Pre-Pubescent Breast Ultrasound

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Categorize Patient

- Age
- Symptoms / PE
- Imaging
- Differential Diagnosis
- Recommendations
Age

- Neonate (first 28 days after birth)
- Neonate-Infant (28 days - 1 year old)
- Pre pubertal
Symptoms and Questions to Ask?

- Nipple discharge?
- Palpable nodule?
- Asymmetric breast tissue?
- Discoloration of soft tissue?
Different Clinical Scenarios: Imaging Not Necessary

- Neonate with nipple discharge
  - Response to maternal hormones, “witch’s milk”
  - Should disappear within 2 weeks as hormone levels start to dissipate
  - Maternal estrogen→ causes varying degree of breast enlargement in newborn¹
    - Usually with the breast bud measuring 1 to 2 cm²
  - Postnatally falling levels of maternal estrogen thought to trigger prolactin secretion³
    - Causes milk secretion in 5 to 20% of newborns⁴
  - Inadequate let-out of milk, either due to improper canalization of lactiferous ducts or due to lack of oxytocin stimulus in the newborn → stagnation of milk, galactocele
    - Superimposed infection may result in complications such as mastitis and breast abscess⁵
2 wk old female with breast enlargement
Neonatal Mastitis

- Common in full term female neonates during 3rd and 4th week of life
- Bilateral involvement rare (<10%)
- Maternal endocrinopathy in 0-14% of cases
- Staph commonest isolate - >60% of cases
- With or without pre-treatment → 50-70% progress to breast abscess requiring drainage
- 30-60% of neonates require IV abx; 8-28% serious life threatening systemic complications
- No long term follow-up
2 week old male with left breast cellulitis
2 week old male with left breast cellulitis
Breast Development and Imaging Findings

• First phase of breast development as fetus
  – Results in formation of rudimentary organ consisting of simple branched ducts
  – Ducts respond to the secretory stimuli of maternal origin

• Normal US finding of the breast prior to thelarche
  – Subcutaneous tissue and fat that appear heterogeneous in echotexture
  – Linear planes of the pectoralis muscle posteriorly
  – Ribs lie posteriorly and result in posterior acoustic shadowing, should not be mistaken for mass
4 month old female, reported palpable mass however no longer
4 month old female, reported palpable mass however no longer
Premature Thelarche a.k.a breast bud

- Breast development that begins before the age of 7.5 yrs, considered precocious or premature
  - Normally thelarache or breast bud happens at Tanner stage II breast development

- Subtle overfunction of the pituitary-ovarian axis
  - Not associated with growth spurt, advanced bone age, and menses
  - Must differentiate between isolated premature thelarche and central precocious puberty
  - Unilateral or bilateral
19 month old female with question of left subareolar breast lesion
19 month old female with question of left subareolar breast lesion
7 y.o. female evaluate for breast cyst
1 year old female with persistent bump underneath right nipple
1 year old female with persistent bump underneath right nipple
Duct Ectasia

- Most commonly affects the subareolar ducts but may also involve the smaller peripheral ducts → cause unclear

- US demonstrates tubular anechoic structures or ducts filled with echogenic debris, usually behind the nipple.

- +/- nipple discharge

- Sx vary:
  - Painful and/or palpable area
  - Asymptomatic, only seen on imaging⁷
1 month old male with bilateral breast swelling
1 month old male with bilateral breast swelling
29 day old male with 2 days of bilateral mobile breast masses
29 day old male with 2 days of bilateral mobile breast masses
29 day old male with 2 days of bilateral mobile breast masses
Congenital Breast Anomalies

• No imaging required

• Polythelia → more than the normal number of nipples

• Polymastia → more than the normal number of breasts

• Congenital amastia → absence of mammary glands
Interesting Cases in Pre-Pubertal Population
6 month old male with right chest wall mass

9 O'CLOCK ADJACENT TO NIPPLE
RT TRANS CHEST
6 month old male with right chest wall mass
8 y.o. male w/ gynecomastia
8 y.o. male w/ gynecomastia
5 yr. old male with left breast mass
5 yr. old male with left breast mass
5 yr. old male with left breast mass
5 yr. old male with left breast mass
5 yr. old male with left breast mass