

CASE REPORTS

TUMORS OF THE ADOLESCENT BREAST - REGARDING A CLINICAL CASE

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ABSTRACT

Introduction: Most breast masses in adolescents are benign and self-limited. Clinical evaluation can be particularly challenging due to normal breast tissue development and natural changes. Ultrasonography is the preferred image modality. When clinical features of the mass raise suspicion, excisional biopsy is warranted.

Case report: Twelve-year-old female patient, who presented a tender, firm nodule occupying the whole outer upper quadrant of the left breast, with periods of alternating growth and shrinking. Overlying skin presented stretch marks. Excisional biopsy of the lesion was performed via a left hemiperiareolar incision with a short vertical component. Post-operative evolution was uneventful. Definitive pathological diagnosis was fibroadenoma.

Discussion: Giant fibroadenomas have a risk of malignant transformation. Therefore, these tumors, regardless of the age of presentation, should be treated with surgery.

Conclusions: It is essential to have a deep knowledge in pediatric breast pathology to provide the most adequate treatment to each patient.

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breast, adolescent, giant, mass, tumor, benign, fibroadenoma.

Introduction

Most breast masses in adolescents are benign and self-limited. In this pediatric cluster, some of the most common diagnosis include fibrocystic disease, fibroadenoma, trauma and infection. Among less common benign masses, mammary duct ectasia, cysts of Montgomery and phyllodes tumors are some examples. Of note, although extremely rare, malignant lesions include primary breast cancer and metastatic cancer.

Clinical evaluation in female adolescents can be particularly challenging due to normal breast tissue development and natural changes. A detailed history and physical examination are essential in the initial approach. During history taking of these patients, some of the most important aspects to bear in mind are: (1) Duration and size; (2) Associated symptoms; (3) Development of secondary sexual characters; (4) Previous breast disease; (5) Personal history of malignancy or breast irradiation; (6) Menstrual and pregnancy history; (7) Family history of breast disease or neoplasms; (8) Medication history. Likewise, during physical examination, one should record: (1) Location, consistency, size, mobility, and tenderness of the mass; (2) Overlying skin changes; (3) Nipple

discharge; (4) Nipple changes; (5) Lymphadenopathy; (6) Hepatosplenomegaly.

Image studies may also prove helpful. Of these, ultrasonography is the preferred modality, because of the increased density of the adolescent breast, which makes mammography difficult to interpret. Ultrasonography can differentiate between solid and cystic lesions in 96-100% of the cases.

Asymptomatic solid masses under 5cm diameter may be managed with observation only. Cystic lesions tend to resolve spontaneously over weeks to months; if persistent, they can be treated with needle aspiration. When clinical features of the mass raise suspicion, excisional biopsy is warranted.

Case Report

We present a twelve-year-old female patient who was referenced to the Plastic Surgery outpatient clinic complaining of a swelling in the outer upper quadrant of the left breast with periods of alternating growth and shrinking. She could not tell if this pattern was or not related to menses. The patient reported that the mass had appeared two months before consultation. There was no history of galactorrhea. Observation identified breast asymmetry with a much larger left breast that presented a tender, firm nodule occupying the whole outer upper quadrant, approximately 7cm in diameter and attached to underlying tissues. Overlying skin presented stretch marks but was otherwise innocent. Mass limits were well-defined and contours were regular. Aside from pain, no inflammatory signs were observed. No other nodules or suspicious enlarged lymph nodes

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were palpable. Ultrasonography evaluation revealed a solid and slightly lobulated and heterogenous mass with 70 x 37 x 52 mm in dimensions; Doppler signal was scarce; no microcalcifications were identified.

Thus, under general anesthesia, excisional biopsy of the lesion was performed via a left hemi-periareolar incision with a short vertical component towards the lower quadrants. Drain was removed after 24h. Post-operative evolution was uneventful.

Pathology report described a well-defined mass with myoepithelial cell growth and fibroepithelial proliferation without any evidence of cellular atypia, mitotic activity, or necrosis. The lesion intersected surgical margins focally. Definitive pathological diagnosis was fibroadenoma.

Figure 1. Patient presentation in the outpatient clinic.



Figure 2. Excised specimen



Discussion

There are multiple differential diagnosis for breast masses in the adolescent female, as noted below. The presented case demonstrates a rare presentation of the fibroadenoma, one of the most common causes for breast tumors in this pediatric cluster.

Fibroadenoma is the most common benign surgical breast lesion in adolescents. They are typically asymptomatic but may become uncomfortable just before the onset of menses. Fibroadenomas present as a rubbery, well circumscribed, and mobile mass, with an average size of 2-3 cm, usually in the upper outer quadrants. Ten to 25% of the reported cases are multiple or recurrent. Diagnosis is clinical, but ultrasonography may help, showing a solid avascular mass that is well circumscribed. Should doubts persist, fine needle aspiration may be performed, and histological analysis will reveal proliferating stromal tissue. Management is usually non-surgical, as most fibroadenomas in adolescents decrease in size and may completely disappear with time. When presenting with 5 cm or less, patients can be observed at one

or two-month intervals. Malignant transformation in adolescents is possible, but rare, however when these masses persist through adulthood, surgical excision may be warranted, as cancer risk increases. Other indications for excisional biopsy include growth of the tumor, size over 5cm (also known as giant fibroadenoma). Fibroadenomas that extend beyond the 5cm threshold are called giant fibroadenomas. They have a similar behavior compared to phyllodes tumors, with an aggressive growth pattern and disfigurement of the breast, overlined by shiny stretched skin such as presented in this case. This similarity to the phyllodes tumor also alerted to the non-negligible risk of malignant transformation. Therefore, these tumors, regardless of the age of presentation, should be treated with complete tumor excision.

The hemiperiareolar incision with a short vertical component allowed for the concealment of the scar while also a good visualization of the tumor and its complete excision. Remarkably, no parenchymal rearrangement was needed, as there was no resulting breast deformity. Patient is currently past the first year of postoperative, with no signs of recurrence or resulting breast asymmetry.

Figure 3. Postoperative result a week after the surgery.

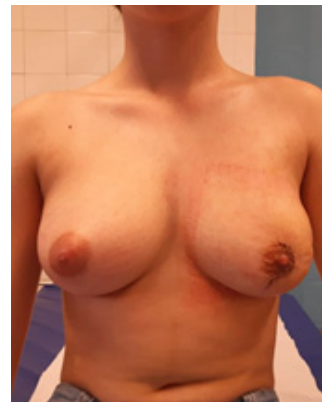


Figure 4. Postoperative result 6 months after surgery. Other breast masses in the adolescent female



Fibrocystic change

Used as either a histological or clinical term, fibrocystic change refers to tissue changes such as stromal fibrosis, cysts, apocrine metaplasia, columnar cell change, sclerosing adenosis and epithelial hyperplasia. Clinically, patients present with nodular dense fibrous areas which may not be a distinct mass on physical examination. These palpable abnormalities may not

be pain-ful. Ultrasonography is nonspecific, identifying one or more cysts with multiple sizes, fibrous echogenic tissue, and dilated ducts. Treatment is usually nonsurgical, focused on reassurance and follow-up consultations.

Phyllodes tumor

Phyllodes tumor (previously known as cystosarcoma phyllodes) is a rare primary tumor most common in older women but has been described in girls starting at 10 years of age. Although most are benign, there are rare cases of malignant behavior. Clinically, patients present with a large, painless breast mass, with shiny and stretched overlying skin due to its rapid growth. Bloody nipple discharge may be present. Ultrasonography findings include lobulations, echo heterogeneity and absence of microcalcifications. These findings are suggestive but not diagnostic. Because it is usually benign, recommended treatment is surgical excision of the mass, with other, more aggressive measures limited to malignant cases.

Mammary duct ectasia

This term refers to a clinical scenario characterized by dilation of mammary ducts and accompanying fibrosis and inflammation. Most of the times, it presents as a bloody nipple discharge persisting for several weeks or months. A discrete mass or diffuse breast enlargement may also be found. Ultrasonography findings include dilated ducts and cysts. Infection may also ensue, with the most common organisms isolated on culture being *Staphylococcus aureus* and *Staphylococcus epidermidis*. In these cases, antibiotic therapy is warranted. Otherwise, conservative management is the preferred treatment, especially in the pediatric cluster, as many reported cases mention spontaneous resolution. When surgery is indicated, dissection should be kept to a minimum, to avoid disturbances in breast tissue development and functional impairment to lactation.

Cysts of Montgomery

Scarcely reported in the literature, cysts of Montgomery occur when there is an obstruction of Montgomery tubercles, small projections at the edge of the areola, that play a role in lactation. This obstruction results in either acute inflammation or an asymptomatic mass. The diagnosis is mainly clinical and can be confirmed with ultrasonography, which mostly shows a single cystic lesion located in the retroareolar area. Management depends on clinical presentation, but most resolve spontaneously.

Trauma

As with the adult breast, trauma may result in a local hematoma in the early periods and/or with fat necrosis later. Unless there is an expanding hematoma, infection, or frank tissue necrosis, conservative management is the rule in these patients. One should keep close attention to the severity and location of the trauma to the breast, as damage to the breast bud can lead to asymmetric breast development.

Infection

Patients with mastitis usually present with local pain and tenderness, and with or without systemic signs of infection (fever, chills, myalgia). Risk factors

in adolescents are lactation, duct obstruction, smoking, diabetes, trauma and immunodeficiency. *Staphylococcus aureus* is the most commonly isolated organism. Ultrasound studies may identify an abscess, in which case drainage is warranted. Cultural exams should guide antibiotic therapy. Lactating patients should keep evacuating the involved breast.

Breast cancer and metastatic cancer

Breast cancer is rare in the pediatric patient. More than 80% of the cases are juvenile secretory carcinomas, followed by intraductal carcinoma. Primary rhabdomyosarcomas and lymphomas may also occur, albeit very rarely. It presents as a hard, irregular mass, that may be adherent to the surrounding tissues. Skin/nipple retraction, peau d'orange, nipple changes, nipple discharge and axillary or supraclavicular lymphadenopathy can also be present. Main risk factors are a personal history of cancer and exposure to radiation. It is also worth mentioning that a breast malignancy is more likely to be metastatic than primary, and include Hodgkin and non-Hodgkin lymphoma, neuroblastoma, hepatocellular carcinoma, and rhabdomyosarcoma.

Conclusion

Breast masses in adolescent females are rare findings with a wide array of differential diagnosis, most being benign and amenable to non-surgical treatment, but requiring rigorous follow-up protocols and reassurance of the patient. However, there are a few cases where excisional biopsy should be performed without a waiting period, as in the presented case. Therefore, it is essential for the physician to have a deep knowledge in this area to provide the most expedite and adequate treatment to each patient.

Compliance with Ethical Standards

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Conflict of Interest None

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