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2 **Juvenile fibroadenoma of the breast: a case report and review of** 3 **the literature**

4

5 **Abstract**

6 **Introduction:**

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

10 **Patient and observation:**

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

17 **Conclusion:**

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

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

22 **Introduction**

23 Juvenile fibroadenoma is a rare variant of breast fibroadenoma, accounting for approximately
24 2% to 4% of all fibroadenomas (1). It is a fibroepithelial tumor characterized by stromal
25 hypercellularity and increased epithelial proliferation.

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

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

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

31 **Case report**

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

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

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

41 **The histological study of the micro-biopsy**suggested a juvenile fibroadenoma with
42 stromal hyper cellularity and epithelial hyperplasia without atypia, or malignancy.

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

45 **DISCUSSION**

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

48 Its etiopathogenesis remains imperfectly elucidated. However, the involvement of
49 hormones is strongly suggested, due to the expression of estrogen and progesterone
50 receptors within these lesions, as well as their preferential occurrence during periods
51 of increased hormonal stimulation, particularly puberty and pregnancy, or in patients
52 using oral contraception (4).

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

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

61 Ultrasound is the first-line imaging modality, with an excellent negative predictive
62 value estimated at 99.5% (8). It typically showing a well-circumscribed, round,
63 homogeneous, hypoechoic lesion, sometimes associated with posterior acoustic
64 enhancement (9). Mammography has limited value in young patients due to high
65 breast density and the risk of radiation exposure.

66 Histologically, juvenile fibroadenoma is characterized by stromal hypercellularity
67 associated with epithelial proliferation. It is distinguished from phyllodes tumors by

68 the presence of a well-defined capsule and a more homogeneous distribution of stroma
69 and epithelium (10).

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

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

77 **Conclusion**

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

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

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

84 **Conflicts of interest**

85 The authors declare no conflicts of interest.

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88 **Consent :**

89 Informed consent was obtained from the patient.

90 **Author contributions:**

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

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143 **FIGURES**



144

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



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

UNDER PEER REVIEW



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



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

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