Original Study

Breast Disorders in Girls and Adolescents. Is There a Need for a Specialized Service?

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A B S T R A C T

Introduction: Minor breast concerns in childhood and adolescence are common and lead to increased anxiety among young patients and their families, particularly due to high correlation with breast cancer. However, most breast services aim at managing adults and triaging patients with breast cancer, whereas adolescent medicine specialists or pediatricians are usually not appropriately trained to identify and treat breast pathology.

Methods: We reviewed hospital records of all patients attending a pediatric and adolescent gynecology or breast clinic of a tertiary referral hospital, with a breast related symptom, between January 2009 and December 2011. We collected information regarding age at presentation, age at menarche, diagnosis, management and outcome.

Results: We identified 81 patients of which 11 presented with an abnormal nipple or areolar secretion, 33 had a palpable lump, 20 had mastitis, and 16 had unequal breast development. One patient presented with virginal breast hypertrophy. Three out of 11 of the patients with an abnormal secretion had a cyst identified on ultrasonography. Out of the palpable lumps 12 were fibroadenomas, 3 were phyllodes tumors, and 14 were cystic in nature. The phyllodes tumors and half of the fibroadenomas were removed. The remaining fibroadenomas remain under regular ultrasonographic follow-up. All cases of mastitis were treated conservatively and resolved with broad spectrum antibiotic treatment.

Conclusion: In our series, no malignancies were identified. Although 8 patients required surgical treatment, the majority of cases were treated conservatively.

Key Words: Fibroadenomas, Mastitis, Adolescent breast, Breast discharge

Introduction

Although breast disease is common in adolescence, it is benign in the vast majority of cases.[1] Nevertheless, breast symptoms are likely to lead to increased anxiety in both the patient and her family. Further impacting on this is the fact that most breast services aim at managing adults and screening for breast cancer, whereas adolescent medicine specialists or pediatricians are usually not appropriately trained to identify and treat breast pathology.

We aimed to evaluate breast disorders in puberty by reviewing cases assessed in a tertiary referral hospital for obstetrics and gynecology.

Methods

This was a retrospective audit of children and adolescents under the age of 16 with breast-related symptomatology. We reviewed all patients that attended the adolescent outpatient clinic or the breast outpatient clinic of a tertiary referral hospital for a breast related problem between January 2009 and December 2011. We excluded patients presenting for assessment of pubertal status or premature thelarche.

Notes were reviewed and information on age, age at menarche, symptoms, imaging findings, and biopsy or cytology results were collected.

All Patients Were Treated according to Local Protocols as Follows:

Patients presenting with a nipple discharge were assessed clinically and by ultrasonography imaging and a sample for microbiology and cytology was sent. If galactorrhoea was suspected, a prolactin level was requested.

Palpable lumps were further assessed by ultrasonography and managed conservatively. Ultrasonography findings were categorized using the Breast Imaging Reporting and Data System classification. Large fibroadenomas more than 2 cm in size, or suspected phyllodes tumors were surgically removed. Fine needle aspiration (FNA) is rarely applied in younger patients, unless there is a strong suspicion for malignancy.

Equally, we tend to avoid mammography in younger patients as, due to increased breast density, results are often inconclusive. We also prefer to avoid unnecessary radiation exposure and excessive pressure to breast tissue that may be poorly tolerated in young patients.

Results

Eighty-one girls presented during this 3-year period with concerns regarding their breast (Table 1). Their median age was 14 years (range 9-16). 17 patients were premenarchal

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Table 1
Types of Breast Disorders, Diagnosis, and Treatment

Breast Disorder	Number	Median Age y (Range)	Diagnostic Workup	Treatment
Nipple-areolar secretion	8	12.5 (10.5-14)	Smear for microbiology and cytology ultrasonography	None, follow-up
Galactorrhea	3	14.5 (14-15)	Serum prolactin	Normal levels (1) Discontinue causative medication (1) Cabergoline (1)
Palpable lump	33	15.5 (9-16)	Ultrasonography	Surgical excision (8) Follow-up: 6-month
Mastitis	20	12.8 (9-16)	Culture when nipple discharge obtainable ultrasonography	Broad spectrum antibiotics for 2 weeks
Anisomastia	16	13.5 (10-16)	Clinical examination and ultrasonography	Reassurance, no intervention recommended until late adolescence
Breast hypertrophy	1	11	Ultrasonography	Plastic surgery
Total	81	14 (9-16)		

and the remaining were at an average of 3 years after menarche.

Six patients presented with an abnormal discharge from the nipple and 2 from the areola. An associated cyst was identified in 3 cases. The discharge was clear and serous-like in 7 cases and blood tinged in one. When a sample could be taken in clinic, it was sent for cytology and microscopy and culture, which yielded no atypia or growth, respectively.

There were 3 cases of galactorrhoea, of which 1 had a normal prolactin level and 1 had moderately raised levels that came down once the patient stopped taking domperidone for oesophageal reflux. The third patient, aged 16, who had persistently high levels of prolactin and associated menstrual irregularities, was found to have a 9-mm pituitary adenoma and is currently on long- term treatment with cabergoline.

Of the 33 patient with a palpable lump, 12 had ultrasonographic masses consistent with fibroadenomas, Three were suspected to have a phyllodes tumor (confirmed by surgical excision) and 14 had a cystic lesion. Four cases had clinical findings consistent with a fibroadenoma but were lost to follow-up and therefore ultrasonography or other confirmation was not available.

The median size of the fibroadenomas was 21 mm (range 13-40). In 5 cases (out of the total 12), surgical excision was recommended, based on size of the lesion and clinical symptoms. Two of the excised fibroadenomas were confirmed on pathology to be juvenile fibroadenomas (size 30 mm and 40 mm respectively). The remaining 7 girls with fibroadenomas were treated conservatively and were on a 6 months follow-up by ultrasonography and clinical examination.

Two patients had phyllodes tumors which measured 42 and 35 mm in their largest diameter respectively, whereas a third patient presented with gross unilateral breast enlargement due to 2 phyllodes tumors, measuring 65 and 75 mm.

All patients that required an operation were followed up at 6 months post procedure and there were no cases of breast asymmetry noted.

Cystic lesions were followed up with regular ultrasonographic imaging and clinical examination. Of the 14 cases, 8 had resolved in 4 months, whereas 5 persisted, albeit in decreasing size. Four of the latter were further treated by paracentesis. Cytology and cultures did not yield any significant results.

20 patients presented with mastitis. Their median age was 12.8 (range 9-16). 5 patients were premenarchal, whereas the remainder 15 were at a median of 6 months post menarche (range, 2 months to 2 years). Presentation was with unilateral breast engorgement and pain. In half of the cases, there was associated pyrexia. Two patients required admission and intravenous antibiotics due to a persistent high temperature above 39°C. The remaining patients were treated with oral broad spectrum antibiotics. In 5 cases, there was a palpable lesion with ultrasonographic appearances of an abscess. All cases resolved with conservative treatment, within a median of 2 weeks after initiation of treatment. However, 3 cases presented with a relapse or recurrence in the following 12 months, which were again treated with broad spectrum antibiotics.

16 cases presented with unequal breast development as their sole complaint. Their median age was 13.8 (range 9.4-16). Clinical examination revealed a significant difference in size. No abnormal masses were palpated and the girls and their parents were reassured and advised to wait for potential balancing growth in later adolescence.

One case of gigantomastia was also evaluated. She presented at age 11 with a grossly enlarged breast. This had developed in a few months and was causing severe difficulties with body posture. The patient was referred for plastic surgery. Unfortunately, despite an initial successful bilateral breast reduction operation, she developed regrowth of the residual breast and required a second breast reduction procedure.

Discussion

Our series is one of a few looking at breast problems in children and adolescents and serves as a snapshot of concerns identified in this age group. On average 600 children and adolescents are referred to our hospital per year and approximately 4.5% present with a breast related disorder. The commonest presenting breast complaint was a palpable lump, followed in frequency by overt mastitis or a nipple or areolar discharge. Of those patients presenting with a mass, approximately half were diagnosed as having a fibroadenoma.

Fibroadenomas are common in adolescents and young adults.[2,3] Evolving breast tissue seems to respond to hormonal stimuli excessively, resulting in the development of single or multiple fibroadenomas.[1,4] The most common type is the simple fibroadenoma, presenting as a smooth, mobile, palpable mass sized usually less than 3 cm in its greatest diameter. Giant fibroadenomas are rare forms of fibroadenomas that grow rapidly and can reach a size of over 10 cm in diameter.[5] Juvenile fibroadenomas are histologically different to simple or giant fibroadenomas in that they have a larger fibrous component. They tend to reach excessive dimensions leading to deformity and asymmetry of the breast and can cause damage to adjacent normal tissue due to local expansion and compression.[6,7]

Fibroadenomas are usually identified and assessed by ultrasonography,[8,9] and, given their benign nature,[10] management is generally conservative.[1,11] Surgical excision is indicated when there is a rapid increase in size, ie, an increase of more than 50% of the original size within the period of 6 months or where there is pain and tenderness. In adult patients, the usual cut-off point for surgical intervention is a diameter of 2 cm. No clear guidelines exist as to fibroadenoma management in adolescents[12] and most services would avoid surgery in young girls. In our practice, a fast growing fibroadenoma, or one where there is a high clinical or ultrasonographic suspicion of juvenile fibroadenoma or where a phyllodes tumor cannot be excluded, is an indication for removal.

Phyllodes tumors comprise a rare group of breast fibroepithelial neoplasms representing less than 1% of all breast tumors.[13] As their name suggests (phyllo = leaf in Greek) they tend to grow like a leaf within the mammary ducts. They are stromal in origin and can attain a large size. In their vast majority they are benign; however, a small proportion may be classified as borderline or malignant, based on mitotic activity, cellular atypia, and stromal overgrowth.[14] Differentiating a fibroadenoma from a phyllodes tumor can be difficult on ultrasonographic grounds alone, although the latter, ultrasonographically, tend to be better defined, round or oval lobular nodules, non-calcified and with a heterogeneous and cystic component.[15] Wide local excision, including surrounding normal tissue, has been recommended as the treatment of choice, due to a relatively high recurrence rate, which, in adult series has been reported to be as high as 40%.[16] So far, the 3 cases in our series have not had a recurrence.

Discharge from the nipple or the areola can be an indication of mild inflammation of the breast. Areolar discharge is usually dark brown in color and originates usually from Montgomery glands. Occasionally a tender cyst may be palpable. Typically the condition does not require treatment and will resolve within a few weeks.[17] Discharge from the nipple may be associated with an underlying cyst and may be an initial symptom of inflammation. Where systemic inflammation and pain is not obvious, a watchful waiting approach is usually recommended.

Overt breast inflammation or mastitis is usually caused by breast milk engorgement during lactation.[18] Breast inflammation has also been associated with neoplastic lesions in older women.[19] It is unclear why the adolescent is prone to infection and inflammation in the absence of milk production. It is possible, however, that an infection can be introduced more easily through the developing mammary duct during puberty.[11] In our series, most patients were within a few months of menarche, which is the time that breast changes and growth are at their peak. Although staphylococcus aureus is thought to be the commonest cause of adolescent mastitis,[18] culture and sensitivity did not yield a result in any of our patients. However, empirical broad spectrum antibiotics led to complete resolution and none of the patients required incision and drainage. Inflammation, such as residual cysts, responds slowly to treatment and may persist for weeks or even months after initial presentation.

Breast cancer is a described entity among children and adolescents. However, it remains an extremely rare condition with an incidence of less than 1 in a million.[20–22] This comes in contrast with what occurs in adult women, particularly over the age of 40, where ruling out cancer at early stages is the paramount goal in assessing a palpable breast lump, nipple discharge, or inflammation. Children and adolescents should clearly represent a separate group of patients, where unnecessary interventions should be avoided, given the extremely small likelihood of identifying a malignancy. Also, even minor surgery in a developing breast can cause extensive and permanent damage to surrounding tissue, which would lead to detrimental cosmetic and functional results. In our hospital, we are developing a special service to manage children and adolescents with breast concerns, so as to expand expertise and improve our approach to managing this group of young patients. We would encourage all centers for breast disease to have a dedicated team for management of girls and adolescents, which should involve a pediatrician or adolescent medicine specialist, should aim at conservative management where possible, and should develop strategies for the management of benign, inflammatory disease.

As particular breast entities are more common in children and adolescent girls, breast specialists should develop clinical skills and collaborate closely with the community, informing and educating parents and pediatricians about pathology that is encountered in this group.

Conclusion

A conservative approach is paramount in young patients, especially in cases of cystic or inflammatory lesions of the breast. Despite a higher threshold for surgical intervention, large masses need to be excised, mainly to prevent breast tissue damage through lesion expansion. In all cases, adequate psychological support to the anxious patient and her family should be provided, in a setting offering a dedicated service for children and adolescents.

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