Adolescent Gynecology: Evaluation and Management of Adnexal Mass, PCOS, and Endometriosis

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Adolescent Visit and Exam
Adolescent Reproductive Health Visit

- Initial visit should take place between 13 and 15 years old
- Excellent opportunity to build relationship and trust with young patients
- Model office visit
  1. Initial consult with patient and parent
  2. Confidential visit with patient
  3. Concluding visit with patient and parent
- Examination: depends on the patient, her concerns, and previous encounters with other clinicians
  - General exam, visual breast exam, and an external pelvic exam may be indicated
  - Internal pelvic exam is generally unnecessary
Adolescent Reproductive Health Visit

- If sexually active
  - Annual screening for gonorrhea and chlamydia
    - Can be done from urine sample or vaginal swab (can be collected by patient or provider)
  - Screen for HIV at least once
  - Discussion regarding contraception and prevention of STIs

- Review other risky behaviors
  - Tobacco, alcohol, and substance abuse
  - Dating violence
  - Abuse
  - Psychiatric: eating disorders, depression, anxiety
Adnexal Mass
Background

- Ovarian tumors are uncommon lesions in children and adolescents
  - Approximate incidence of 2.6 cases annually/100,000
  - Malignant ovarian tumors are approximately 1% of childhood cancers
- Benign and functional cysts are the most common ovarian lesions in pediatric and adolescent population
  - Follicular, corpus luteum, and theca lutein cysts
- Majority of ovarian tumors are of non-epithelial origin
Most common presenting symptom is pain in 60-80% of children and adolescents
- Pain may be intermittent, constant, or acute
- Acute pain with nausea, vomiting, or fever requires immediate attention and likely surgical intervention

Other symptoms:
- Abdominal distension
- Menstrual irregularity
- Precocious puberty
- Virilization
- Urinary frequency
- Constipation
- Asymptomatic with incidental finding on ultrasound or other imaging
Differential Diagnosis

- Ovarian:
  - Torsion
  - Functional cysts
  - PCOS
  - Endometrioma
  - Benign or Malignant neoplasm

- Tubal
  - Paraovarian/paratubal cysts
  - Hydrosalpinx
Differential Diagnosis

- Infectious
  - PID
  - Tubo-ovarian abscess
- Obstructive
  - Imperforate hymen
  - Hematocolpos
- Gastrointestinal
  - Appendicitis
Evaluation

- History (including sexual history)
- Physical Exam (+/- pelvic exam or rectal exam)
- CBC
- Pregnancy test
- Ultrasound
- MRI
- Tumor Markers (CA-125, AFP, HCG, CEA, LDH, Inhibin, Estradiol, Testosterone)
Functional Cysts

- Follicular, corpus luteal, and theca lutein cysts are usually benign and usually resolve spontaneously.
- 2-3 months of observation is appropriate.
- Predictive factors for resolution:
  - Right-sided cysts
  - Cysts less than 7cm
- OCPs can suppress future large cyst development but do not cause cyst regression.
- Persistence warrants re-evaluation of diagnoses.
Neoplasms

- Germ cell tumors are the most common type in adolescents
  - Mature and immature cystic teratomas, Dysgerminomas, etc.
- Other neoplasms include serous and mucinous cystadenomas, sex-cord stromal tumors, and other malignancies that metastasize to the ovary
Mature Cystic Teratomas (Dermoids)

- Grow slowly at a rate of 1.8mm per year
- Occur bilaterally in 10-15% of cases
- Recurrence rate of 3-4%
- Asymptomatic dermoids less than 5cm can be managed expectantly
- Laparoscopic cystectomy for larger dermoids or symptomatic patients
Malignant Neoplasm

- Incidence in the adolescent population (4.2-7%) is low compared to children (10-14%)
- Most common malignancy in adolescence is the germ cell tumor
- Management is controversial
  - Consideration for fertility preservation vs full staging
Tubo-Ovarian Abscess (TOA)

- In sexually active adolescents an ovarian mass may be TOA
- Signs and Symptoms: Pelvic pain, pelvic mass, adnexal tenderness, leukocytosis, or fever
- Treatment:
  - Inpatient admission with IV Cefotetan or Cefoxitin plus Doxycycline or Gentamicin and Clindamycin; may also add Flagyl to either regimen
    - Transition to oral Clindamycin or Doxycycline +/- flagyl for a total of 14 days
  - May require IR drainage or surgery if does not improve with medical management
Torsion

- Torsion is rare with an incidence of 4.9/100,000 in females age 1-20yo
- Usually associated with adnexal pathology or a long utero-ovarian ligament
- Diagnosis is commonly delayed or misdiagnosed
- Involves the right adnexa more frequently
- Symptoms: Unilateral pain, nausea, vomiting, and/or low-grade fever
- Treatment: More emphasis on untwisting procedures with cystectomy if cyst is present
  - Necrotic-appearing ovaries have demonstrated follicular activity weeks after conservative management
  - Bivalve procedure of ovary may relieve vascular congestion
  - May consider oophoropexy after untwisting
Conclusions

- While rare, adnexal masses due occur in adolescent patients
- Trends in surgical management support ovarian-sparing surgery whenever possible
Endometriosis
Introduction

- Estimated 25-38% of adolescents with chronic pelvic pain have endometriosis
- Endometriosis has been identified in girls even prior to onset of menses
- Some genetic predisposition towards developing endometriosis
  - 6.9% of first-degree female relatives of patients with endometriosis are affected, as compared to 1% of controls
Diagnosis

- **Symptoms**
  - Acyclic and cyclic pain 62.5%
  - Acyclic pain 28.1%
  - Cyclic pain 9.4%
  - Gastrointestinal pain 34.3%
  - Urinary symptoms 12.5%
  - Irregular menses 9.4%
  - Vaginal discharge 6.3%

- Endometriomas are rare prior to the age range of mid-twenties
Diagnosis

- **Evaluation:**
  - Complete history, consider a pain or symptom diary
  - Family history
  - Physical exam: goal is to determine etiology and rule out an ovarian tumor or reproductive anomaly
    - Can consider rectal-abdominal exam in non-sexually active females
    - Q-tip can be inserted in vagina to evaluate for obstruction
  - Ultrasound: to evaluate for possible pelvic mass or structural anomaly or other cause of pain
  - Laboratory Studies: pregnancy test, CBC, ESR, urinalysis, urine culture, STD testing if appropriate
Protocol for Evaluation and Treatment of Adolescent Pelvic Pain/Endometriosis

History
Physical Exam
Consider Radiologic Imaging
Pain Diary

Cyclic HT & NSAIDs

Empiric GnRH agonist (if over 18 years)
If improved diagnosis is endometriosis

Laparoscopy
Visualization +/- biopsy
Ablation/resection/laser of endometriosis

Gross/histology positive
< 16 years
Noncyclic HT
symptoms persist

> 16 years
GnRH agonist
(± add-back)

Gross/histology negative

> 16 years
gastrointestinal / urologic evaluation
Pain Management Service

Noncyclic HT

Noncyclic or cyclic HT

No pain
Continue HT

Continued pain
Laparoscopy with resection of endometriosis
Pain Management Service
Complimentary/Alternative Therapies
Long-term GnRH agonist with "add-back"

NSAIDs = Nonsteroidal anti-inflammatory drugs; HT = Hormonal Therapy (oral contraceptive pills, estrogen/progestin patch, estrogen/progestin vaginal ring, norethindrone acetate, medroxyprogesterone acetate); GnRH = gonadotropin-releasing hormone; " add-back" = estrogen + progestin or norethindrone acetate alone
Empiric Treatment

- NSAIDs: begin before the onset of symptoms or menses
- OCPs: may improve dysmenorrhea and decreasing menstrual flow
- If pain continues despite OCPs and NSAID use for 2-3 months and pain is adversely affecting quality of life, further assessment is needed
Surgical Diagnosis and Treatment

- Operative laparoscopy
  - Must be familiar with appearance of endometriosis in an adolescent
    - Red flame lesions and clear lesions are more common
    - Peritoneal Alan-Masters windows are also common
    - If no evidence of endometriosis is identified, consider a cul-de-sac biopsy to rule out microscopic disease
  - Destroy or resect any visible disease
  - Consider waiting at least 2 years before repeating surgery for recurrent pain
Ongoing Treatment

- Endometriosis is a chronic disease that has shown to be progressive
- Goal of medical therapy is to treat pain and suppress progression
- Continuous oral contraceptives
  - Hormonally decreases stimulus to endometriotic tissue
  - Can also use contraceptive patch or vaginal ring
- Progestin-only therapy
  - Can use oral or intramuscular progestins
- NSAIDs
  - Helpful adjuvant agent for the treatment of pelvic pain associated with endometriosis
Ongoing Treatment

- **GnRH Agonists**
  - Only if the patient is over 16yo (when most bone is formed) and has persistent pain despite other medical therapy
  - Depot leuprolide acetate 11.25mg q 3 months
    - Use the 3 month formulation to avoid “flare effect”
    - Use add-back therapy to minimize side effects
      - Norethindrone Acetate 5mg/day
      - Conjugated estrogen (0.625mg) plus norethindrone acetate (5mg) daily
    - Calcium and Vitamin D supplementation
  - Consider bone scan if using for longer than 9 months
Conclusions

- Endometriosis occurs in adolescents
- If endometriosis is identified in adolescents with chronic pain, may be able to keep disease from progressing
  - Decrease lifelong pain
  - Preserve future fertility
Polycystic Ovarian Syndrome (PCOS)
Introduction

- Once considered an adult illness, PCOS is now recognized as having origins prenatally and manifests itself through early childhood, puberty, and adolescence.
- How to define and diagnose PCOS in adolescence remains controversial.
- Estimated that 11-26% of adolescents may be affected.
- Associated with obesity, but lean PCOS also exists.
  - Lean and Obese PCOS begin to show signs of insulin resistance in childhood.
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Diagnosis

- Use of previously described criteria in adolescent patients is difficult as there is no adolescent specific definition of PCOS
- Oligo-ovulation with subsequent menstrual irregularities is common in the first 18 months after menarche
- Puberty is a state of physiologic insulin resistance
  - Insulin decreases hepatic SHBG production leading to increased free testosterone in the serum
- Hyperandrogenism diagnosed by acne may actually reflect increased free androgen production in puberty and not pathology
- Ovarian volume continues to increase 2-3 years after menarche
  - Ovarian volume measurements are more accurate when done transvaginally, but most ultrasounds are done transabdominally in adolescents
Diagnosis

- Consider waiting at least 2 years after menarche prior to making diagnosis
  - Consider girls with hyperandrogenism and oligomenorrhea as having probable but unconfirmed PCOS
  - Disadvantage of using this criteria is a delay in evaluation for insulin resistance associated with PCOS
- Must exclude other possible diagnoses
  - Laboratory evaluations is mainly for excluding other diagnoses
- Include lab evaluation for metabolic syndrome risk factors
  - Oral glucose tolerance test, fasting insulin level, fasting lipid panel
Management

- Must address each of the following concerns:
  - Menstrual dysfunction, risk of endometrial cancer, and future fertility
  - Hyperandrogenism, including acne, hirsutism, and alopecia
  - Metabolic syndrome risks
  - Psychological concerns
  - Risks of other comorbidities
Management - Menstrual Dysfunction

- Dysmenorrhea and oligomenorrhea are common findings in adolescent PCOS
- Combined OCPs
  - Low to moderate estrogen dose (20-35mcg) and less adrogenic progesterone (Norgestimate, Norethindrone, and Ethynodiol)
  - May also help with hyperandrogenism symptoms
  - May also use vaginal ring
- If history of clotting disorders may use progesterone-only therapies
  - Monthly medroxyprogesterone, norethindrone, or prometrium for 5-10 days
  - Levonorgestrel IUS
Management-Hyperandrogenism

- OCPs with low androgenic potential
  - Will lead to a gradual decrease in new hair growth and acne
  - Hair that is already present must be removed by conventional methods
- Spironolactone can also be used
  - Should be used in conjunction with contraception in sexually active adolescents due to teratogenicity
Management-Metabolic Syndrome

- **Lifestyle interventions**
  - 150 minutes per week of aerobic activity
  - Dietary modifications
- **Weight loss of 5-10% associated with significant improvements**
- **Metformin is used to help with insulin resistance, decrease risk of metabolic syndrome, and development of further abnormalities in glucose metabolism**
  - Check annual creatinine and B12 levels
  - Check LFTs before initiation then every 4-6 months
Management-Psychological Concerns

- Physical stigma of acne and hirsutism can be associated with social distress and school phobia or avoidance.
- Obesity and acanthosis nigricans also have similar issues, and some girls are reluctant to exercise for fear of taunting.
- Recognition of psychological concerns is important as they may complicate adolescents adherence to treatments.
- Goals of therapy should be discussed at initial visit and re-discussed at subsequent visits to help maintain compliance.
Management-Other Comorbidities

- Obstructive sleep apnea (OSA)-seen in a significant numbers of adolescents with PCOS
- Nonalcoholic fatty liver disease (NAFLD)-common in PCOS and a marker of insulin resistance
- Renal insufficiency-can occur with obesity and is a significant problem for adolescents with PCOS due to the medications used for PCOS (i.e. metformin, spironolactone)
Management

- Management of PCOS in adolescents must address the multiple healthcare issues, both short-term and long-term
- Incorporate the adolescent’s desires and goals into the management plan
- Work with a multidisciplinary team will help in achieving better outcomes
References

- The Initial Reproductive Health Visit, ACOG Committee Opinion 598, May 2014
- Connor. “Adolescent polycystic ovary syndrome.” Adolescent Medicine 2012; 23: 164-177
Questions?