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Juvenile fibroadenoma of the breast: a case report and review of the literature

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Abstract

Introduction :

Juvenile fibroadenoma is a rare benign breast tumor characterized by rapid growth and large size, mainly affecting adolescents. Its diagnosis may be challenging due to similarities with phyllodes tumors.

Patient and observation:

We report the case of a 15-year-old girl with a family history of breast neoplasia who presented with a rapidly enlarging right breast mass. Clinical examination revealed a well-circumscribed, mobile mass measuring approximately 10 cm. Breast ultrasound showed a large, homogeneous hypoechoic lesion classified as ACR 4. Histopathological examination confirmed the diagnosis of juvenile fibroadenoma. The patient underwent surgical excision with an uneventful postoperative course.

Conclusion:

Although benign, juvenile fibroadenoma may mimic malignant tumors due to its rapid growth and suspicious imaging features. Surgical excision remains the treatment of choice for large or atypical lesions.

Keywords: Juvenile fibroadenoma – breast mass –adolescent –ACR 4 – lumpectomy

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Introduction

Juvenile fibroadenoma is a rare variant of breast fibroadenoma, accounting for approximately 2% to 4% of all fibroadenomas (1). It is a fibroepithelial tumor characterized by stromal hypercellularity and increased epithelial proliferation.

Its pathophysiology remains poorly understood, but is thought to be related to a response to estrogenic stimulation (2).

Diagnosis relies on a combination of clinical, radiological, and histological findings.

We report a case of juvenile fibroadenoma in a 15-year-old adolescent, highlighting its diagnostic and therapeutic features.

#### Case report

**Patient Information :** A 15-year-old patient, with a family history of breast neoplasia in a sister, who consulted for a rapidly enlarging mass in the right breast, without breast pain, nipple discharge or other associated functional symptoms.

**Clinical findings:** Clinical examination, revealed a large mass occupying almost the entire right breast, measuring approximately 10 cm, firm, mobile, well-circumscribed, painless, with no signs of inflammation or axillary lymphadenopathy (Figure 1).

**Diagnostic Assessment:** Breast ultrasound revealed an oval-shaped, hypoechoic, homogeneous lesion measuring 100 × 97 mm, involving multiple quadrants of the right breast, and classified as ACR 4 (Figure 2).

The histological study of the micro-biopsy suggested a juvenile fibroadenoma with stromal hypercellularity and epithelial hyperplasia without atypia, or malignancy.

**Therapeutic intervention:** A lumpectomy by enucleation was performed (Figures 3 and 4). The postoperative course was favorable, with a satisfactory cosmetic outcome.

#### DISCUSSION

Juvenile fibroadenoma is a rare entity of breast fibroadenoma that predominantly affects adolescent girls and young women (3).

Its etiopathogenesis remains imperfectly elucidated. However, the involvement of hormones is strongly suggested, due to the expression of estrogen and progesterone receptors within these lesions, as well as their preferential occurrence during periods of

increased hormonal stimulation, particularly puberty and pregnancy, or in patients using oral contraception (4).

In addition, a genetic susceptibility seems to be involved, as evidenced by the higher frequency of fibroadenomas in African American women, as well as the presence of family history reported in some cases (5).

Clinically, it presents as a unilateral, well-defined, mobile, and painless breast mass, often with rapid growth (6). Giant forms, may cause breast asymmetry with skin distension. However, inflammatory skin signs such as ulceration, or nipple inversion remain exceptional and should prompt consideration of a differential diagnosis, particularly a phyllodes tumor (7).

Ultrasound is the first-line imaging modality, with an excellent negative predictive value estimated at 99.5% (8). It typically showing a well-circumscribed, round, homogeneous, hypoechoic lesion, sometimes associated with posterior acoustic enhancement (9).

Mammography has limited value in young patients due to high breast density and the risk of radiation exposure.

Histologically, juvenile fibroadenoma is characterized by stromal hypercellularity associated with epithelial proliferation. It is distinguished from phyllodes tumors by the presence of a well-defined capsule and a more homogeneous distribution of stroma and epithelium (10).

Management depends on lesion size, growth rate, and cosmetic impact. Monitoring may be recommended for small, stable lesions. However, surgical excision is recommended for large, rapidly growing, or suspicious lesions, as in our case. The goal is complete excision while preserving the areola and nipple, with a satisfactory cosmetic result (11).

The prognosis is excellent, although recurrence may occur, warranting long-term follow-up (12).

## Conclusion

Juvenile fibroadenoma is a rare benign tumor that may pose diagnostic challenges due to its rapid growth and clinical presentation.

A multidisciplinary approach combining imaging and histology is essential for accurate diagnosis.

Surgical excision remains the treatment of choice for large or atypical lesions, ensuring both diagnosis and favorable cosmetic outcomes.

Conflicts of interest

The authors declare no conflicts of interest.

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Consent :

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Author contributions:

All authors contributed to patient management, manuscript drafting, and final approval.

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## FIGURES

Figure 1: Marked breast asymmetry with a significant enlargement of the right breast, causing skin distension suggestive of a giant juvenile fibroadenoma.

Figure 2: Breast ultrasound showing a large, well-circumscribed, homogeneous hypoechoic mass, suggestive of a fibroepithelial tumor consistent with juvenile fibroadenoma.

Figure 3: Surgical specimen following tumorectomy, showing a large, well-circumscribed mass with a smooth, lobulated surface, consistent with fibroadenoma on macroscopic examination

Figure 4: Early postoperative appearance after excision of a juvenile fibroadenoma, showing an arcuate incision in the inframammary fold with a satisfactory initial cosmetic outcome

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