DISCLOSING ADOLESCENTS' GYNECOLOGICAL CONCERNS: EXPLORING TRENDS IN ADOLESCENT GYNECOLOGY VISITS AND COMPLAINTS

Uyaniklar OO ✉, Rahimli Ocakoglu S, Atak Z, Suer E

Department of Obstetrics and Gynecology, Bursa City Hospital, Bursa, Turkey

Adolescence represents a pivotal phase in the transition from childhood to adulthood. Adolescent gynecology is the clinical specialty that focuses on the management of gynecologic problems during this period. This study's primary objective is to emphasize the importance of adolescent gynecology by examining the gynecological causes of adolescent presentations and highlighting the differences that warrant consideration in the clinical approach to adolescent patients. The study was designed as a retrospective cohort study in an academic tertiary hospital and included adolescent individuals presenting to the obstetrics and gynecology emergency department or outpatient clinic. The analysis encompassed a range of factors, including age, presenting symptoms, examination findings, ultrasound results, laboratory data, and the necessity for hospital admission. The study cohort comprised 750 adolescent patients, 71.3% seeking gynecological care. Adolescents most frequently presented for menstrual irregularities (57.6%) and secondly for dysmenorrhea. The results of the gynecological clinical evaluations indicated that 62.9% of the patients had menstrual disorders. Of these, 53.4% had irregular menstrual cycles, 4.5% had prolonged and/or heavy bleeding, and 3% had amenorrhea. Ultrasound imaging revealed the presence of pathological findings in 25.8% of the patients. In conclusion, this study's findings indicate that irregular menstrual cycles are the most common gynecological condition in the adolescent population. The physiological characteristics of adolescents require a distinct approach to diagnosis and treatment compared to adult women, which can significantly impact future fertility and overall reproductive health.

Keywords: adolescent pathologies, menstrual irregularity, adolescent gynecology, dysmenorrhea, vaginitis

Compliance with ethical standards: the study protocol was approved by the Bursa City Hospital Ethics Committee at the beginning of the study period (approval number: 2022-4/5).

✉ **Correspondence should be addressed:** Ozlem Ozgun Uyaniklar
Department of Obstetrics and Gynecology, Bursa City Hospital, 16110, Nilüfer, Bursa, Turkey; ozlemuyaniklar@gmail.com

Received: 16.06.2024 **Accepted:** 22.08.2024 **Published online:** 31.08.2024

DOI: 10.24075/brsmu.2024.035

ГИНЕКОЛОГИЧЕСКИЕ ПРОБЛЕМЫ У ПОДРОСТКОВ: ТЕНДЕНЦИИ ОБРАЩЕНИЙ К ГИНЕКОЛОГАМ И ЖАЛОБ

О. О. Уйаныклар ✉, С. Рахимлы Очакоглу, З. Атак, Э. Суэр

Отделение акушерства и гинекологии, Городская больница Бурсы, Бурса, Турция

Подростковый период представляет собой ключевой этап перехода от детства к взрослости. Подростковая гинекология занимается лечением гинекологических проблем, возникающих в этот период. Основной целью работы было подчеркнуть важность подростковой гинекологии, исследовав гинекологические причины обращения подростков за медицинской помощью и особо отметив различия, которые необходимо учитывать при обращении за клинической помощью у таких пациентов. В ретроспективное когортное исследование, проведенное на базе специализированной университетской больницы, были включены лица подросткового возраста, обращавшиеся за экстренной помощью в отделение акушерства и гинекологии или в поликлинику. Был проанализирован целый ряд факторов, в том числе возраст, имеющиеся симптомы, результаты обследования, результаты ультразвукового исследования, лабораторные данные и необходимость госпитализации. Исследованную когорту составили 750 пациентов подросткового возраста, 71,3% из них обращались за гинекологической помощью. Подростки чаще всего обращались к врачу по поводу нарушений менструального цикла (57,6%), второй по значимости причиной была дисменорея. Результаты гинекологического обследования показали, что нарушения менструального цикла имели место у 62,9% пациентов. Из них у 53,4% были нерегулярные менструации, у 4,5% — продолжительные и/или обильные кровотечения, у 3% — аменорея. Ультразвуковое исследование выявило патологические изменения у 25,8% пациентов. Результаты исследования показали, что нарушения менструального цикла представляют собой наиболее широко распространенную в подростковой популяции гинекологическую проблему. Физиологические особенности подростков требуют особого подхода к диагностике и лечению по сравнению со взрослыми женщинами, что может негативно повлиять на будущую фертильность и общее репродуктивное здоровье.

Ключевые слова: подростковая патология, нарушения менструального цикла, подростковая гинекология, дисменорея, вагинит

Соблюдение этических стандартов: исследование одобрено этическим комитетом Городской больницы Бурсы (протокола № 2022-4/5).

✉ **Для корреспонденции:** Озлем Озгюн Уйаныклар
Отделение акушерства и гинекологии, Городская больница Бурсы, 16110, Нилюфер, Бурса, Турция; ozlemuyaniklar@gmail.com

Статья получена: 16.06.2024 **Статья принята к печати:** 22.08.2024 **Опубликована онлайн:** 31.08.2024

DOI: 10.24075/vrgmu.2024.035

Adolescence is a period of change between childhood and adulthood, typically between the ages of 10 and 19 [1]. The gynecological problems experienced by adolescent girls differ from those of adult women. The fundamental differences in gynecological changes during adolescence typically begin with the production of steroid hormones, which facilitate breast development, uterine growth, and the development of pubic hair. Menarche, on the other hand, refers to the onset of cyclic ovarian hormone production, leading to menstrual bleeding [2].

Adolescent gynecology is a specialized field of medicine that focuses on adolescents' reproductive health and gynecological issues. It addresses young girls' unique needs and concerns during the transitional period from childhood to adulthood.

In this field, healthcare providers are trained to provide comprehensive care for adolescents, including preventive care, diagnosis, and treatment of gynecological conditions. They address a wide range of issues such as menstrual problems, contraception, sexually transmitted infections (STIs), pelvic

pain, abnormal bleeding, polycystic ovary syndrome (PCOS), and concerns related to sexual development [3].

Adolescent gynecology also encompasses the management of reproductive health concerns specific to teenagers, including education about healthy sexual practices, Human papillomavirus (HPV) vaccination, counseling on contraception and family planning, and addressing the emotional and psychological aspects of sexual development [4]. The American College of Obstetricians and Gynecologists (ACOG) recommends the initial reproductive health visit between 13 and 15 years [5]. Gaining proficiency in the appropriate methods for the initial examination plays a crucial role in forming a lasting connection with individuals within this age group [4].

Adolescent gynecology is a subspecialty within the field of obstetrics and gynecology.

This study aims to emphasize the significance of adolescent gynecology by analyzing the gynecological reasons for which the adolescent population seeks medical care. Additionally, it aims to highlight the distinctions between adolescent gynecology and adult gynecological approaches.

METHODS

This is a retrospective cohort study, conducted in a high-volume tertiary hospital. Electronic file records for patients who applied to the Gynecology and Obstetrics clinic between June 2021 and January 2022 were analyzed retrospectively. Patients aged between 10 and 18 years who presented to the Obstetrics and Gynecology Emergency Department or outpatient clinic were included in the study. Patients with missing data in the electronic medical records were excluded from the study. The reason at patient admission was evaluated, whether due to pregnancy or gynecological complaints. Patients presenting due to pregnancy were not included in the analysis. The patient's age, complaints at admission, findings from the gynecological examination if performed, ultrasound findings, laboratory results, and the need for hospitalization were also analyzed.

Age values are expressed as mean ± standard deviation. Categorical variables are expressed with *n* (%). SPSS (IBM Corp. Released 2012. IBM SPSS Statistics for Windows. Version 21.0. Armonk. NY: IBM Corp.) program was used for statistical analysis.

RESULTS

In total, 750 adolescent girls were included in this study (Figure). Of the adolescents included in the study, 215 (28.7%) presented to the hospital due to pregnancy, while 535 (71.3%) sought medical care for gynecological reasons. The complaints reported by the patients at admission are presented in Table 1. The majority of adolescents sought care with complaints of menstrual irregularities (*n* = 309; 57.6%), followed by dysmenorrhea (12.7%), vulvar itching/vaginal discharge (9.5%), pelvic pain (5.6%), and hirsutism (5.6%). Patients presenting with complaints of an adnexal mass (5.2%) consisted of individuals who had previously detected adnexal masses through imaging studies. In addition to the mentioned complaints, acne vulgaris (2.2%), contraception counseling (1%), and galactorrhea (3%) were among the other presenting complaints.

The results of the patient's clinical evaluations are presented in Table 2. When questioning the patients about their menstrual history, it was determined that a total of 337 (62.9%) adolescent girls had menstrual irregularities. Among the patients with menstrual irregularity, 16 patients presented with amenorrhea. While 15 adolescents were describing secondary amenorrhea, one patient had primary amenorrhea. When the patient's hospital records were checked, secondary sex characters at the age of 16 showed normal development. As a result of ultrasonography and MRI, the uterus was not observed, and genetic consultation was requested.

Of the girls who underwent ultrasonography, PCO morphology was detected in 89 cases (16.6%), while normal sonographic findings were observed in 385 cases (71.8%). Unilateral unilocular anechoic cysts larger than 4 cm were found in 35 girls. Among the girls with unilocular anechoic cysts, 4 had cyst sizes ranging from 6 to 8 cm. No cases showed evidence of torsion, and all were followed up in the outpatient clinic. A total of 5 girls (0.9%) were diagnosed with corpus hemorrhagicum or corpus luteum. Among the girls with corpus hemorrhagicum, 3 reported pelvic pain and 2 had irregular bleeding as their presenting complaints. Four girls were diagnosed with mature cystic teratomas, and only 1 girl with a 6.5 cm endometrioma presented with dysmenorrhea.

The laboratory results are also presented in Table 2. Hyperprolactinemia was detected in 31 (5.8%) adolescents in two separate measurements. Patients with elevated CA-125 levels were called for outpatient follow-up due to the presence of accompanying ovarian cysts. None of the patients were suspected of malignancy based on sonographic findings, and among these five cases, the highest CA-125 value was determined to be 166 U/mL.

A total of 4 patients (0.7%) were hospitalized. Two of the hospitalized patients were admitted due to heavy menstrual bleeding. Treatment involved the administration of intravenous tranexamic acid and an estrogen-progesterone combination regimen. In a patient who presented with dysmenorrhea and chronic pelvic pain, an ultrasound evaluation revealed a 5.5 cm

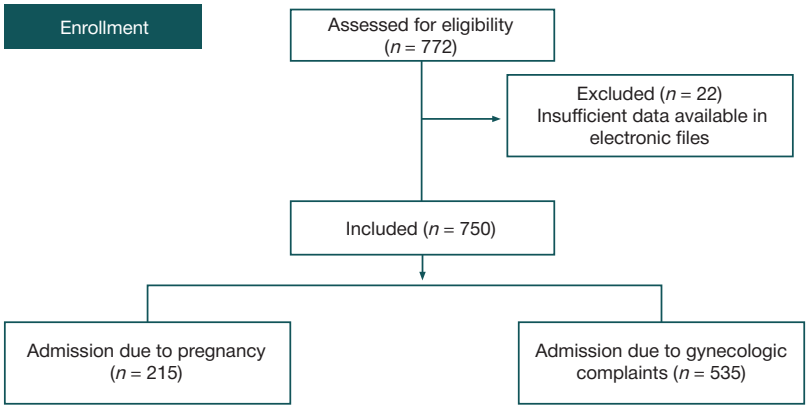

Fig. Flow diagram of patients included in the study

Table 1. Complaints at the time of admission

		Frequency (percent)
Admission	Pregnancy	215 (28.7)
	Gynecologic complaints	535 (71.3)
Total		750 (100)
Gynecologic Complaints of Adolescents		
Menstrual irregularity		309 (57.6)
Dysmenorrhea		68 (12.7)
Vulvar pruritus/ vaginal discharge		51 (9.5)
Pelvic pain		30 (5.6)
Hirsutism		30 (5.6)
Adnexal mass		28 (5.2)
Acne vulgaris		12 (2.2)
Contraception counseling		5 (1)
Galactorrhea		3 (0.6)

Note: Data are presented as n (%) for nominal variables.

septated cyst in the right ovary and a 3 cm unilocular anechoic cyst in the left ovary. No signs of the acute abdomen were observed during the abdominal examination. The patient's medical history indicated a previous benign ovarian cyst excision surgery performed 5 years ago. Due to the presence of elevated CA-125 levels (594 U/mL) three months ago and the persistence of elevated levels in the current presentation (166 U/mL), a consultation with gynecologic oncology was requested. The patient's Lactate dehydrogenase level was determined to be 110 U/L, and the Alpha-fetoprotein (AFP) level was found to be 3.8 IU/L. The Human epididymis protein 4 (HE4) level was found to be normal three months ago. Considering the newly detected 5.5 cm septated cyst in comparison to previous imaging, it was presumed to be a corpus hemorrhagicum, and analgesics were administered. The fourth hospitalized patient presented to the emergency department with abdominal pain and was admitted following an ultrasound examination that revealed a 4 cm unilocular anechoic cyst and a 3 cm fluid collection in the abdomen. The patient was discharged on the third day of admission with no decrease in hemoglobin/ hematocrit values during the hospital follow-up.

DISCUSSION

In our study, menstrual irregularities were the most frequent reason for adolescents seeking gynecological care (57.6%). Abnormal bleeding is a common complaint in adolescent gynecology [6]. Young girls and their parents may not have enough information about normal bleeding periods, so the age of menarche and the order and duration of menstrual periods should be questioned [2]. Menarche usually occurs within 2–3 years after thelarche (breast budding) [7]. Although there can be variations, the average age of menarche is 12–13[8]. However, due to immaturity in the hypothalamic-pituitary-ovarian axis and anovulation, menstrual cycles can be irregular, but they usually occur every 21–45 days and last for 7 days or less [2,9].

The assessment of heavy menstrual bleeding in adolescents is crucial for the diagnosis of an underlying bleeding disorder [10]. The PALM-COEIN system should be utilized for the classification of heavy menstrual bleeding: Polyp, Adenomyosis, Leiomyoma, Malignancy and hyperplasia, Coagulopathy, Ovulatory dysfunction, Endometrial, Iatrogenic, and Not otherwise classified [11]. However, structural causes are not a very common cause of heavy menstrual bleeding in adolescents [10]. While bleeding disorders occur in approximately 1–2% of the general population, the prevalence of bleeding disorders is 20% among adolescents experiencing heavy menstrual bleeding [12, 13]. In our study, 24 adolescents (4.5%) were admitted to the hospital due to heavy menstrual bleeding. A total of two adolescents were hospitalized and treated due to heavy menstrual bleeding in our study. Adolescents who are hemodynamically unstable and have heavy bleeding should be hospitalized as in these cases [10]. The monophasic combined oral contraceptive and tranexamic acid combination was administered to both patients by the guidelines [10,14].

The initial management of acute bleeding is medical treatment, which is determined based on the patient's hemodynamic status and the potential etiology of the bleeding. In our study, medical treatment, as applied to the two patients admitted internally, can be implemented as hormonal, non-hormonal, or combination therapy [13]. The primary treatment for acute bleeding is intravenous conjugated estrogen therapy administered every 4–6 hours. Alternatively, monophasic combined oral contraceptives should be administered every 6-8 hours until the bleeding stops. For adolescents who cannot tolerate estrogen, a progestin-only regimen can be applied, such as oral medroxyprogesterone 10–20 mg every 6–12 hours or norethindrone acetate 5–10 mg every 6 hours [15].

Adolescents who have not reached the menarche by 15 years of age or have not menstruated within 3 years of the thelarche should be evaluated for primary amenorrhea. The absence of breast development until 13 years of age should also be evaluated for delayed puberty [16]. Adolescents with more than 3 months between menstrual cycles who were menstruating regularly or absence of menses for more than six months should be evaluated for secondary amenorrhea [17]. In our study, one patient presented with primary amenorrhea. The uterus was not observed as a result of ultrasonography, and Mullerian agenesis was considered as a result of pelvic MRI. Androgen insensitivity syndrome, distal vaginal agenesis, transverse vaginal septum, imperforate hymen, and cervical agenesis should be included in the differential diagnosis of the patient presenting with primary amenorrhea [18]. Additionally, evaluation for renal anomalies is necessary for these patients [18].

Dysmenorrhea is the most common menstrual symptom in the literature among adolescent girls, with a prevalence ranging from 50% to 90% [19]. Furthermore, our study revealed that dysmenorrhea was the most frequent reason for adolescents seeking gynecological care after menstrual irregularities (12.7%). Dysmenorrhea, or painful periods, can significantly

Table 2. Menstrual History, Examination, Ultrasonography, and Laboratory Findings

Patients presenting with gynecological complaints	
Age	16.42 ± 1.73
Menstrual Irregularity (Total)	337 (62.9)
Menses at irregular intervals (>45 or <21 days)	286 (53.4)
Prolonged and/or heavy bleeding	24 (4.5)
Intermenstrual or breakthrough bleeding	11 (2.1)
Amenorrhea (primary or secondary)	16 (3)
Sonographic Pathology (Total)	138 (25.8)
Normal sonographic findings	385 (71.8)
PCO morphology	89 (16.6)
Unilateral >4 cm anechoic cyst	35 (6.5)
Corpus hemorrhagicum/ corpus luteum	5 (0.9)
Mature cystic teratoma	4 (0.7)
Bilateral ovarian cyst	3 (0.6)
Endometrioma	1 (0.2)
Intraperitoneal fluid	1 (0.2)
No ultrasonography performed	13 (2.4)
Hyperthyroidism	14 (2.6)
Hypothyroidism	4 (0.7)
Hyperprolactinemia	31 (5.8)
Elevated CA-125 level (35 units/mL)	5 (0.9)
Hospitalization	4 (0.7)
Outpatient management	531(99.3)

Note: Data are presented as mean — SD; and *n* (%) for nominal variables. Primary amenorrhea: failure to reach menarche by age 15 years in adolescent girls with otherwise normal secondary sexual development Secondary amenorrhea: cessation of previously regular menses for 3 months or longer and cessation of previously irregular menses for 6 months or longer. Polycystic ovarian morphology(PCOM):Ovarian volume 10 ml on either ovary (guideline 2018) Hypothyroidism: Elevated TSH with low free T4 or with normal T4 Hyperthyroidism: Suppressed TSH with freeT4 and or T3 elevated

impact the daily activities and quality of life of adolescent girls and it is a common cause of school absenteeism [20]. Primary dysmenorrhea involves painful menstruation without any pelvic pathology. Prostaglandins play a role in the etiology. Secondary dysmenorrhea, on the other hand, refers to painful menstrual periods attributed to pelvic pathology or a medical condition. In adolescents, the most common cause of secondary dysmenorrhea is endometriosis [21]. In our study, however, an endometrioma was detected sonographically in one patient. Within the study population, there are likely more cases of endometriosis; the diagnosis of peritoneal endometriotic lesions can only be established through a laparoscopic intervention. The etiology of secondary dysmenorrhea includes other factors such as adenomyosis, infections, Müllerian anomalies, obstructive tract abnormalities, fibroids, and ovarian cysts [20].

Polycystic ovary syndrome (PCOS) frequently manifests with symptoms during adolescence, primarily characterized by ovulation dysfunction and androgen excess (hyperandrogenism) [22]. Adolescents with the presence of hirsutism or treatment-resistant inflammatory acne, accompanied by menstrual abnormalities (amenorrhea, oligomenorrhea, or excessive menstrual bleeding), acanthosis nigricans, and/or obesity, should be evaluated with consideration of a PCOS diagnosis [22]. Ultrasonographically, the finding of polycystic ovary morphology (PCOM) can also be commonly observed in normal adolescents; therefore, it is not included in the 2015 PCOS diagnostic criteria for adolescents [23]. In our study, a total of 89 adolescents were found to have sonographically detected PCOM; however, it is important to emphasize that this is not a diagnostic criterion for PCOS during adolescence.

Vulvovaginitis is a common gynecologic concern among adolescents and is characterized by discharge, pain, swelling, itching, and discomfort [24]. The etiology of adolescent vulvovaginitis can be multifactorial, encompassing poor hygiene practices, chemical irritants, infectious agents, and hormonal changes associated with puberty. In adolescents, the most prevalent causes of vaginitis encompass bacterial vaginosis, vulvovaginal candidiasis, and Trichomonas vaginalis infection [24]. Within our study cohort, 51 adolescents (9.5%) presented with complaints of vaginal discharge or vulvar itching. Apart from infectious agents, etiological factors include poor hygiene practices, chemical irritants, and feminine hygiene products. In adolescents, obtaining a comprehensive medical history and inquiring about sexual activity is imperative for accurate diagnosis and effective management.

In adolescents, ovarian masses can be incidentally identified during imaging or may give rise to symptoms such as pelvic pain, menstrual irregularities, or findings suggestive of precocious puberty [25]. The majority of ovarian masses encountered in adolescent girls are either physiological ovarian cysts or of a benign nature. In our study, an adolescent presenting with abdominal pain was found to have a 5,5 cm septated cyst and an accompanying 3 cm unilocular anechoic cyst on ultrasonography. The patient was admitted to the hospital, received medical treatment, and underwent evaluation for malignancy.

In the treatment of adnexal masses in adolescents, priority should be given to preserving the ovaries to maintain fertility [26]. Surgical indications include suspicion of malignancy, ovarian torsion, persistent mass, and acute abdominal pain [26]. According to a meta-analysis published in 2020, the reported rate of malignancy is approximately 10–20% of patients who underwent surgical intervention due to ovarian cysts [27]. Germ cell tumors are the most common malignancies of the ovaries in children and adolescents, and AFP, β-hCG, and

lactate dehydrogenase should be tested for the assessment of suspected germ cell tumors [28,29]. The reason for the absence of surgical cases in the patient group included in the study is that patients presenting with abdominal pain or an acute abdominal condition tend to seek treatment in the field of Pediatric Surgery or have their treatment directly coordinated with Pediatric Surgery by the Pediatrics department.

Our study has some strengths and limitations. The retrospective design and single center nature of our study may limit the power of our study. Strengths of the study include conducting it in a high-volume tertiary hospital and enrolling a large number of patients.

CONCLUSIONS

Adolescent gynecology differs from adult gynecology due to the physiological and psychological specificities of the adolescent period. Considering the potential psychological impacts of the first gynecological examination on adolescents, understanding appropriate examination techniques is crucial. In our study, adolescents most commonly sought medical attention due to menstrual irregularities. It is important to distinguish normal menstrual patterns encountered during the pubertal period from abnormal menstrual bleeding. Conditions such as PCOS and endometriosis can manifest during adolescence and may have implications for future fertility. Congenital female reproductive tract anomalies can be detected in adolescents, either symptomatically or asymptomatically. Accurate diagnosis is crucial for preserving future fertility and has significant psychological and social implications. Our study provides valuable insights into the epidemiology of gynecological issues among adolescents, which can inform healthcare strategies and interventions for this vulnerable population.

References

1. Adolescent health. World Health Organization n.d. Available from: https://www.who.int/health-topics/adolescent-health (accessed June 18, 2023).
2. ACOG Committee Opinion No. 651: Menstruation in girls and adolescents: using the menstrual cycle as a vital sign. Obstetrics and Gynecology 2015; 126: e143–6.
3. Snook ML, Nayak S, Lara-Torre E, Sanfilippo JS. Adolescent gynecology: special considerations for special patients gynecologic evaluation of the adolescent. Clin Obstet Gynecol 2012; 55: 651–61.
4. Sanfilippo JS, Lara-Torre E. Adolescent gynecology. Obstetrics and Gynecology 2009; 113: 935–47. Available from: https://doi.org/10.1097/AOG.0B013E31819B6303.
5. The Initial Reproductive Health Visit: ACOG Committee Opinion, Number 811. Obstetrics and Gynecology 2020; 136: 70–80. Available from: https://doi.org/10.1097/AOG.0000000000004094.
6. Roos EJ, Simms-Cendan J, Cheung C, Laufer D, Grover SR. Pediatric and adolescent gynecology through a global lens. International Journal Gynecology Obstetrics. 2022; 156: 189–96. Available from: https://doi.org/10.1002/ijgo.13723.
7. Biro FM, Huang B, Crawford PB, Lucky AW, Striegel-Moore R, Barton BA, et al. Pubertal correlates in black and white girls. J Pediatr. 2006; 148: 234–40. Available from: https://doi.org/10.1016/J.JPEDS.2005.10.020.
8. Chumlea WC, Schubert CM, Roche AF, Kulin HE, Lee PA, Himes JH, et al. Age at menarche and racial comparisons in US girls. Pediatrics. 2003; 111: 110–3. Available from: https://doi.org/10.1542/PEDS.111.1.110.
9. Sun BZ, Kangarloo T, Adams JM, Sluss PM, Welt CK, Chandler DW, et al. Healthy post-menarchal adolescent girls demonstrate multi-level reproductive axis immaturity. Journal of Clinical Endocrinology and Metabolism. 2018; 104: 613–23. Available from: https://doi.org/10.1210/jc.2018-00595.
10. Screening and management of bleeding disorders in adolescents with heavy menstrual bleeding: ACOG COMMITTEE OPINION, Number 785. Obstetrics and Gynecology 2019; 134: E71–83. Available from: https://doi.org/10.1097/AOG.0000000000003411.
11. ACOG committee opinion no. 557: Management of acute abnormal uterine bleeding in nonpregnant reproductive-aged women. Obstetrics and Gynecology. 2013; 121: 891–6. Available from: https://doi.org/10.1097/01.AOG.0000428646.67925.9A.
12. Venkateswaran L, Dietrich JE. Gynecologic concerns in pubertal females with blood disorders. J Pediatr Adolesc Gynecol. 2013; 26: 80–5. Available from: https://doi.org/10.1016/J.JPAG.2012.07.001.
13. Haamid F, Sass AE, Dietrich JE. Heavy menstrual bleeding in adolescents. J Pediatr Adolesc Gynecol. 2017; 30: 335–40. Available from: https://doi.org/10.1016/J.JPAG.2017.01.002.
14. James AH, Kouides PA, Abdul-Kadir R, Dietrich JE, Edlund M, Federici AB, et al. Evaluation and management of acute menorrhagia in women with and without underlying bleeding disorders: consensus from an international expert panel. Eur J Obstet Gynecol Reprod Biol 2011; 158: 124–34. Available from: https://doi.org/10.1016/J.EJOGRB.2011.04.025.
15. Ely JW, Kennedy CM, Clark EC, Bowdler NC. Abnormal uterine bleeding: a management algorithm. J Am Board Fam Med 2006; 19: 590–602. Available from: https://doi.org/10.3122/JABFM.19.6.590.
16. Sultan C, Gaspari L, Maimoun L, Kalfa N, Paris F. Disorders of puberty. Best Pract Res Clin Obstet Gynaecol. 2018; 48: 62–89. Available from: https://doi.org/10.1016/J.BPOBGYN.2017.11.004.
17. Rosenfield RL. Clinical review: Adolescent anovulation: maturational mechanisms and implications. J Clin Endocrinol Metab. 2013; 98: 3572–83. Available from: https://doi.org/10.1210/JC.2013-1770.
18. Pfeifer SM, Attaran M, Goldstein J, Lindheim SR, Petrozza JC, Rackow BW, et al. ASRM müllerian anomalies classification 2021. Fertil Steril. 2021; 116: 1238–52. Available from: https://doi.org/10.1016/J.FERTNSTERT.2021.09.025.
19. Al-Jefout M, Nawaiseh N. Continuous Norethisterone Acetate versus Cyclical Drospirenone 3 mg/Ethinyl Estradiol 20 µg for the Management of Primary Dysmenorrhea in Young Adult Women. J Pediatr Adolesc Gynecol 2016; 29: 143–7. Available from: https://doi.org/10.1016/j.jpag.2015.08.009.
20. ACOG Committee Opinion No. 760: Dysmenorrhea and endometriosis in the adolescent. Obstetrics and Gynecology 2018; 132: E249–58. Available from: https://doi.org/10.1097/AOG.0000000000002978.
21. Janssen EB, Rijkers ACM, Hoppenbrouwers K, Meuleman C, D'Hooghe TM. Prevalence of endometriosis diagnosed by laparoscopy in adolescents with dysmenorrhea or chronic pelvic pain: a systematic review. Hum Reprod Update 2013; 19: 570–82. Available from: https://doi.org/10.1093/HUMUPD/DMT016.
22. Ibáñez L, Oberfield SE, Witchel S, Auchus RJ, Chang RJ, Codner E, et al. An International Consortium Update: pathophysiology, diagnosis, and treatment of polycystic ovarian syndrome in Adolescence. Horm Res Paediatr 2017; 88: 371–95. Available from: https://doi.org/10.1159/000479371.
23. ACOG Committee Opinion, Number 789; screening and management of the hyperandrogenic adolescent. Obstetrics and Gynecology. 2019; 134: E106–14. Available from: https://doi.org/10.1097/AOG.0000000000003475.
24. Itriyeva K. Evaluation of vulvovaginitis in the adolescent patient. Curr Probl Pediatr Adolesc Health Care. 2020; 50. Available from: https://doi.org/10.1016/J.CPPEDS.2020.100836.
25. Heo SH, Kim JW, Shin SS, Jeong SI, Lim HS, Choi YD, et al. Review of ovarian tumors in children and adolescents: radiologic-pathologic correlation. Radiographics. 2014; 34: 2039–55. Available from: https://doi.org/10.1148/RG.347130144.
26. Eskander R, Berman M, Keder L. Practice Bulletin No. 174: Evaluation and management of adnexal masses. Obstetrics and Gynecology. 2016; 128: e210–26. https://doi.org/10.1097/AOG.0000000000001768.

27. Qazi SH, Jeelani SM, Dogar SA, Das JK, Saxena AK. Approaches to the management of pediatric ovarian masses in the 21st century: Systematic review and meta-analysis. J Pediatr Surg. 2020; 55: 357–68. Available from: https://doi.org/10.1016/J.JPEDSURG.2019.09.003.
28. Gupta B, Guleria K, Suneja A, Vaid NB, Rajaram S, Wadhwa N. Adolescent ovarian masses: A retrospective analysis. J Obstet Gynaecol. 2016; 36: 515–7. Available from: https://doi.org/10.3109/01443615.2015.1103721.
29. Papic JC, Finnell SME, Slaven JE, Billmire DF, Rescorla FJ, Leys CM. Predictors of ovarian malignancy in children: overcoming clinical barriers of ovarian preservation. J Pediatr Surg. 2014; 49: 144–8. Available from: https://doi.org/10.1016/J.JPEDSURG.2013.09.068.

Литература

1. Adolescent health. World Health Organization n.d. Available from: https://www.who.int/health-topics/adolescent-health (accessed June 18, 2023).
2. ACOG Committee Opinion No. 651: Menstruation in girls and adolescents: using the menstrual cycle as a vital sign. Obstetrics and Gynecology 2015; 126: e143–6.
3. Snook ML, Nayak S, Lara-Torre E, Sanfilippo JS. Adolescent gynecology: special considerations for special patients gynecologic evaluation of the adolescent. Clin Obstet Gynecol 2012; 55: 651–61.
4. Sanfilippo JS, Lara-Torre E. Adolescent gynecology. Obstetrics and Gynecology 2009; 113: 935–47. Available from: https://doi.org/10.1097/AOG.0B013E31819B6303.
5. The Initial Reproductive Health Visit: ACOG Committee Opinion, Number 811. Obstetrics and Gynecology 2020; 136: 70–80. Available from: https://doi.org/10.1097/AOG.0000000000004094.
6. Roos EJ, Simms-Cendan J, Cheung C, Laufer D, Grover SR. Pediatric and adolescent gynecology through a global lens. International Journal Gynecology Obstetrics. 2022; 156: 189–96. Available from: https://doi.org/10.1002/ijgo.13723.
7. Biro FM, Huang B, Crawford PB, Lucky AW, Striegel-Moore R, Barton BA, et al. Pubertal correlates in black and white girls. J Pediatr. 2006; 148: 234–40. Available from: https://doi.org/10.1016/J.JPEDS.2005.10.020.
8. Chumlea WC, Schubert CM, Roche AF, Kulin HE, Lee PA, Himes JH, et al. Age at menarche and racial comparisons in US girls. Pediatrics. 2003; 111: 110–3. Available from: https://doi.org/10.1542/PEDS.111.1.110.
9. Sun BZ, Kangarloo T, Adams JM, Sluss PM, Welt CK, Chandler DW, et al. Healthy post-menarchal adolescent girls demonstrate multi-level reproductive axis immaturity. Journal of Clinical Endocrinology and Metabolism. 2018; 104: 613–23. Available from: https://doi.org/10.1210/jc.2018-00595.
10. Screening and management of bleeding disorders in adolescents with heavy menstrual bleeding: ACOG COMMITTEE OPINION, Number 785. Obstetrics and Gynecology 2019; 134: E71–83. Available from: https://doi.org/10.1097/AOG.0000000000003411.
11. ACOG committee opinion no. 557: Management of acute abnormal uterine bleeding in nonpregnant reproductive-aged women. Obstetrics and Gynecology. 2013; 121: 891–6. Available from: https://doi.org/10.1097/01.AOG.0000428646.67925.9A.
12. Venkateswaran L, Dietrich JE. Gynecologic concerns in pubertal females with blood disorders. J Pediatr Adolesc Gynecol. 2013; 26: 80–5. Available from: https://doi.org/10.1016/J.JPAG.2012.07.001.
13. Haamid F, Sass AE, Dietrich JE. Heavy menstrual bleeding in adolescents. J Pediatr Adolesc Gynecol. 2017; 30: 335–40. Available from: https://doi.org/10.1016/J.JPAG.2017.01.002.
14. James AH, Kouides PA, Abdul-Kadir R, Dietrich JE, Edlund M, Federici AB, et al. Evaluation and management of acute menorrhagia in women with and without underlying bleeding disorders: consensus from an international expert panel. Eur J Obstet Gynecol Reprod Biol 2011; 158: 124–34. Available from: https://doi.org/10.1016/J.EJOGRB.2011.04.025.
15. Ely JW, Kennedy CM, Clark EC, Bowdler NC. Abnormal uterine bleeding: a management algorithm. J Am Board Fam Med 2006; 19: 590–602. Available from: https://doi.org/10.3122/JABFM.19.6.590.
16. Sultan C, Gaspari L, Maimoun L, Kalfa N, Paris F. Disorders of puberty. Best Pract Res Clin Obstet Gynaecol. 2018; 48: 62–89. Available from: https://doi.org/10.1016/J.BPOBGYN.2017.11.004.
17. Rosenfield RL. Clinical review: Adolescent anovulation: maturational mechanisms and implications. J Clin Endocrinol Metab. 2013; 98: 3572–83. Available from: https://doi.org/10.1210/JC.2013-1770.
18. Pfeifer SM, Attaran M, Goldstein J, Lindheim SR, Petrozza JC, Rackow BW, et al. ASRM müllerian anomalies classification 2021. Fertil Steril. 2021; 116: 1238–52. Available from: https://doi.org/10.1016/J.FERTNSTERT.2021.09.025.
19. Al-Jefout M, Nawaiseh N. Continuous Norethisterone Acetate versus Cyclical Drospirenone 3 mg/Ethinyl Estradiol 20 µg for the Management of Primary Dysmenorrhea in Young Adult Women. J Pediatr Adolesc Gynecol 2016; 29: 143–7. Available from: https://doi.org/10.1016/j.jpag.2015.08.009.
20. ACOG Committee Opinion No. 760: Dysmenorrhea and endometriosis in the adolescent. Obstetrics and Gynecology 2018; 132: E249–58. Available from: https://doi.org/10.1097/AOG.0000000000002978.
21. Janssen EB, Rijkers ACM, Hoppenbrouwers K, Meuleman C, D'Hooghe TM. Prevalence of endometriosis diagnosed by laparoscopy in adolescents with dysmenorrhea or chronic pelvic pain: a systematic review. Hum Reprod Update 2013; 19: 570–82. Available from: https://doi.org/10.1093/HUMUPD/DMT016.
22. Ibáñez L, Oberfield SE, Witchel S, Auchus RJ, Chang RJ, Codner E, et al. An International Consortium Update: pathophysiology, diagnosis, and treatment of polycystic ovarian syndrome in Adolescence. Horm Res Paediatr 2017; 88: 371–95. Available from: https://doi.org/10.1159/000479371.
23. ACOG Committee Opinion, Number 789; screening and management of the hyperandrogenic adolescent. Obstetrics and Gynecology. 2019; 134: E106–14. Available from: https://doi.org/10.1097/AOG.0000000000003475.
24. Itriyeva K. Evaluation of vulvovaginitis in the adolescent patient. Curr Probl Pediatr Adolesc Health Care. 2020; 50. Available from: https://doi.org/10.1016/J.CPPEDS.2020.100836.
25. Heo SH, Kim JW, Shin SS, Jeong SI, Lim HS, Choi YD, et al. Review of ovarian tumors in children and adolescents: radiologic-pathologic correlation. Radiographics. 2014; 34: 2039–55. Available from: https://doi.org/10.1148/RG.347130144.
26. Eskander R, Berman M, Keder L. Practice Bulletin No. 174: Evaluation and management of adnexal masses. Obstetrics and Gynecology. 2016; 128: e210–26. https://doi.org/10.1097/AOG.0000000000001768.
27. Qazi SH, Jeelani SM, Dogar SA, Das JK, Saxena AK. Approaches to the management of pediatric ovarian masses in the 21st century: Systematic review and meta-analysis. J Pediatr Surg. 2020; 55: 357–68. Available from: https://doi.org/10.1016/J.JPEDSURG.2019.09.003.
28. Gupta B, Guleria K, Suneja A, Vaid NB, Rajaram S, Wadhwa N. Adolescent ovarian masses: A retrospective analysis. J Obstet Gynaecol. 2016; 36: 515–7. Available from: https://doi.org/10.3109/01443615.2015.1103721.
29. Papic JC, Finnell SME, Slaven JE, Billmire DF, Rescorla FJ, Leys CM. Predictors of ovarian malignancy in children: overcoming clinical barriers of ovarian preservation. J Pediatr Surg. 2014; 49: 144–8. Available from: https://doi.org/10.1016/J.JPEDSURG.2013.09.068.