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Juvenile fibroadenoma and granular cell tumor of the breast in an adolescent

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Abstract We describe a case of a 15-year-old girl who presented with 2 painful masses in her right breast. Ultrasound confirmed the presence of 2 lesions, both of which appeared noncharacteristic for fibroadenomas. Both lesions were surgically resected. One was found to be a fibroadenoma and the other a granular cell tumor, both benign upon further histologic evaluation. Breast masses are rare in the pediatric population. The finding of a concurrent fibroadenoma and granular cell tumor is unique and has not been previously reported. Granular cell tumors of the breast are relatively uncommon. Often, they are mistaken for a breast malignancy. The concerning clinical and radiographic findings in this patient warranted operative excision.

Breast masses are uncommon in the female pediatric population. In the adolescent age group, most palpable breast masses are fibroadenomas. The exact incidence of fibroadenomas in the pediatric population is not known. Surgical excision is still the most common operative treatment [1]. Breast cancer is extremely rare in the pediatric population. More common tumors are metastases from lymphoma, leukemia, or rhabdomyosarcoma. Fibroadenomas are more common in African Americans, with a peak in late adolescence.

Common indications for surgical management are persistent symptoms, large or rapidly growing masses, a history of malignancy or radiation therapy, high-risk genetic mutations, and child's or parents' apprehension [2]. We present a unique case of an adolescent girl with 2 palpable breast lesions that were rapidly enlarging and painful. Sonographic findings were concerning, and excisional biopsy was undertaken. Pathology was notable for not only a fibroadenoma, but also the rare finding of a granular cell tumor (GCT), both in her right breast.

1. Case report

A 15-year-old previously healthy African American girl presented to our clinic with 2 palpable, self-detected, right breast masses and complaints of breast pain. She initially noticed a mass at the 12-o'clock position approximately 9 months before presentation to our facility. An outside

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ultrasound examination was performed, and no sonographic abnormalities were reported. Approximately 7 months later, she noticed a new mass at the 3-o'clock position, which had become increasingly painful with rapid enlargement. There was no stated association with her menstrual cycle. The patient was adopted, so there was no known family history of benign or malignant breast lesions. There was no personal history of radiation exposure or malignancy. Physical examination of her right breast was notable for a firm, mobile, 1-cm lesion at the 12-o'clock position and a firm, mobile 4-cm lesion at the 3-o'clock position. There were no associated skin changes or nipple discharge. Supraclavicular and axillary adenopathy was not appreciated on examination.

A targeted ultrasound evaluation of the right breast was performed in the regions of the palpable abnormalities. The images revealed a 1.1 × 1.0 × 0.8-cm partially circumscribed, round, heterogeneous lesion at approximately the 12-o'clock position. The mass appeared slightly taller than wide and demonstrated posterior acoustic enhancement. A small amount of central vascular flow was identified on color Doppler imaging. A second lesion was identified at the 3-o'clock position, measuring 3.3 × 2.6 × 2.2 cm. This mass was well circumscribed, multilobulated, heterogeneous and demonstrated posterior acoustic enhancement. It revealed moderate intralesional vascular flow with color Doppler imaging. Both of the visualized masses were nonspecific in nature but not characteristic of fibroadenoma. Excisional biopsy was recommended. Given the rapid increase in size of the breast masses, her ongoing complaints of pain, and ultrasound findings, surgical excision was performed. Both lesions were excised separately through a single 4-cm circumareolar incision with minimal change in the overall appearance of her breast. Because both lesions were firm and had distinct borders, we used manual palpation to help guide our excisional margins. The incision was closed with subcuticular absorbable sutures to maintain cosmesis. There were no postoperative complications. Histopathologic evaluation revealed the 12-o'clock lesion to be a yellow-tan, well-delineated firm mass that was positive for S-100 immunoperoxidase staining (Fig. 1), which is consistent with a GCT. The 3-o'clock lesion was a white-tan, well-delineated firm mass consistent with a juvenile fibroadenoma (Fig. 2). Both lesions were noted to have positive resection margins. Given the benign nature of the masses, the decision was made to observe the patient with yearly clinical breast examinations only and no imaging.

2. Discussion

Granular cell tumors are uncommon and can arise nearly anywhere in the body and can be multifocal. The most frequent locations involve the tongue, head, and neck regions. They are believed to arise from Schwann cells. These tumors are found in the breast in 5% to 15% of all GCTs. Oftentimes, their appearance on imaging is concerning for malignancy [2,3]. A GCT breast prevalence of 1:1000 cases of breast tumors has been published. However, recent studies suggest a prevalence of 1:617 among the screened population [4] and 6.7:1000 cases in the total clinical population [5]. They are most commonly found in middle-aged premenopausal subjects and especially African American women. Granular cell tumors are reported to occur in a wide range of ages, from teenagers to the elderly [6].

Granular cell tumors of the breast may present as a firm and painless mass, which may be fixed to the pectoral muscle or the skin, possibly resembling a malignant lesion. In contrast to most breast tumors that occur in the upper outer quadrant, GCTs are most frequently found in the upper inner quadrant, corresponding to the cutaneous sensory territory of the supraclavicular nerve [7]. The tumor usually appears as a solitary unilateral lesion, but rarely, multiple lesions in the breast and other parts of the body are seen. In our patient, the tumor was located at the junction of the upper inner and outer quadrants. Most of these breast lesions are found in females, but it has been described in males in up to 6.6% of all cases [3]. In symptomatic patients, there is no uniform description of the presenting mass. Most masses are firm and

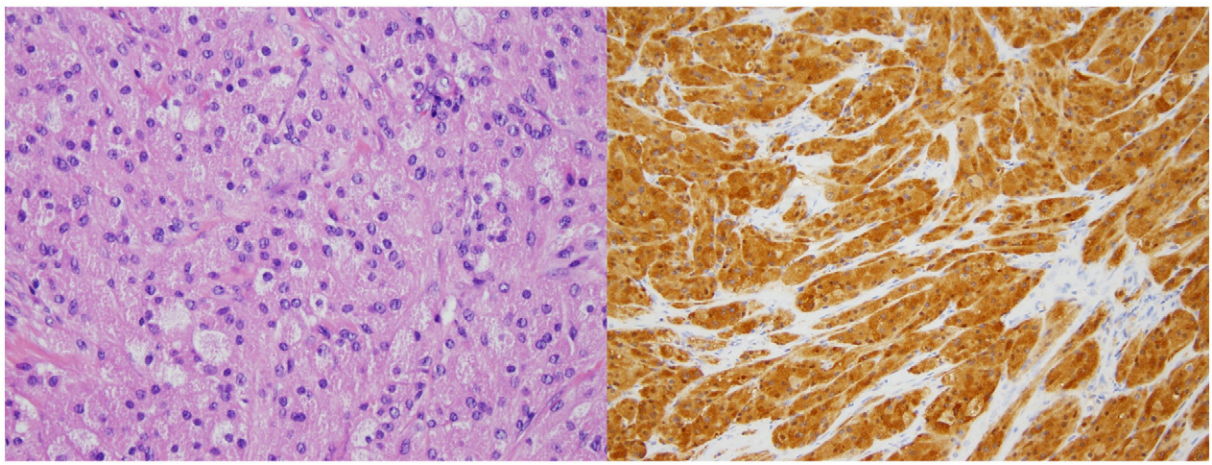

Fig. 1 Granular cell tumor. High-power magnification: hematoxylin and eosin stain (left) and S-100 immunoperoxidase stain (right).