumscribed oval heterogeneous iso- and hyperechoic mass in the left axilla. Chest CT showed a well-defined, oval, and mildly enhancing mass in the left axilla on the lateral aspect of the pectoralis muscle. A final diagnosis of GCT was made through US-guided core needle biopsy. Follow-up US showed no significant changes in the axillary GCT. Familiarity with GCT may facilitate early diagnosis and subsequent management.

Index terms Granular Cell Tumor; Axilla; Ultrasound; Computed Tomography, X-Ray

INTRODUCTION

Granular cell tumors (GCTs) are rare soft tissue tumors that originate from neural or perineural cells. GCTs may occur throughout the body and 6% of GCTs arise in the breast (1, 2).

However, GCTs in axillary region are extremely rare (3, 4). Here, we report US, CT and pathologic features of axillary GCT in a 69-year-old woman with a history of ipsilateral breast cancer.

CASE REPORT

A 69-year-old woman visited our hospital for a follow-up US. She experienced discomfort

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with mild, tender pain in the left axillary area. Six years ago, she had undergone a modified radical mastectomy for invasive ductal carcinoma in the left breast. No metastasis was observed in the axillary lymph nodes. After the surgery, the patient was treated with chemotherapy and hormonal therapy.

US revealed a 0.8 cm × 1.4 cm circumscribed oval heterogenous iso- and hyperechoic mass with minimal blood flow in the left axilla level I (Fig. 1A). The mass was a 1.1 cm well-defined oval minimal enhancing nodule on chest CT and located at the lateral aspect of the pectoralis muscle near the previous operative site (Fig. 1B). No other abnormal finding was observed at the left mastectomy site, contralateral breast and axilla. Because of her previous history of ipsilateral breast cancer, the possibility of axillary metastasis could not be ruled out. Fine-needle aspiration (FNA) was performed using a 23G needle. The cytologic result showed some clusters of histiocytes, with no evidence of malignancy. US-guided biopsy using a 14G core needle was performed for accurate diagnosis. Microscopic examination revealed large polygonal cells with abundant eosinophilic periodic acid Schiff-positive granular cytoplasm and small nuclei. The tumor cells were strongly positive for S100 protein. These findings were consistent with GCT. When reviewed retrospectively, FNA cytology showed clusters of large polygonal cells with abundant granular cytoplasm, consistent with a GCT (Fig. 1C).

The patient refused surgical excision of the mass and underwent follow-up US exams. Fol-

Fig. 1. Axillary GCT in a 69-year-old woman.
A. US reveals a 1.4 cm mass with a well-defined, oval, heterogenous, hyper- and iso-echogenicity, and minimal blood flow in the left axilla level I.
B. Chest CT shows a well-defined, oval, and minimal enhancing nodule (arrow) in the left axilla level I, near the surgical site.
GCT = granular cell tumor

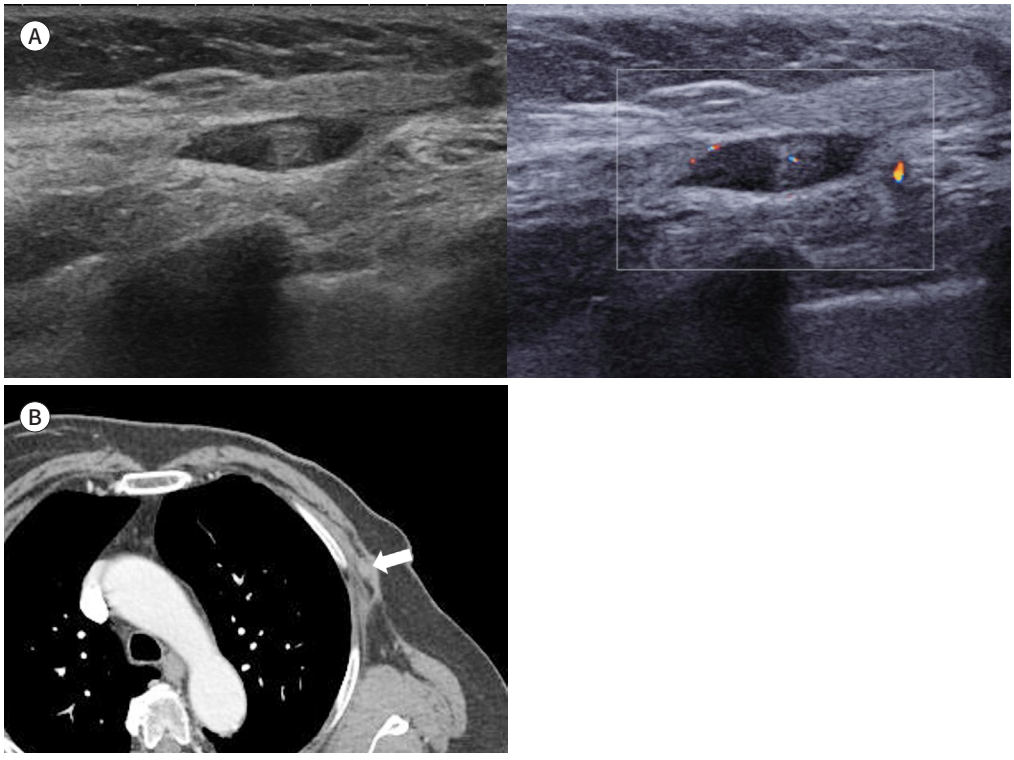
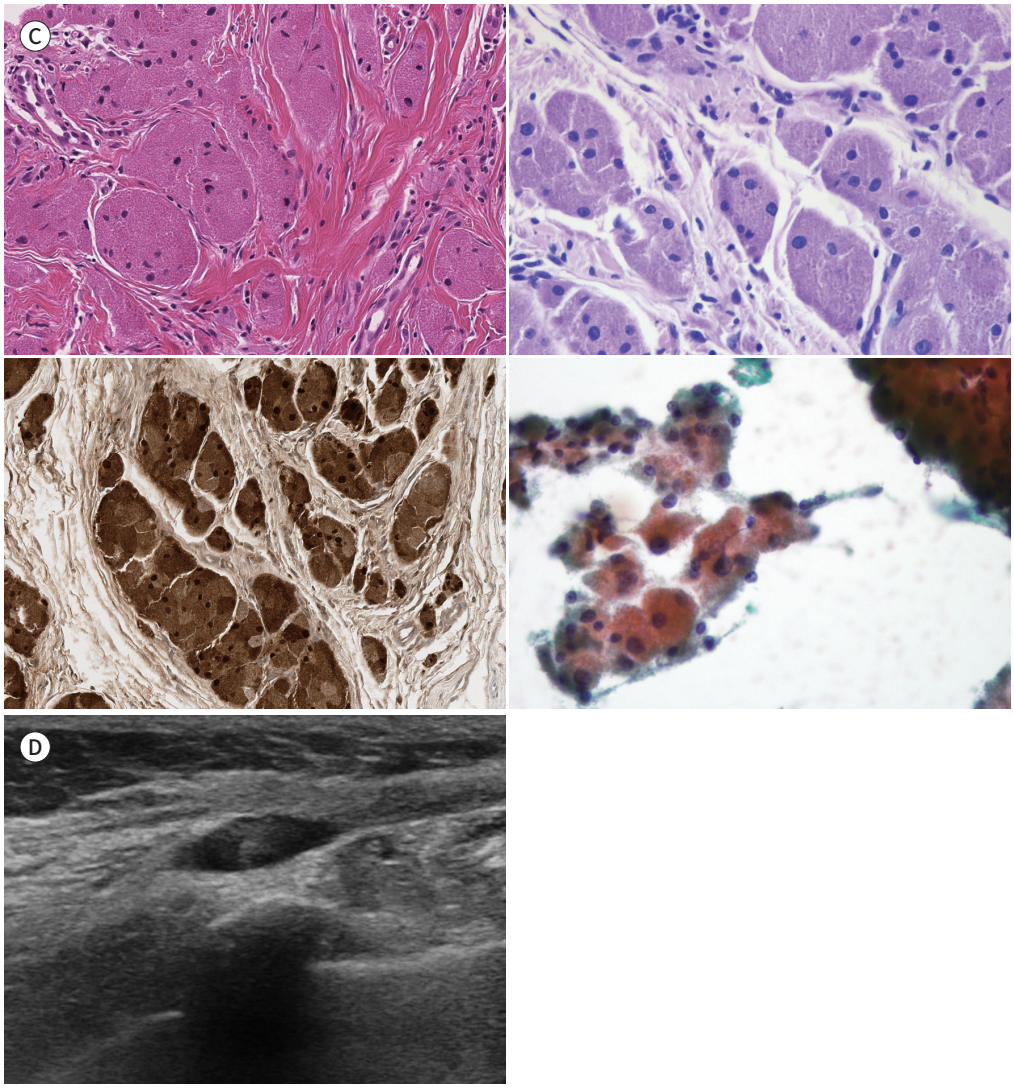


Fig. 1. Axillary GCT in a 69-year-old woman.
C. The tumor cells are large polygonal cells with abundant eosinophilic granular cytoplasm and small nuclei (hematoxylin & eosin stain, × 200, left upper image). The cytoplasmic granules of the tumor cells are positive for periodic acid Schiff staining (× 400, right upper image). The tumor cells are strongly positive for S100 protein (× 200, left lower image). On the retrospective review of the fine needle aspiration cytology, loose clusters of large polygonal cells with a slightly eccentric nucleus and abundant granular cytoplasm are present (× 400, right lower image), consistent with a GCT.
D. US performed four years after biopsy reveals no significant change of a confirmed GCT.
GCT = granular cell tumor



low-up US over four years showed no significant changes in the size and shape of the axillary GCT (Fig. 1D).

This study was approved by the Institutional Review Board and the requirement for informed consent was waived (IRB No. 2022-08-001).

DISCUSSION

A GCT is a rare benign soft tissue tumor that is considered to originate from neural or perineural cells. GCTs may occur in any part of the body but they are mainly found in the skin, oral cavity or gastrointestinal tract (5). Only 6%–8% of GCTs occur in the breast (1, 2), and patients with breast GCT are usually premenopausal African American women (6).

The imaging findings of GCTs in the breast are variable. The lesions on mammography and US may range from a circumscribed to spiculated mass that cannot be distinguished from malignancy (2, 6-9). However, calcification has not been reported. Hyperechogenicity is noted in 71% of breast GCTs and increased vascularity in 75% (6). A spiculated heterogeneous enhancing mass with persistent kinetics has been reported on MRI (9).

However, only two case reports have described imaging features of axillary GCTs. Mammography shows a circumscribed, oval, hyperdense mass and US reveals a circumscribed and oval hypoechoic mass in the axillary region (3). MRI of a GCT involving the axillary nerve in a patient with a history of recurrent breast cancer demonstrated hypointensity on T1-weighted image, hyperintensity on T2-weighted image, and homogeneous intense enhancement with no involvement of adjacent structures (4). The reported cases of axillary GCT are so rare that it is difficult to identify the differences or similarities with our cases, but as reported in the GCT of breast, our case also showed an internal hyperechogenicity.

There were several reports of GCT occurring in the scar site after previous gynecologic surgery (10). Our patient's axillary mass developed near the post-operative scar, six years after surgery for ipsilateral breast cancer. Although the possibility of metastasis is high clinically, the lesions associated with surgical scar including traumatic neuroma, granular cell tumor or desmoid tumor should be considered as differential diagnosis. US-guided core biopsy for exact pathologic confirmation was performed and it was confirmed as a benign GCT.

Treatment of GCT is wide local excision. Local recurrence of benign GCTs has been reported after inadequate excision (1). Our patient refused surgical excision of the mass and her axillary GCT was observed without significant interval changes for more than four years on follow up US.

We present US, CT and pathologic findings of axillary GCT mimicking metastasis in a 69-year-old woman with a history of breast cancer. Although very rare, GCTs should be included in the differential diagnosis of axillary masses, especially those that are associated with previous surgery. Clinicians and radiologists should be aware of GCTs and knowledge of the imaging features of GCTs may provide an appropriate diagnosis and facilitate subsequent treatment planning.

Author Contributions

Conceptualization, P.J.Y.; data curation, O.J., J.M.; formal analysis, O.J.; methodology, O.J.; resources, P.J.Y.; supervision, P.J.Y.; validation, O.J., J.M.; writing—original draft, O.J.; and writing—review & editing, P.J.Y., J.M.

Conflicts of Interest

The authors have no potential conflicts of interest to disclose.

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유방암 과거력을 가진 환자에서 액와부 과립세포종의 영상 소견: 증례 보고

오정음[1] · 박지연[1]* · 주 미[2]

과립세포종은 신경 또는 신경 주위 세포에서 생기는 드문 연부조직 종양이다. 저자들은 유방암 과거력을 가진 69세 여자 환자에서 액와부 과립세포종 증례를 보고하고 다양한 영상 소견을 논의하고자 한다. 초음파에서 왼쪽 액와부에 경계가 분명한 타원형의 비균질한 등에코, 고에코의 종괴였으며, 흉부 전산화단층촬영에서 대흉근의 바깥쪽에 경계가 분명한 타원형의 약간 조영 증강되는 종괴로 보였다. 초음파 유도하 조직 생검을 통해 과립세포종으로 최종 진단되었다. 추적 초음파에서 변화는 없었다. 과립세포종에 대해 잘 알고 있다면 조기 진단과 후속 관리를 용이하게 할 수 있을 것이다.

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