5yo girl with vaginal bleeding

Matthew Wise, MD
Med-Peds Endo

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HPI

• 5y 10m Caucasian girl
• 2mo prior:
  - labial swelling
• 1mo prior:
  - painless vaginal bleeding x5days,
  - pads q4-6h
  - breast buds noted
• Presents to PCP, parents distressed
Advice to PCP?

- Consider OB/Gyn eval
- Growth Chart
- Bone Age
- Early AM FSH, LH, estradiol
- TSH
- Trans-abdominal US
Further Hx, ROS

- body odor, hair
- acne
- known exposure to estrogen products
- recurrence of bleeding in past 3-4 weeks
+ mood irritable
+ growth spurt over 4-5 month period
Med/Surg History

PMH
- Seasonal allergies
- Reactive airway disease
- Bilateral inguinal hernia repair 3mo
- Salivary gland surgery 2yrs

Allergies: NKDA

Birth
- Full term, uncomplicated

Meds:
1. Zyrtec
2. Benadryl

Developmental
- Normal timing of milestones
Family and Social History

Family
- Mother 44yrs, Graves’ disease; RAI; hypothyroid
- Father 45yrs, healthy
- 22yo sister – dx with teratoma at 11, involving ovary, presenting with abdominal mass and urinary sx – surgically removed; recurrent ovarian cysts
- No FH of early puberty

Social
- Mother is pediatric nurse
- Father is paramedic
- 8 siblings, mother pregnant
- Kindergarten
Physical Exam

97.6 F, 98, BP 101/73, RR 13, Wt 21.2 (65%), Ht 115.5cm (63%)

- Gen: Well appearing, non-cushingoid/non-acromegalic
- Head/Face: no dysmorphia, EOM-I, PERRLA, no oral/midline lesions
- Neck: no thyromegaly, no acanthosis
- Resp: CTA B
- CV: RRR no m/r/g
- Abd: Soft, scaphoid, non-tender, no masses
- GU: Breasts tanner II (buds) 1cm R, 0.8cm L; no axillary/pubic hair
  no clitoromegaly; mildly estrogenized vaginal mucosa/labial edema
- Derm: 1cm café-au-lait with irregular border L inguinal; brown nevi scalp, upper back; no acne, no body hair
Laboratory/Radiologic Data

3 weeks prior:
• 17:14 LH 0.1 mIU/mL
  FSH 0.1 mIU/mL
  estradiol 27 pg/mL (<20)
  DHEA-S <15 mcg/dL
  TSH 2.6 mIU/mL
• Bone Age: 6.5 years (+1.0 SD)
• Transabd US: L ovarian cyst 2.6x2.6x1.9cm
  Uterus: 9.4 cm³, L ovary 15.5cm³, R ovary 7.4cm³
  endometrial stripe 2.4mm
Trans-abdominal US
Differential Diagnosis

Gonadotropin-Independent Precocious Puberty

Precocious Pseudopuberty (in girls)

**Estrogen overproduction**
- ovarian cysts
- ovarian granulosa cell tumors
- Sertoli-Leydig cell tumors +/- Peutz-Jeghers syndrome
- McCune-Albright syndrome
- exogenous steroids
- hypothyroidism

**Androgen overproduction**
- ovarian arrhenoblastomas
- ovarian hyperthecosis
- non-classic CAH
- androgen-secreting adrenal tumors
- glucocorticoid resistance synd (GRS)
- Cushing’s syndrome
- exogenous steroids

Central Precocious Puberty – but missing early AM rise in LH/FSH
Recommendations

*Highest suspicion for functional ovarian cyst

Monitor for:
- Recurrence of vaginal bleeding
- Progression/Regression in breast development
- Growth velocity

Repeat in 2mo (sooner if progression, or menses)
- AM gonadotropins, estradiol, DHEA-S
- Transabdominal US
Follow-Up

1 month later:

- Mother felt that pt was irritable, breast tenderness
- Labs: 8am
  - LH <0.1 (pre-pubertal <0.2)
  - FSH 0.8 mIU/mL (pre-pubertal <2.7)
  - Estradiol 3 pg/mL (pre-pubertal 4-12)
  - DHEA-S <15 ug/dL (<45)
Follow-Up

• Repeat Abdominal US

(delayed until mid-February)
Clinical Questions

1) How common are functional ovarian cysts in pre-pubertal children?
2) Do the ultrasound characteristics aid in diagnosis?
3) What is the expected clinical course and suggested management?
1. How common are functional cysts?

- 2-53% of all pre-pubertal girls have ovarian cysts
  - decreasing frequency with age
  - majority are small < 9mm (average 2-3mm)

- Autonomous ovarian cysts were present in 5% of the girls with ovarian cysts (Millar 1993)
  - majority are large
2. US Characteristics Aid in Diagnosis?

- Size of cyst predicts autonomous function
  - Rodriguez-Macias (1993): 7 patients:
  - King (1993): 4 peripheral (>9mm)
    - 23 central (<9mm)

- Contralateral ovary enlargement associated with central precocity
  - King (1993): 4 peripheral – unilateral ovarian enlargement
    - 23 central – bilateral ovarian enlargement
3. Natural History and Management

- Self-limited, no treatment necessary
- Spontaneous regression of cysts and pubertal signs within weeks to few months
- Larger cysts associated with torsion
- Persistence: surgery since can’t exclude tumor
- Recurrence: consider McCune-Albright
McCune-Albright

Lumbroso (2004) JCEM

- 39 girls with precocious pseudopuberty, no other signs of McCune-Albright
  - 33% found to have mutation
  - 70% of pts who had cystic fluid analyzed were + for the mutation (9 of 13)
Take Home

• Distinguishing pseudopuberty (as with ovarian cysts) from central precocious puberty is essential as the management is different
• Autonomously functioning ovarian cysts are generally large, most >1cm and typically >2cm, than cysts seen in central precocious puberty
• Management is conservative with monitoring for spontaneous regression within weeks to few months
References