Gynecologic Care in the Adolescent Population

A Case Series in Adolescent Gynecology

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Gynecologic care in the adolescent population presents unique challenges to the healthcare provider due to widely varying stages of psychosocial and physical development as well as the emergence of several complex medical conditions during this time. Gynecologists and primary care providers treating this population must provide both sensitive and multidisciplinary care to fully address even the most common conditions, always considering patients' psychological and physiological circumstances. Using case vignettes, we review several of the most frequently encountered adolescent gynecologic conditions, including their common presentations, differential diagnoses, evaluation, and management. This case series seeks to improve both the clinical knowledge base and confidence of providers in addressing common adolescent gynecologic complaints. (J Reprod Med 2019;64:319–325)

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Adolescent gynecology has arrived at a place of respect and, in a sense, prominence in Obstetrics and Gynecology. Clinicians treating this patient population have a unique opportunity to provide an unprecedented level of expertise as we progress with research and training. At present there are 13 fellowship programs in North America. In addition, the American Board of Obstetrics and Gynecology has dedicated a special class of certification, namely, Focused Practice, to identify obstetricians and gynecologists who provide care for this age group and via examination demonstrate knowledge and expertise in the area. The North American Society for Pediatric and Adolescent Gynecology (NASPAG) was established in 1986 and serves to "provide multidisciplinary leadership in education, research, and gynecologic care to improve the reproductive health of youth."

Providers should [keep] in mind the physical and psychosocial developmental stage of each patient.

Clinicians can readily gain knowledge and understanding of several more common clinical challenges as they proceed through our case series. The design is to provide education regarding diagnosis and management on problems the clinician is likely to encounter.

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Basics in Adolescent Gynecologic Examination

The goals of the adolescent gynecologic examination are broad and include (1) assessment of development, (2) confirmation of normal anatomy, (3) education about hygiene, personal anatomy, and tampon use, and (4) assessment of symptoms. Preventative care gynecologic visits for adolescents should begin at 13–15 years of age, despite Pap smears not beginning until age 21.[1] For sexually active adolescents, annual or semiannual examinations are recommended and should include sexually transmitted infection (STI) screening. In those who are not sexually active, visits every other year may be preferred. Pelvic examination is not necessary at each visit, but common indications include delayed or precocious puberty, abnormal uterine bleeding, pelvic pain, pathologic vaginal discharge, or suspicion of intrabdominal pathology. Speculum examination is also not required at each visit, and asymptomatic patients who are not sexually active can delay examination until age 21.[2]

History

Before performing the examination, obtain the history while the patient is clothed to facilitate comfort. Preventative health education and patient engagement are key in this population, and providers should engage the patient in discussion even if a parent is present. The interview should also include private discussion with patients older than 10–12 years of age to address sensitive issues, including concerns about sexuality, intimate partner and dating violence, eating disorders and body image, and screening for substance abuse as well as depression. Many providers find it helpful to structure this discussion using the HEADSS (Home, Education/employment, peer group Activities, Drugs, Sexuality, and Suicide/depression) motivational interviewing process. This is also an appropriate time to discuss contraception, given the underreporting of sexual activity and high rates of unintended pregnancy in this demographic.[1]

Confidentiality for minors should be maintained according to local law while encouraging patient disclosure of important health information to parents/guardians and offering to be a liaison for the conversation. Providers who may be unfamiliar with local confidentiality laws should consult his or her state medical society for assistance. Likewise, be mindful of mandatory reporting laws in cases of suspected adolescent abuse, neglect, or suicidality.

Examination

As the gynecologic examination is accompanied by anxiety for many adolescents, approach the examination in an unhurried manner with explanations of the purpose, method, and expected outcomes of all examination components. Seek the assent of the patient and caregiver, and inquire whether the patient would like a caregiver present. As many adolescents are unfamiliar with their anatomy, offer patients a handheld mirror and flexible light source for visualization. Likewise, models and visual aids may enhance understanding of anatomy and function.[2]

Positioning should be based on patient comfort during the external examination, often in the frog leg or butterfly position. Begin the examination with evaluation of the mons and labia majora. Note the Tanner stage of pubic hair as well as shaving practices, including evidence of folliculitis or poor hygiene. Assess normalcy of clitoral hood and clitoral size, particularly in adolescent concerned about androgen excess. Also assess the appearance of the hymen, which may vary from annular or crescentic to micro perforate and may change configuration with increased estrogen exposure. Screen for chlamydia and gonorrhea routinely in sexually active adolescents using nucleic acid amplification techniques with a urine sample or vaginal swab.[1]

If speculum examination is indicated, patient positioning using stirrups is ideal. Place the speculum horizontally—rather than at 45-degree angle—as it may decrease traction on the hymen. Water-based lubricant may also be helpful. Open the speculum only once fully inserted to visualize the cervix and note any lesions. If a bimanual examination is clinically indicated, single digit examination is preferred. Office vaginoscopy, preferably with irrigating endoscope, or examination under anesthesia may be required when an office examination and ultrasonography do not provide adequate diagnostic information.

Vulvovaginitis

Case

An 11-year-old girl presents with a 6-week history of vulvar erythema, itching, and scant yellowish vaginal discharge. She is otherwise healthy, has not yet undergone menarche, and is not sexually active.

Presentation

Vulvovaginal complaints—such as vulvovaginitis,

dermatosis, and labial agglutination—are a common reason adolescents seek gynecologic care. Many factors contribute to vulvovaginal complaints, including a hypoestrogenic state in prepubertal adolescents, anatomical proximity of the rectum, and exposure to irritants. Among the most common vulvovaginal concerns is vulvovaginitis, which refers to inflammation of the vulva and vaginal mucosa. Presentation varies and may include vaginal discharge, vulvar pain, itching, and dysuria. Up to 75% of vulvovaginitis in this age group is nonspecific and culture-negative, which may be due to irritation of under-estrogenized vulvar skin and poor hygiene. A pathogen can be isolated in 25% of disease, and common etiologies include respiratory flora, enteric bacteria, Candida, and STIs.[3] Inflammation may also be due to foreign bodies, such as toilet paper or a retained tampon.

Evaluation

The differential diagnosis for vulvovaginitis includes urinary tract infection (UTI), lichen sclerosis, eczema, contact dermatitis, scabies, and vesicovaginal reflux. History should include detailed discussion of the quality and duration of symptoms, discharge consistency and odor, prior treatments, relation to menstrual cycle, recent trauma, and hygiene habits. Sexual history should also be elicited in older adolescents, as many of these patients will be sexually active and warrant STI screening.[4] On examination, assess the vulva and note erythema, irritation, genital warts, ulcerations, and personal hygiene. Speculum examination may be helpful for assessment of vaginal discharge and collection of cultures. If dysuria is present, obtain urine analysis and culture to assess for UTI.

Management

Initial management includes reassurance that the condition is common, as well as education regarding proper genital hygiene, STI prophylaxis, and avoidance of risk factors such as irritants and tight clothing. For nonspecific vulvovaginitis, reduce irritation with local measures such as sitz baths, discontinued use of soaps or detergents, wearing cotton underwear, and protective barriers like zinc oxide. For bacterial infection, begin antibiotic treatment based on the isolated organism or initiate broad-spectrum coverage if there is a high suspicion of bacterial etiology. Yeast is common in postpubertal adolescents and is treated with fluconazole or vaginal antifungals. For those who screen positive for STIs, treat per CDC guidelines—including partner treatment—and counsel on prevention.[5]

Polycystic Ovary Syndrome

Case

A 15-year-old, sexually-naïve female presents for evaluation of obesity and amenorrhea. She reports weight increasing from 10th to 70th percentile in the past 8 years. Menarche occurred at age 13, but she soon after developed secondary amenorrhea. The patient has mild acne and reports some dark hair growth on her chin and midline abdomen.

Presentation

Polycystic ovary syndrome (PCOS) is a common endocrinopathy affecting 4–6% of females that is characterized by the triad of anovulation, biochemical or clinical hyperandrogenism, and polycystic ovarian morphology.[6] It is associated with myriad metabolic derangement including obesity and increased risk of type 2 diabetes, hypertension, cardiovascular disease, and endometrial hyperplasia. PCOS is thought to be due to rapid GnRH pulses causing hormonal dyssynchrony, excessive ovarian androgen production, and ovulatory dysfunction.[7] More recently, insulin resistance has been shown to have a significant role in both androgen excess and ovulatory dysfunction.[8]

PCOS exists on a spectrum with variable presentations.[9] Onset is typically in adolescence and should be considered in any patient with obesity, hirsutism, or menstrual irregularity, though a minority of patients are not overweight and represent a slender subtype of PCOS. Ovulatory dysfunction often presents as irregular menses or secondary amenorrhea but may rarely present as primary amenorrhea. Hyperandrogenism may be clinically evident as acne or hirsutism or may only be identified biochemically. Regardless of presentation, early diagnosis is important to address metabolic comorbidities and reduce long-term impact of the disease.

Evaluation

Evaluation includes a detailed menstrual and family history and inquiry about specific signs of hyperandrogenism, as some adolescents may be hesitant to report symptoms that they find embarrassing. On examination, assess signs of hyperinsulinism such as alopecia and acanthosis nigricans, along with signs of androgen excess such as hirsutism. The provider may wish to document the

amount and pattern of hair growth in a standard way using the Ferriman-Gallwey classification.[10] Examination of the thyroid, abdomen, and pelvis aids assessment of other etiologies. Key laboratory testing includes serum DHEAS and testosterone, and many clinicians include fasting 17-hydroxyprogesterone to rule out late-onset congenital adrenal hyperplasia. Testosterone >200 ng/dL is suggestive of an ovarian tumor, and DHEAS >700 µg/dL suggests an adrenal tumor. Either result should prompt abdominal ultrasound or MRI.

Three criteria exist to diagnose PCOS in adults—National Institutes of Health, Rotterdam, and Androgen Excess and PCOS Society—and each criterion includes varying requirements for hyperandrogenism, polycystic ovaries, and anovulation. However, using adult diagnostic criteria for adolescents is problematic, as ovaries tend to have greater numbers of follicles than adult ovaries and many hormonal findings are transitory during puberty.[11] Adolescents should therefore be at least 2 years post-menarche for a PCOS diagnosis (though some guidelines suggest delaying diagnosis until 8 years after menarche), and ovarian morphology should not be considered in diagnostic criteria.[12] For peripubertal girls at risk for progressing to PCOS, frequent longitudinal evaluations are warranted to alleviate symptoms and minimize risk of future disease.

Management

The mainstay of treatment for PCOS is conservative management with diet and exercise to promote weight loss. Oral contraceptives (OCPs) are first-line treatment when conservative management fails and are highly effective at regulating menstruation. Metformin may also be employed as an insulin sensitizer and to assist in weight loss and improve ovulatory function, although evidence for use in adolescents is limited.[13,14]

Education on the long-term metabolic sequelae of PCOS and counseling regarding a healthy lifestyle are key aspects of management. To screen for insulin resistance and hyperglycemia, the American Diabetes Association recommends obtaining hemoglobin A1c in adolescents with PCOS at time of diagnosis and at 3-year intervals, along with regular blood pressure screening.[9] Finally, PCOS is associated with an increased risk of mood disorders in adolescents, and regular depression screening is indicated.[15]

Abnormal Uterine Bleeding

Case

A 15-year-old female presents with irregular cycles and prolonged, heavy bleeding. She denies dysmenorrhea. She had menarche at age 14 and has never had regular cycles. She exercises periodically and has a BMI of 22. She denies sexual activity.

Presentation

Abnormal uterine bleeding (AUB) is defined as menstrual flow outside of normal volume, duration, or regularity and is the most common gynecologic complaint as adolescents transition through puberty.[16] Diagnosis is frequently delayed due to inconsistency in disclosure, recall difficulty, and provider disregard of symptoms as post-menarche anovulatory bleeding. Although cycle irregularity is common during initial years of menstruation, 90% of cycles still last 21–45 days and abnormalities should be evaluated.[17] Heavy menstrual bleeding (HMB) is the most frequent manifestation of AUB in adolescents and is defined as menses lasting longer than 7 days or loss of >80 mL of blood per cycle.[18] This amount of bleeding may require changing a pad or tampon hourly and is associated with soiling clothes or bedsheets.

Evaluation

Possible etiologies of AUB are organized using the PALM-COEIN classification for structural (Polyp, Adenomyosis, Leiomyoma, Malignancy, Hyperplasia) and nonstructural (Coagulopathy, Ovulatory dysfunction, Endometrial, Iatrogenic, and Not yet classified) causes, though a more complete differential is detailed in Table I. AUB is rarely caused by structural problems in adolescents (1.3–1.7%) and is usually due to anovulatory cycles owing to immature hypothalamic-pituitary-ovarian axis.[19] This may manifest as irregular cycles, HMB, or amenorrhea.

Preliminary evaluation includes thorough sexual, menstrual, and family histories. The American College of Obstetricians and Gynecologists (ACOG) recommends treating the menstrual cycle as a vital sign and documenting menstruation patterns at each visit.[20] Bleeding disorders, including von Willebrand Disease (vWD) and platelet dysfunction, are common and may go undetected until menarche, thus eliciting personal and family bleeding history is key. Initial testing includes β-hCG to rule out pregnancy, thyroid function tests, hematologic tests including CBC and iron profile, eval-

Table I *Differential Diagnosis for Abnormal Uterine Bleeding*

Endocrine causes	Trauma
Anovulatory bleeding	Infections
PCOS	Cervicitis
Thyroid disease	Endometritis
Other	Disorders of the uterus
Bleeding disorders	Myoma
von Willebrand disease	Intrauterine device
Platelet dysfunction	Polyps
Thrombocytopenia	Cancer
Clotting factor deficiency	Adenomyosis
Pregnancy	Medications
Abortion	Depot medroxyprogesterone
Ectopic pregnancy	Anticoagulants
Gestational trophoblastic disease	Foreign body
	Hemorrhagic ovarian cysts

PCOS = polycystic ovary disease.
Adapted from Elmaoğulları S, Aycan Z: Abnormal Uterine Bleeding in Adolescents. J Clin Res Pediatr Endocrinol 2018;10:192.

uation for bleeding, and PCOS and STI screening if indicated. Second tier testing includes evaluation for bleeding disorders, liver function tests, and PCOS and STI screening if not done previously. If there is high suspicion for vWD, we recommend obtaining plasma von Willebrand factor (vWF) antigen, vWF activity, and Factor VIII activity.

Management

Although definitive treatment is tailored to the presumed diagnosis, initial management is provided based on degree of anemia. For mild anemia, treat conservatively with Fe and NSAIDs. Hormonal therapy is acceptable if active bleeding is affecting patient quality of life or hemoglobin falls below 12 g/dL. Oral contraceptives are first line, although progestin-only therapy—including depot medroxyprogesterone acetate, intrauterine device (IUD), and oral progestins—can be used in those with estrogen contraindications. Hospitalize patients with hemoglobin <7 g/dL to ensure hemodynamic stability. Intravenous conjugated estrogen should be used with caution but is indicated if bleeding continues after 24 hours of oral estradiol therapy. Other less commonly used hemostatic medications include tranexamic acid, which is equal to OCPs in reducing menstrual blood loss and improving quality of life but carries similar risks of thrombosis.[21]

Surgical management, such as therapeutic curettage, is indicated as a last resort if medical management fails or bleeding becomes life-threatening. Endometrial ablation is not recommended in young women due to possible effect on fertility but may be used to avoid hysterectomy in life-threatening situations. Though a 30 cc Foley balloon is occasionally used for uterine tamponade in postpartum hemorrhage, this approach must be used with caution as it may take as little as 10 cc to provide effective tamponade. We recommend ultrasound guidance to improve safety and minimize the risk of uterine rupture.[22] Once the patient is stabilized via medical or surgical therapy, initiate long-term maintenance therapy with combination oral contraceptives.

Dysmenorrhea and Endometriosis

Case

A 16-year-old young woman presents with painful menses, causing her to miss 2 days of school each month. Menarche was at 12 years old, and she has regular 30-day cycles with menses lasting 5 days. Flow is normal, but she reports cramping, headaches, and dizziness.

Presentation

Dysmenorrhea. Dysmenorrhea, or painful menses, is common among adolescents and typically presents as crampy, suprapubic pain occurring at the start of menses and lasting 2–3 days. Pain is thought to be due to excessive prostaglandin production and is often accompanied by systemic symptoms including headache, fatigue, nausea, or back pain. It is more common in patients who are under 30 years old, have a BMI <20, underwent early menarche, and have a positive family history. As dysmenorrhea more commonly occurs in ovulatory cycles, most adolescents do not report dysmenorrhea until cycles have normalized.[23]

Endometriosis. Endometriosis is a common cause of dysmenorrhea due to the presence of endometrial glands and stroma outside of the uterus. It commonly involves the ovaries and is variably associated with bowel or bladder dysfunction. Endometriosis often presents as pelvic pain in the adolescent patient, as compared to infertility in adults, and diagnosis tends to be delayed due to variable cycles and intermittent symptoms.[24] Its mechanism is not fully understood, but theories include retrograde menstruation into the fallopian tubes, coelomic metaplasia from undifferentiated cells in the peritoneal cavity, and hematologic or lym-

phatic spread of endometrial tissue with subsequent implantation.

Evaluation

In adolescents presenting with chronic pelvic pain, the following systems should be considered with regards to the underlying cause: gastrointestinal, genitourinary, musculoskeletal, gynecologic, and psychiatric. A detailed history and examination will assist in ruling in or out a system, and particular care should be paid to possible etiologies of psychosomatic pain, such as abuse or life stressors. If gynecologic in nature, the differential diagnosis includes primary dysmenorrhea, endometriosis, pelvic inflammatory disease, leiomyomata, ectopic pregnancy, and unspecified chronic pelvic pain. To distinguish between gynecologic causes, menstrual history, history of prior therapies and outcomes, and family and sexual history are required.

The examination evaluates risk of infection and assesses possible outflow tract obstruction, especially in patients presenting before menarche. Bimanual examination may provide information regarding uterine size, tenderness, and motility, and initial laboratory evaluation includes ruling out pregnancy. Abdominal or transvaginal ultrasound (TVUS) can assess for fibroids and endometriomas, although TVUS is not recommended in sexually-naïve adolescents. In cases of severe pain unrelieved by therapy, pelvic MRI assesses the pudendal nerve and surrounding structures.

For endometriosis, the disease is classified in 4 stages based on pelvic involvement, although morbidity does not correlate with severity of disease (Table II).[25] On examination, many adolescents with endometriosis will have pelvic tenderness on palpation, but few exhibit cul-de-sac nodularity, which is more common in adults.[26]

Table II *Staging of Endometriosis*

Stage I	Minimal disease, isolated implants, no adhesions
Stage II	Superficial implants <5 cm, no significant adhesions present
Stage III	Multiple deep and superficial implants, may have periovarian adhesions
Stage IV	Severe disease, multiple superficial and deep implants including large ovarian endometriomas, filmy dense adhesions

Adapted from the American Society for Reproductive Medicine.

Laparoscopy is the gold standard diagnostic test and has confirmed endometriosis in up to 70% of adolescents with persistent dysmenorrhea.[27]

Management

Treatment primarily aims to reduce pain and improve quality of life. NSAIDs, which decrease prostaglandins, are the mainstay of treatment in the sexually naïve adolescent. If contraception is indicated or NSAIDs have failed, initiate hormonal therapy. OCPs have been shown to improve dysmenorrhea in up to 80% of women, and the levonorgestrel-containing intrauterine system (Mirena [Bayer]) and etonogestrel-containing implant (Nexplanon [Merck]) have similar efficacy.[28-30] If hormonal therapy fails, consider organic causes of pain, such as endometriosis, and discuss laparoscopy or alternate therapeutic options.

For endometriosis, ideal management depends on early diagnosis. While there is insufficient evidence to make strong recommendations about treatment of adolescents, combined medical and surgical therapy is advised.[25] Although GnRH agonists are frequently used in adults, these therapies are not routinely recommended for adolescents due to concerns for bone health during development. However, patients who have pain refractory to suppressive hormonal therapy and conservative surgical therapy may benefit from at least 6 months of GnRH agonist therapy with add-back medicine, although this treatment should be initiated only following a thorough discussion of risks and benefits of therapy as well as initiation of treatment to prevent bone loss.[31] Laparoscopic surgery, which should involve excision of all lesions and lysis of adhesions, reduces pain for many patients. Finally, tricyclic antidepressants, medications for neuropathic pain, and psychosocial support can all improve symptoms.

Conclusion

Adolescents are impacted by a range of gynecologic conditions that can prove challenging for the gynecologic or primary care practitioner. Providers should approach adolescent gynecologic complaints in an open manner, keeping in mind the physical and psychosocial developmental stage of each patient. Using visits as opportunities for patient education and preventative healthcare is an effective way to reduce future morbidity and improve the overall health of each patient.

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