Brief report

Arch Argent Pediatr. 2026;e202510820

Breast disorders in adolescence: Etiological, clinical, and therapeutic aspects

Jessie N. Zurita Cruz[1], Juana Serret Montoya[2], Ofelia Mendoza Rojas[2], Isabel Colunga Olvera[2], Guillermo Fojaco Villanueva[2], Mónica Zavala Serret[2]

ABSTRACT

Introduction. Breast diseases in adolescents are rare and generally benign, although their treatment can be complex.

Objective. To describe the etiology, clinical presentation, and therapeutic management of adolescents with breast conditions at a tertiary care hospital.

Population and methods. Retrospective case series study. The study included patients aged 10 to 18 years with suspected breast pathology who were treated between 2020 and 2024. Clinical and treatment data, as well as information on comorbidities, were collected.

Results. A total of 127 patients were analyzed (median age: 16 years); 80 were female. In females, benign tumors predominated, primarily fibroadenomas, and 29 required surgery. In males, pubertal gynecomastia was the most common finding (n = 33), and secondary cases associated with hypogonadism or medication use were identified; 11 required surgery.

Conclusion. Fibroadenomas were most common in girls, and gynecomastia in boys. The identification of secondary causes underscores the need for a comprehensive evaluation and targeted treatment.

Keywords: *human mammary glands; adolescent pathology; fibroadenoma; gynecomastia; hypogonadism.*

doi: http://dx.doi.org/10.5546/aap.2025-10820.eng

To cite: Zurita Cruz JN, Serret Montoya J, Mendoza Rojas O, Colunga Olvera I, Fojaco Villanueva G, Zavala Serret M. Breast disorders in adolescence: Etiological, clinical, and therapeutic aspects. *Arch Argent Pediatr.* 2026;e202510820. Online ahead of print 27-AUG-2026.

[1] School of Medicine, Universidad Nacional Autónoma de México, Mexico; [2] Adolescent Care Unit, Hospital Infantil de México Federico Gómez, Mexico City, Mexico.

Correspondence to *Jessie N. Zurita-Cruz: zuritajn@hotmail.com*

Funding*: None.*

Conflict of interest*: None.*

Received*: 7-16-2025*
Accepted*: 4-28-2026*

INTRODUCTION

Breast disorders in children are rare, with an estimated incidence ranging from 0.1% to 3.25%.[1] These conditions include developmental abnormalities, hormone-dependent functional disorders, inflammatory processes, trauma, tumors, and, in boys, pubertal gynecomastia.

In women, two conditions stand out: fibrocystic breast disease, linked to an estrogen-progesterone imbalance in anovulatory cycles, and fibroadenoma, the most common benign tumor, characterized by being solitary, mobile, firm, and well-defined. Although these conditions are usually treated conservatively, some cases require surgery due to size, symptoms, or rapid growth.[2-5]

A fibroadenoma usually presents as a mobile, well-defined, painless mass, whereas mastalgia is typically associated with inflammatory or functional conditions.[6] The clinical management of mastalgia depends on the intensity and duration of the symptoms.

In males, pubertal gynecomastia is the most common cause of breast enlargement; it is of physiological origin but is exacerbated by obesity. It may also be caused by hypogonadism, cirrhosis, renal failure, or medication use.[7-9] Diagnosis includes a physical examination, testicular and breast ultrasound, tumor markers, and a hormonal profile.[6,7,9] In persistent cases or those with psychosocial impact, pharmacological or surgical treatment may be indicated.[8]

Despite evidence on the most common causes, significant information gaps remain, especially for tertiary care hospitals treating patients with complex chronic conditions. Many studies focus on general populations, without considering comorbidities or treatments that affect clinical presentation.

In the literature, there is variability in the diagnostic approach and in the indications for additional tests or surgical interventions in adolescents with breast conditions.

The objective of this study was to describe the etiology, clinical presentation, and treatment approach in adolescents with breast conditions treated at a tertiary care hospital.

POPULATION AND METHODS

A retrospective case series study was conducted that included patients aged 10 to 18 years who were referred to the Adolescent Clinic at a tertiary-level pediatric hospital due to suspected breast pathology between January 2020 and December 2024. Data on demographics, clinical course, diagnosis, therapeutic approach, and comorbidities were collected. Patients with incomplete medical records were excluded. Patients were classified by sex to describe their clinical and therapeutic characteristics. Suspected breast pathology was defined by the presence of a palpable mass, breast pain, breast enlargement, or skin changes detected during the clinical evaluation.

With regard to etiology, patients were classified into (a) developmental abnormalities (size, shape, position), (b) functional disorders (hormonal dependence such as hypogonadism, abnormalities in sex hormone-binding proteins as seen in liver disease), (c) inflammatory processes, (d) trauma, (e) tumors, and, in the case of males, (f) pubertal gynecomastia.[1,2] Obesity was defined as a body mass index (BMI) ≥95th percentile, and overweight as a BMI ≥85th percentile for age and sex. Tamoxifen treatment was indicated in cases of persistent gynecomastia with psychological impact. Surgical treatment was reserved for lesions with a diameter ≥5 cm, persistent pain, or suggestive ultrasound findings.

Statistical analysis

Quantitative variables were analyzed using the median and interquartile range; qualitative variables were analyzed using frequencies and proportions.

Ethical considerations

The study complied with the principles of the Declaration of Helsinki and was approved by the Research Committee (registration number R-2024-3603-011).

RESULTS

During the study period, 3820 consultations were recorded, of which 1528 were initial visits. In this group, 153 patients were identified as having been referred due to suspected breast pathology; 26 were excluded due to incomplete medical records, resulting in a final sample of 127 patients. The median age was 16 years, and 84 patients had a chronic disease (*Table 1*).

In the group of women (n = 80), benign tumors (n = 61) were documented; fibroadenomas (n = 60) were the most common, followed by one case of lymphangioma. Tumor size ranged from 0.7 cm to 10 cm, with a median of 2.7 cm.

Eleven functional disorders (13.8%) were identified, including mastalgia, fibrocystic

Table 1. General characteristics of the included patients

	All (n = 127)	Female (n = 80)	Male (n = 47)
Age, years			
Median (IQR)	16 (14-17)	17 (14-18)	15 (14-16)
Sex, n (%)			
Female	80 (63)	80 (100)	
Male	47 (37)		47 (100)
Weight, kg			
Median (IQR)	51.4 (43.8-59.8)	49.7 (40.7-54.0)	57.7 (49.0-69.0)
Height, cm			
Median (IQR)	155 (150-161)	152 (148-156)	162 (156-170)
BMI Z-score			
Median (IQR)	0.34 (-0.35-0.99)	0.35 (-0.50-0.89)	0.34 (-0.03-1.22)
Nutritional status, n (%)			
Normal	91 (71.6)	61 (76.2)	30 (63.8)
Malnutrition	4 (3.2)	3 (3.8)	1 (2.1)
Overweight/obese	32 (25.2)	16 (20.0)	16 (34.1)
Pubertal stage, n (%)			
Prepubertal	2 (1.6)	1 (1.2)	1 (2.2)
Pubertal	125 (98.4)	79 (98.8)	46 (97.8)
Tanner stage, n (%)			
2	7 (5.5)	1 (1.2)	6 (12.8)
3	19 (14.9)	11 (13.8)	8 (17.0)
4	58 (45.7)	40 (50.0)	18 (38.3)
5	41 (32.3)	27 (33.8)	14 (29.8)
Chronic disease, n (%)			
Present	84 (66.1)	46 (57.5)	38 (80.8)
Type			
Endocrinological	21 (25.0)	6 (13.0)	15 (39.5)
Allergic	10 (11.9)	4 (8.7)	6 (15.8)
Genetic	10 (11.9)	6 (13.0)	4 (10.5)
Gastrointestinal	8 (9.5)	5 (10.9)	3 (7.9)
Hemato-oncological	8 (9.5)	5 (10.9)	3 (7.9)
Nephro-urological	7 (8.2)	5 (10.9)	2 (5.3)
Dermatological	6 (7.2)	6 (13.0)	0 (0.0)
Neurological	6 (7.2)	5 (10.9)	1 (2.6)
Autoimmune	4 (4.8)	3 (6.5)	1 (2.6)
Cardiological	4 (4.8)	1 (2.2)	3 (7.9)

IQR: interquartile range, BMI: body mass index.

mastopathy, macromastia, and galactorrhea secondary to severe hypothyroidism. In cases of mastalgia, inflammatory or extramammary causes were ruled out.

The inflammatory condition was breast eczema in 7 patients (8.8%), and one case of a developmental abnormality (accessory mammary gland) was reported (1.2%) (*Table 2*).

Initial treatment was conservative in most cases. Twenty-one patients received drug therapy, primarily analgesics; in refractory cases, 0.1% topical tacrolimus was used for 2 to 4 weeks, with a good response in 4 patients. Surgical treatment was performed in 29 patients with fibroadenoma, primarily due to a size of ≥5 cm (n = 10), persistent pain (n = 16), or suggestive ultrasound findings (n = 3). The postoperative course was favorable, with complete clinical remission and confirmation of the histopathological findings of fibroadenoma (*Table 2*).

Among males, 38 patients had a chronic disease (*Table 1*). The most common diagnosis was pubertal gynecomastia (n = 33). Within this group, secondary causes were identified, including primary hypogonadism (n = 2) and liver disease treated with spironolactone (n = 4); one of these patients also reported methamphetamine use, and another had cirrhosis; the latter died two

months after the evaluation. In addition, two cases of simple cysts, three cases of breast nodules, two cases of inflammation due to eczema, and one case of Poland syndrome were detected.

DISCUSSION

We present a series of cases from a tertiary-level pediatric hospital in which a considerable proportion of adolescents had comorbidities. This context may explain the higher frequency of secondary etiologies in males and a higher threshold for surgical indication compared to series involving the general population.

Fibroadenoma was the most common benign tumor in women.[10] Although treatment is usually conservative, in our series, surgery was indicated primarily due to size, persistent pain, or suggestive ultrasound findings. Although no malignant tumors were identified, they should be considered in the differential diagnosis, since in adolescents they often correspond to non-primary neoplasms or metastases.[1,10]

In males, in addition to pubertal gynecomastia, secondary cases associated with hypogonadism and liver disease were reported with the use of spironolactone. These findings highlight the need for a targeted evaluation, especially in patients with chronic disease or drug exposure. Tamoxifen was reserved for selected cases, and topical tacrolimus was used for refractory eczema on a short-term basis.[7,8]

In addition, less common conditions were identified, such as nipple eczema, with a prevalence of 8%, likely related to the high proportion of patients with chronic diseases. In these cases, second-line treatments were necessary, such as 0.1% topical tacrolimus.[11]

One of the main limitations of the study was the lack of systematic data on relevant aspects, such as treatment adherence, treatment duration, surgical complications, and psychosocial impact, due to the retrospective nature of the analysis. Additionally, because this was a tertiary referral hospital, the findings may not reflect the general population due to potential selection bias. ■

REFERENCES

1. Sosnowska-Sienkiewicz P, Januszkiewicz-Lewandowska D, Mańkowski P. Benign and malignant breast lesions in children and adolescents: diagnostic and therapeutic approach. *Front Pediatr*. 2024;12:1417050. doi: 10.3389/

Table 2. Type of breast disease and recommended treatment

	All (n = 127)	Female (n = 80)	Male (n = 47)
Duration of disease, months (n =1 127)			
Median (IQR)	5 (1-12)	2 (1-7)	6 (6-12)
Breast condition, n (%) (n = 127)			
Tumors	66 (52.0)	61 (76.2)	5 (10.6)
Functional	17 (13.4)	11 (13.8)	6 (12.8)
Developmental	2 (1.5)	1 (1.2)	1 (2.1)
Inflammatory	9 (7.1)	7 (8.8)	2 (4.3)
Pubertal gynecomastia	33 (26.0)	0 (0)	33 (70.2)
Largest tumor diameter, cm (n = 66) £			
Median (IQR)	2.4 (1.3-3.7)	2.7 (1.4-4.0)	0.6 (0.6-0.8)
Pharmacological treatment, n (%)			
Yes	34 (26.8)	21 (26.2)	13 (27.7)
Medications (n = 34*), n**			
Nonsteroidal anti-inflammatory drugs	22	15	7
Tamoxifen	6	0	6
Tacrolimus 0.1%	4	4	0
Emollients	2	2	0
Surgical treatment, n (%) (n = 127)			
Yes	40 (31.5)	29 (36.2)	11 (23.4)

IQR: interquartile range.

£ The denominators correspond to the number of patients with tumors (total n = 66; female n = 61; male n = 5).

** The denominators correspond to the number of patients who received drug treatment (total n = 34; female n = 21; male n = 13).*

*n** Absolute frequencies.*

fped.2024.1417050.
2. Cerrato F, Labow BI. Diagnosis and management of fibroadenomas in the adolescent breast. *Semin Plast Surg*. 2013;27(1):23-5. doi: 10.1055/s-0033-1343992.
3. Greydanus DE, Matytsina L, Gains M. Breast disorders in children and adolescents. *Prim Care*. 2006;33(2):455-502. doi: 10.1016/j.pop.2006.02.002.
4. Lee EJ, Chang YW, Oh JH, Hwang J, Hong SS, Kim HJ. Breast lesions in children and adolescents: diagnosis and management. *Korean J Radiol*. 2018;19(5):978-91. doi: 10.3348/kjr.2018.19.5.978.
5. Omar L, Gleason MK, Pfeifer CM, Sharma P, Kwon JK. Management of palpable pediatric breast masses with ultrasound characteristics of fibroadenoma: A more conservative approach. *AJR Am J Roentgenol*. 2019;212(2):450-5. doi: 10.2214/AJR.17.19482.
6. Mareti E, Vatopoulou A, Spyropoulou GA, Papanastasiou A, Pratilas GC, Liberis A, et al. Breast disorders in adolescence: A review of the literature. *Breast Care (Basel)*. 2021;16(2):149-55. doi: 10.1159/000511924.
7. Kanakis GA, Nordkap L, Bang AK, Calogero AE, Bártfai G, Corona G, et al. EAA clinical practice guidelines: gynecomastia evaluation and management. *Andrology*. 2019;7(6):778-93. doi: 10.1111/andr.12636.
8. Metwalley KA, Farghaly HS. Gynecomastia in adolescent males: current understanding of its etiology, pathophysiology, diagnosis, and treatment. *Ann Pediatr Endocrinol Metab*. 2024;29(2):75-81. doi: 10.6065/apem.2346142.071.
9. Yang X, Zheng X, Zhang M, Huang J, Huang P, Wang J. Drug-induced gynecomastia: data mining and analysis of the FDA adverse event reporting system database. *Clin Epidemiol*. 2024;16:617-30. doi: 10.2147/CLEP.S470959.
10. Jayasinghe Y, Simmons PS. Fibroadenomas in adolescence. *Curr Opin Obstet Gynecol*. 2009;21(5):402-6. doi: 10.1097/GCO.0b013e32832fa06b.
11. Kaur A, Kumar R, Gupta S. Nipple eczema in an adolescent girl presenting with persistent unilateral nipple discharge. *BMJ Case Rep*. 2020;13(8):e237691. doi: 10.1136/bcr-2020-237691.