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(CASE REPORT)

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Juvenile Fibroadenoma: A Case Report and Review of the Literature

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Abstract

Breast disorders in adolescents are rare and are mostly benign. They may present as congenital anomalies, infections, mastodynia, nipple discharge, or breast tumors, which are generally benign. Fibroepithelial tumors, the most common group, represent a heterogeneous category including benign, borderline, and malignant entities such as phyllodes tumors. Differentiating these tumors, particularly the various types of fibroadenomas, requires histopathological examination due to the similarity of their radiological features and the heterogeneity of lesions. Recognizing the true nature of these lesions is crucial to avoid overlooking malignant forms with metastatic potential. Giant juvenile fibroadenoma is a rare benign fibroepithelial tumor that cannot be reliably distinguished from phyllodes tumors prior to histopathological examination.

Keywords: Juvenile fibroadenoma; Adolescent breast mass; Fibroepithelial tumor; Surgical excision

1. Introduction

Breast disorders in adolescent girls are uncommon and are predominantly benign. When present, they may cause significant discomfort and anxiety. These disorders include congenital abnormalities, infections and abscesses, mastodynia, nipple discharge, and breast masses. Most breast masses in this age group are benign, while malignant tumors are rare, with an estimated incidence of 0.5% in individuals under 20 years of age [1].

Fibroepithelial tumors of the breast are the most frequent and represent a heterogeneous group characterized by epithelial and stromal proliferation, including benign, borderline, and malignant entities, notably phyllodes tumors. They occur in approximately 10–15% of cases. Among benign tumors, fibroadenomas are the most common, with an estimated incidence ranging from 7% to 13% in females under 20 years of age. Several variants exist, including fibrocystic changes, simple fibroadenoma, complex fibroadenoma, cellular fibroadenoma, tubular fibroadenoma, lactating fibroadenoma, myxoid fibroadenoma, hyalinized fibroadenoma, and finally, giant juvenile fibroadenoma, according to their histopathological components. These variants often share similar radiological appearances, making histopathological examination essential for differentiation, although diagnosis may be challenging due to lesion heterogeneity. Identifying the exact nature of the lesion is essential to avoid missing borderline or malignant tumors with metastatic potential [2].

Juvenile fibroadenoma is a rare subtype, accounting for 0.5% to 4% of fibroadenomas in adolescents. It is characterized by rapid growth and requires surgical confirmation following clinical and radiological assessment. We report the case of a 14-year-old girl who presented with a rapidly growing mass in the left breast, with the diagnosis of juvenile fibroadenoma confirmed after surgical management.

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2. Case Presentation

A 14-year-old adolescent girl with no significant medical history (traumatic, infectious, or neoplastic) presented with a palpable nodule in the left breast. Clinical examination revealed a well-defined, painless, and mobile retroareolar mass in the left breast. The overlying skin was normal, with no signs of inflammation.

Breast ultrasound revealed a large retroareolar mass extending to the upper quadrants of the left breast, containing cystic areas, measuring 40 × 23 mm, and classified as ACR 4 (Figure 1).

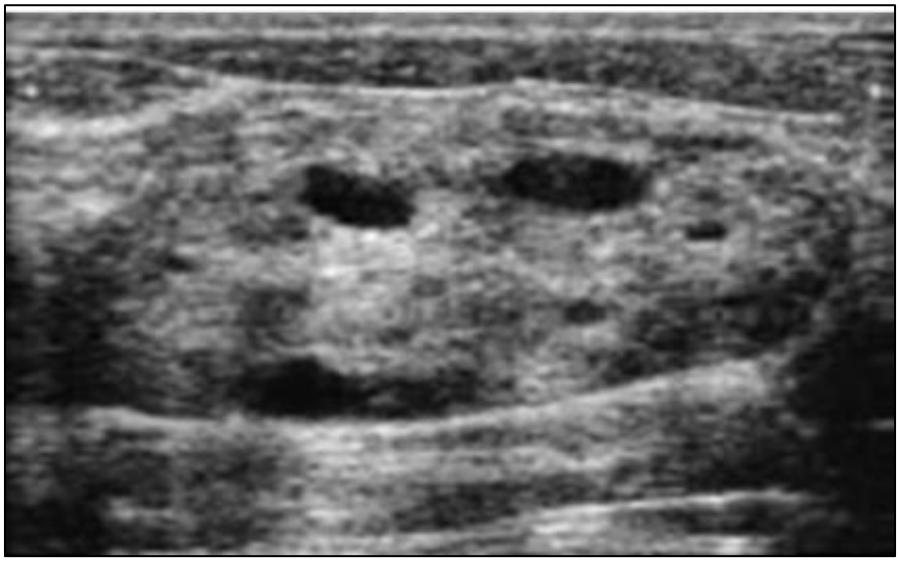

Figure 1 Ultrasound appearance of juvenile fibroadenoma

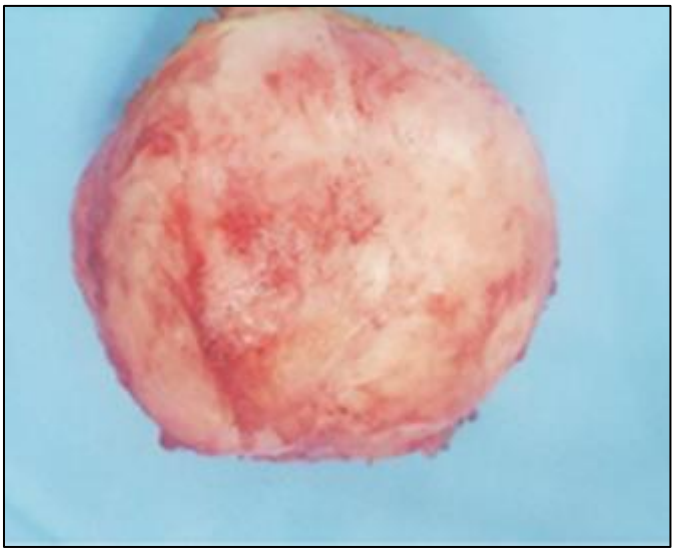

Figure 2 Macroscopic appearance of the excised juvenile fibroadenoma

A core needle biopsy was performed, and histopathological examination showed fibroepithelial proliferation.

The patient subsequently underwent surgical excision of the mass (Figure 2). Histological analysis confirmed the diagnosis of juvenile fibroadenoma.

3. Discussion

Breast masses in adolescents are most commonly benign tumors related to fibroepithelial lesions, whereas malignant masses account for only 0.5% of breast tumors in this population [1]. Fibroepithelial tumors include phyllodes tumors (benign, borderline, and malignant) as well as fibroadenomas and their variants (simple, complex, lactating, hyalinized, myxoid, juvenile, and giant). Their growth is generally slow, except for hormone-sensitive lesions such as juvenile fibroadenomas, lactating fibroadenomas, and phyllodes tumors [2].

Juvenile fibroadenoma is a benign breast lesion composed of fibroglandular tissue. It occurs in adolescent girls between 10 and 18 years of age, hence the term "juvenile." It accounts for 30–50% of breast tumors in this age group. When it exceeds 5 cm in diameter, weighs more than 500 g, or occupies more than four-fifths of the breast, it is classified as a giant fibroadenoma [3]. This rare form represents 0.5% to 4% of all fibroadenomas and is characterized by rapid enlargement, leading to breast distortion and compression [1].

Clinically, juvenile fibroadenomas are often asymptomatic or mildly symptomatic, painless, and typically discovered during self-examination. They are usually unilateral and present as well-circumscribed, firm, elastic, and mobile masses. In their giant form, they may cause significant breast deformity and aesthetic concerns [1,4]. Despite rapid growth, general condition is preserved, and systemic symptoms are absent [3]. In our case, the mass increased rapidly in size over two months, causing significant discomfort and anxiety for the patient.

Regarding imaging, mammography is generally not recommended for giant juvenile fibroadenomas due to the patient's young age. When performed, it typically shows a well-defined oval opacity larger than 5 cm. Fibroadenoma variants may appear hypodense, contain fat or fluid levels, exhibit calcifications (particularly in complex and hyalinized forms), or display lobulated contours [2]. Ultrasound is the primary diagnostic modality, revealing a large, homogeneous, hypoechoic mass that may show hypervascularization on color Doppler imaging, with posterior acoustic enhancement. It tends to displace adjacent structures without invasion [2], as observed in our patient.

In complex and hyalinized fibroadenomas, suspicious features such as irregular shape, non-circumscribed margins, or microcalcifications may be present. In such cases, MRI may be useful, demonstrating variable signal intensity, typically hyperintense on T1- and T2-weighted images, with homogeneous or heterogeneous contrast enhancement. Non-enhancing septa are observed in more than 50% of cases but are not specific and may also be seen in phyllodes tumors, complicating differential diagnosis. Additionally, myxoid fibroadenomas may show MRI features similar to mucinous breast carcinoma, including irregular margins, rapid enhancement, and washout patterns [2].

Due to similarities with phyllodes tumors, biopsy is often not recommended, and surgical excision is advised for both diagnostic and therapeutic purposes. Complete excision with histological confirmation remains the only reliable method for differentiation [1,4]. Differential diagnosis should also include other fibroadenoma variants as well as pubertal breast hypertrophy, characterized by excessive hyperplasia of breast tissue, occurring in females aged 13 to 20 years and sometimes associated with estrogen excess or increased tissue sensitivity to estrogen [1].

Histopathological examination typically reveals epithelial and stromal hypercellularity with micropapillary ductal hyperplasia [2].

Most fibroadenomas grow slowly and may even regress spontaneously; therefore, management is often conservative with surveillance or limited surgical excision. However, giant fibroadenomas require surgical treatment due to the risk of breast distortion, aesthetic concerns, and impairment of quality of life. Breast reconstruction plays a crucial role in achieving satisfactory cosmetic outcomes [4].

4. Conclusion

Breast tumors in adolescents, predominantly benign fibroepithelial lesions, present unique challenges due to their variable clinical presentation and potential for rapid growth. Among these, giant juvenile fibroadenoma is a distinct entity associated with significant physical and aesthetic concerns. Diagnostic imaging, particularly ultrasound and, in ambiguous cases, MRI, plays a key role in lesion characterization and therapeutic decision-making. Surgical excision remains essential for definitive diagnosis and differentiation from phyllodes tumors. Comprehensive management strategies, including breast reconstruction, are crucial to address both medical and aesthetic concerns and to ensure optimal outcomes for young patients.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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