

Spectrum of Paediatric Breast Health Issues: Audit from a Single Center

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Abstract

Paediatric breast health issues, though not a rare entity, have been overlooked. The scarcity of published literature and absence of guidelines remains a major obstacle. The aim of the study is to put forward the spectrum of the disease and to suggest a disease classification. The study involves a retrospective audit of patients presenting with paediatric breast health issues between May 2018 and March 2019. The patients were subdivided into 3 age groups (<6 years, 6-12 years and >12 years). The data was analysed. As the study involves a simple data evaluation, no comparison statistics is feasible. A total of 53 cases were analysed. Paediatric breast health issues are not infrequent. Gynaecomastia, premature thelarche and mastalgia comprises the major case loads. The study emphasizes the importance of development of guideline based paediatric breast health program in tertiary care centres.

Keywords: Paediatric breast health issues-spectrum of cases-age based classification.

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Introduction

Breast diseases comprises of a major public health issue globally. While breast cancer remains the major concern,^[1] for all policy makers, benign breast disease saturates most out patient departments. Benign breast diseases, formerly called BBD, has been renamed as Aberration of Normal Development and Involution of breast (ANDI).^[2] A major component of ANDI is developmental breast issues which is a concern for the society. Most of these and other breast issues fall in the category of paediatric breast health. However, there is scarcity of published literature on this topic. Since last five years there are evolving concepts of paediatric breast health clinics.

Aim

1. To study the spectrum of paediatric breast health problems
2. To put forward a disease classification system based on which larger studies can be conducted.

Subjects and Methods

The study was conducted in the Paediatric breast health clinic of Institute of Child Health, Kolkata between May 2018 and March 2019. The study is a retrospective audit of all the

paediatric patients with breast problems attending the clinic under the age of 18 years. The patients were subdivided into 3 categories based on their age

1. Group A : Birth to 6 years of age.
2. Group B : 6 to 12 years of age
3. Group C : 12 to 18 years of age.

Data was retrieved from the Institute data base. The distribution of the patients were noted based on the age, sex, pattern of disease, evaluation methods and management profile.

As the study is a retrospective audit, simple distribution pattern was noted.

Results

Data of 53 patients was retrieved. 5 patients were in Group A (Table 1), 18 patients were in Gr B (Table 2) and 30 patients were in Group C (Table 3). No malignancy was found in any age group. In Gr A, neonatal mastitis was the commonest problem. In Group B, developmental variations in the form of abnormalities of thelarche and asymmetry (fig2) comprises of the main issue while in Group C, gynaecomastia and fibroadenoma were the commonest.

Table 1: Pattern of disease in Group A (<6 years)

Clinical diagnosis	Frequency N=5	Sex	Character	Treatment
Neonatal mastitis	4	Male 1 /female 3	Neonatal breast enlargement	observation

Neonatal mastitis with secondary infection	1	Male	Neonatal breast enlargement with features of inflammation	antibiotics
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Table 2: Pattern of disease in Group B (6 to 12 years)

Clinical diagnosis	N	Character	Treatment
	18		
Premature Thelarche	7	Tanner 3	Endocrine opinion and needful Reassure if no endocrine problem
Physiological Thelarche	2	Tanner 1-3	Reassure
Asymmetry	2	Unilateral Under developed	Reassure (fig 2)
Mastalgia	1	Non-cyclical	EPO
Gynecomastia	5	Pseudo	Reduce weight (fig 3)
Vascular malformation	1	Vascular malformation	Surgery (fig 4)

Table 3: Pattern of Disease in 12 to 18 years of age

Clinical diagnosis	N= 30	character	treatment
Gynecomastia (true)	2	Gr 2,3	Endocrine evaluation
			USG
			Surgery
Gynecomastia (pseudo)	15	Gr 2	Reassure (fig 3)
Mastalgia (cyclical)	12	Before onset of cycles	Reassure
Mastalgia (noncyclical)			
Eczema/ Infection	5	Varied	Medical
Breast Lump	2	Palpable mass	Triple assessment
			Surgery
Asymmetry	1	One less developed	Reassure

Table 4: Tanners Stages of Thelarche

Stage	Age	Morphological change	Cause
Tanners Stage 1	Pre adolescent	Elevation of papilla. No additional development of stroma or parenchyma beyond what has occurred in infancy	
Tanner stage2 (Thelarche)	8.5 to 13.5 Average age 11 years	formation of breast bud with nipple elevation, a small mound of breast tissue and areolar diameter enlargement	Estrogen surge is responsible for the initiation. The action of estrogen depends on pituitary Growth hormone. Groth hormone stimulates expression of Insulin like growth factor I (IGF1) in the mammary gland.
There may be discrepancy in the size of the breast between Tanner 2 & 3			
Non development of breast by 14 years should be investigated			
Tanners stage 3	Average 12.5	Further enlargement breast and areola with no separation of contours	
Menarche occurs between Tanner 3 and 4			
Tanners stage 4	Average age 13-14 years	nipple and areolar enlargement leading to the formation of secondary mound on the breast	
Tanners Stage 5	Around 15 years	recession of the areola on to the breast resulting in loss of the separation of the contours. This stage occurs around 15 years of age of female.	

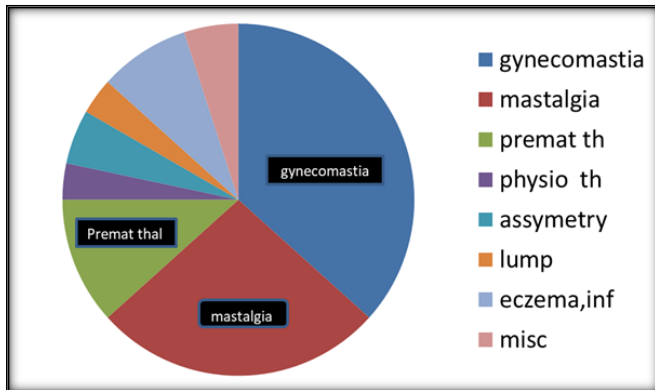


Figure 1: Distribution of various paediatric breast health issues in patients attending paediatric breast health Clinic at ICH



Figure 4: Vascular malformation of breast



Figure 2: Asymmetry of breast



Figure 3: Adolescent gynaecomastia

Discussion

Paediatric breast health is an evolving subspecialty.^[3] The spectrum is wide and often requires multidisciplinary approach. There is no classification of the disease as there is little published literature. The changes in breast in the first 18 years of life is extremely dynamic and depends on interplay of various hormonal factors. Understanding the physiology plays a key role in evaluation and treatment of these conditions.

During the intrauterine life the breast develops from the ectodermal milk ridges. However, the maturation and involution takes place during the first two years of life. There may be neonatal mastitis immediately after birth or within 2 weeks of birth. Most studies show equal distribution in both sexes.^[4] In our series the sample size is too small to comment about any sexual predisposition. Subsequently, infantile mastitis might occur beyond 2 months but it is more common in females.^[5] and is due to persistence physiological stimulation and hypertrophy. Use of antibiotic is empirical and there is no uniform practice globally.^[5] In our series, antibiotic was used in only one case with clinical evidence of infection. All 4 cases mastitis subsided spontaneously without any use of antibiotics. Thus in Group A which comprises of pre-school children, infants and neonates, mastitis remains the main issue.

The gland remains quiescent from 2 years till puberty. The breast development begins in females as the first sign of

puberty under the influence of estrogen. The development of breast proceeds according to Tanners stages.^[6,7] (Table 4). In Group B (School), issues related to thelarche takes the central stage. Most physiological thelarches require parental counselling and reassurance. Children with breast asymmetry also require parental counselling. Of the 2 cases of asymmetry (Fig 3) both have developed acceptable symmetry at 15 years. Decision of breast augmentation is decided only after 18 years. These patients need plastic surgical interventions. 7 out of 18 patients in Group B had premature thelarche before the age of 8 years. All the patients needed endocrine consultation. One patient presented with vascular malformation of the breast and was dealt by paediatric surgeon.

The changes in breast between 12 and 15 years follows post pubertal Tanners Stage 4 and 5. Developmental issues are the commonest problem in Gr C (adolescents). Apart from fibroadenomas which are usual problems of females in this groups, gynaecomastia comprised of a large number of patients (17 out of 30). In our study we found that majority of gynaecomastia (fig 3) were pseudo in nature. Pseudo-gynaecomastia.^[8] is defined as enlargement of male breast due to fat deposition. It is seen in obese males and differs from true-gynaecomastia in that it does not show glandular proliferation. All pseudo-gynaecomastia patients are referred to nutritionist for weight reducing diet. Surgery is reserved only after obesity is controlled. Patients with true-gynaecomastia were further sub-graded.^[9] into Grade 1 & 2 (low volume gynaecomastia) and Grade 3 (large volume gynaecomastia). Large Volume gynaecomastia requires cosmetic corrective surgery. We have followed 13 low volume gynaecomastia conservatively and none of them required surgery. As age increases and the body torso remodels most low volume gynaecomastia reshapes to an adjustable shape and size. We have not used any medical treatment in gynaecomastia. Most fibroadenomas were treated by follow up. The indications of surgery are giant fibroadenomas more than 4 to 5 cm in size.^[11] In this series all patients were triple assessed using clinical breast examination, high resolution ultrasound and cytology or core biopsy.

The study suggests that the paediatric patients can be sub-classified depending on pre-school (neonates, infants, toddlers and pre-schools), school groups (6 to 12 years) and adolescents (12-18 years). This classification seems most sensible as it adheres to the physiological dynamics and morphological development. Alternatively an age based classification based on Tanners stages can also be drawn. Larger studies will be able to address the issues conclusively.

Conclusion

1. Paediatric breast health issues are not infrequent entities.
2. Gynaecomastia, premature thalarche and mastalgia comprises the major case loads.
3. The global practice is heterogenous and non-evidence

based.

4. There is need for larger studies and systemic reviews so as to develop a working guidelines
5. The issues mostly fall into a “no-mans” subspeciality zone and therefore there is need for development of this subspeciality.

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