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CASE REPORT

Uterine leiomyoma in adolescents: A case report and a review of the literature



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KEYWORDS

Uterine myoma;
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Abdominal pain

Abstract

Introduction: Fibroids are common benign gynecological tumors but a rare finding in adolescents. Although infrequent, some symptomatic cases have been described in literature.

Main symptoms and/or clinical findings: A 16-year-old Caucasian patient came to our attention for abdominal pain and dysmenorrhea appeared two months before. Her gynecological history was characterized by regular menstrual cycles, normal in quantity, with dysmenorrhea. Bimanual pelvic examination revealed an anteverted mobile uterus, no adnexal tenderness or masses. Speculum examination showed a normal cervix. No vaginal bleeding or discharge was observed during the visit.

Main diagnoses: Transabdominal/transvaginal ultrasound demonstrated an anteverted uterus of 71 mm × 44 × 48 mm, with a heterogeneous myometrial structure and a hypoechoic subserosal-intramural mass (FIGO leiomyoma subclassification system: 0-4) localized in the posterior uterine wall, measuring 26 mm × 19 mm × 16 mm, slightly vascularized at the Color-Doppler (Color Score 2). Magnetic resonance imaging confirmed the ultrasound diagnosis.

Therapeutic interventions and outcomes: Considering pelvic mass dimension and the patient age, a "wait and see" approach was chosen and the patient was re-evaluated a month and three months after the first ultrasound. The second and the third transvaginal ultrasound exam showed an unchanged picture.

Conclusion: The management of leiomyoma in young patients should be targeted to dimension and symptoms of the mass. When facing myomas of small dimension, paucisymptomatic or asymptomatic, with no signs of malignancy, we suggest an expectant management.

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PALABRAS CLAVE

Mioma uterino;
Adolescente;
Ecografía;
Dismenorrea;
Dolor abdominal

Leiomioma uterino en adolescentes: reporte de un caso y revisión de la literatura**Resumen**

Introducción: Los fibromas son tumores ginecológicos benignos comunes, pero son un hallazgo raro en los adolescentes. Aunque son poco frecuentes, en la literatura se han descrito algunos casos sintomáticos.

Principales síntomas y/o hallazgos clínicos: Paciente caucásica de 16 años que acudió a nuestra consulta por dolor abdominal y dismenorrea de aparición 2 meses antes. Sus antecedentes ginecológicos se caracterizaron por ciclos menstruales regulares, normales en cantidad, con dismenorrea. El examen pélvico bimanual reveló un útero móvil en anteversión, sin dolor a la palpación ni masas anexiales. El examen con espéculo mostró un cuello uterino normal. Durante la visita no se observó sangrado ni secreción vaginal.

Diagnósticos principales: La ecografía transabdominal/transvaginal demostró un útero antevertido de $71 \times 44 \times 48$ mm, con una estructura miometrial heterogénea y una masa subseroso-intramural hipoecoica (sistema de subclasificación de leiomiomas FIGO: 0-4) localizada en la pared posterior del útero, de $26 \times 19 \times 16$ mm, ligeramente vascularizado en el Doppler color (Color Score 2). La resonancia magnética confirmó el diagnóstico ecográfico.

Intervenciones terapéuticas y resultados: Teniendo en cuenta la dimensión de la masa pélvica y la edad de la paciente, se optó por un enfoque de «esperar y ver» y la paciente fue reevaluada un mes y 3 meses después de la primera ecografía. El último examen de ultrasonido transvaginal mostró una imagen sin cambios.

Conclusión: El tratamiento del leiomioma en los pacientes jóvenes debe centrarse en el tamaño y los síntomas de la masa. Ante miomas de pequeño tamaño, paucisintomáticos o asintomáticos, sin signos de malignidad, sugerimos un manejo expectante.

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Introduction

Uterine leiomyomas, also known as fibroids, are neoformations originating from smooth muscle cells of the myometrium. Fibroids are extremely heterogeneous in their location, dimension and clinical presentation. When symptomatic, myomas can present themselves, depending on their size and location in the uterus, with heavy bleeding or abnormal uterine bleeding (AUB), dysmenorrhea, dyspareunia, bulk symptoms (pelvic pressure, back or abdominal pain), urinary or gastrointestinal symptoms (pollakiuria or constipation).¹ Fibroids can also be associated with infertility and other poor obstetrical outcomes (increased risk of preterm labor, cesarean delivery, fetal malpresentation and growth restriction).^{2,3}

Myomas are the most common form of benign tumors of the uterus but notable differences are found in their prevalence and presentation. Fibroids are more frequent, tend to present at a younger age, are greater in number and larger in size in women of African ancestry.⁴ Other risk factors identified include: nulliparity, hypertension, obesity, late menopause and early menarche, familiarity.⁵

Considering that fibroid development and growth is strongly influenced by female hormones, leiomyomas mainly interest women during reproductive years and typically regress following menopause.⁶ Therefore, fibroids are a common finding in women between the ages of 30 and 50 but are extremely rare in adolescents. At 25–30 years the incidence of fibroids is only 0.31 per 1000 women years, but by ages 45–50 the incidence has increased 20-fold to

6.20 per 1000 women years.⁷ From 1969, only 35 cases in young women have been reported.

In this work we present the case of a 16-year-old patient addressed to the gynecologist for abdominal pain and dysmenorrhea, who was diagnosed with a uterine leiomyoma. In addition, we provide an updated review of the literature, including the management of myomas in adolescent patients.

Case report**Information of the patient**

A 16-year-old Caucasian patient came to our attention for abdominal pain and dysmenorrhea appeared two months before. She had an unremarkable medical, surgical and family history. Her gynecological history was also mute and was characterized by regular menstrual cycles, normal in quantity, with a dysmenorrhea 8 out of 10 on the Visual Analogue Scale.

Clinical findings

Patient vital signs were normal. On examination, Tanner staging was appropriate for age. Her body mass index was 26. Bimanual pelvic examination revealed an anteverted mobile uterus, no adnexal tenderness or masses. Speculum examination showed a normal cervix. No vaginal bleeding or discharge was observed during the visit.

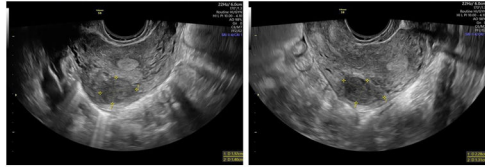


Figure 1 (A and B). Transvaginal ultrasound described a hypoechoic subserosal-intramural mass (FIGO leiomyoma subclassification system: 0-4) localized in the posterior uterine wall, measuring 23 mm × 19 mm × 13 mm, slightly vascularized at the Color-Doppler (Color Score 2).

Diagnostic evaluation

Transabdominal/transvaginal ultrasound (Mindray DC-80A, convex ultrasound transducer, 1.3–5.7 MHz, China) demonstrated an anteverted uterus of 71 mm × 44 mm × 48 mm, with a heterogeneous myometrial structure and a hypoechoic subserosal-intramural mass (FIGO leiomyoma subclassification system: 0-4) localized in the posterior uterine wall, measuring 26 mm × 19 mm × 16 mm, slightly vascularized at the Color-Doppler (Color Score 2). The endometrium had a three-layers pattern, synchronized to her menstrual cycle. Ovaries were unremarkable bilaterally. No pelvic fluid was observed. The pelvis MRI (Siemens AVANTO 1.5T) showed an oval mass on the upper left wall of the uterine myometrium (axial dimensions 25 mm × 15 mm), with a low to intermediate signal intensity compared with the normal myometrium in the T1-weighted sequences acquired on axial and sagittal planes and an intermediate to high signal intensity compared with the normal myometrium in the T2-weighted sequences acquired on an axial and sagittal planes, compatible with a hypercellular variant of an uterine leiomyoma. The post-contrast administration sequences acquired during arterial and venous phases showed an homogenous enhancement similar to the myometrium which is consistent with non-degenerated fibroids; the finding was confirmed with DWI sequences (b1000) and ADC mapping in which there was no evidence of significant restriction in the diffusion pattern inside the fibroid mass.

Therapeutic intervention

Considering pelvic mass dimension, a “wait and see” approach was chosen and the patient was re-evaluated a month after and three months after the first ultrasound. In this period, in order to alleviate patient’s symptoms (abdominal pain and dysmenorrhea), we prescribed paracetamol 1000 mg orally twice a day during menstruation.

Monitoring and results

The second and the third transvaginal ultrasound exam (GE Voluson S8, micro-convex transducer, 4–10 MHz, South Korea), a month and three months after the first exam respectively, showed an unchanged picture (Fig. 1A and B): a hypoechoic subserosal-intramural mass (FIGO leiomyoma subclassification system: 0-4) localized in the posterior uterine wall, measuring 23 mm × 19 mm × 13 mm, slightly vascularized at the Color-Doppler (Color Score 2).

3-dimensional (3-D) ultrasound revealed a normal uterine cavity.

Discussion

In this report we add another case of symptomatic uterine fibroid in an adolescent patient to the very few described in the last 53 years (Table 1).

The first case was presented by Wisot et al. in 1969. Since then, a total of 35 patients, including the one whom case we describe, were identified. The youngest was aged 12-year-old and the oldest aged 21-year-old (mode 15-year-old). Most of them reported abnormal uterine bleeding, followed by abdominal pain. Other patients described abdominal mass and distention, anemia and dysmenorrhea. All of them, except one, performed at least an ultrasound (transabdominal US or transvaginal US). In 13 cases the diagnostic was completed with a magnetic resonance imaging (MRI) and in 7 cases a computer tomography scan (CT) was performed. Myomectomy was the most common surgical treatment chosen (28 cases), either approached via hysteroscopy (3 cases), laparoscopy (5 cases), or laparotomy (18 cases). One patient underwent a vaginal myomectomy and only one patient underwent a hysterectomy. The expectant management was preferred in 5 patients, of whom 4 were pregnant. The histological examination did not reveal a malignancy in any cases of the ones reported. In 14 cases, there was no evidence of the disease in a variable period of follow-up time (3 months–6 years). In 2 cases there was a recurrence of the fibroids, respectively, at the 1 year follow-up and the 2 years follow-up. In one case a leiomyosarcoma was described in the previous benign myomectomy site. In 2 cases a pregnancy followed the leiomyoma diagnosis and the surgical treatment and both patients underwent a cesarean section.

Our case presents the same characteristics of the ones reported in literature, concerning symptoms and methods of diagnostic. Considering the dimension of the fibroid which affected our patient and the absence of any sign of malignancy at the ultrasound and MRI performed, an expectant management was preferred, despite the vast majority of the cases described.

Gynecological symptoms in adolescents often recognize a different etiology from the adult population. Abnormal uterine bleeding is typically due to anovulation secondary to the immaturity of the hypothalamic–pituitary–ovarian axis.⁸ The majority of cases of dysmenorrhea are primary or functional and, when secondary, dysmenorrhea is typically attributed to endometriosis.⁹ In the adolescent age group, the distinct possibility of a müllerian anomaly must also be considered. Abdominal distension, when due to gynecological disorders, is often reconducted to an ovarian mass. As shown, uterine fibroids can be found in adolescent patients, although rare. For this reason the diagnosis of leiomyoma should be taken into account even in younger population.

The approach to a woman presenting the described symptoms should always include the evaluation of family history (familiarity for gynecological cancers and fibroids) and a gynecological visit. Sonography is the first line imaging exam. When possible, the combined transabdominal and transvaginal approach is preferred. Transvaginal method is generally chosen as it allows better evaluation of patients

Table 1 Literature report of myomas in adolescents.

Authors, reference	Year of publication	Age	Ethnicity	Clinical manifestation	Myoma size (cm)	Evaluation	Management	Outcome
Wisot et al.	1969	15	Caucasian	AUB*	12 × 7 × 6	Abdominal flat plate	Abdominal myomectomy	No evidence of disease at 6 months
Augensen S	1981	15	Not specified	AUB, pelvic mass, urinary retention	10	Pelvic ultrasound	Abdominal myomectomy	No evidence of disease at 1 year
De Rooy et al.	1986	15	Not specified	Abdominal pain and mass, hemorrhagic shock	16.5 × 11 × 8.5	Pelvic ultrasound	Abdominal myomectomy	No evidence of disease at 5 years
Horejsi et al.	1988	15	Not specified	Not specified	Unknown	Pelvic ultrasound Pelvic arteriography CT scan [†]	Abdominal hysterectomy + BSO [‡]	Not specified
Heimer et al.	1991	15	Not specified	Abdominal pain and fatigue	20 × 12	Pelvic ultrasound CT scan	Abdominal myomectomy	No evidence of disease at 6 months
Morad et al.	1993	15	Saudi Arabian	AUB, abdominal mass	7	Pelvic ultrasound	Abdominal myomectomy	Pregnant after 8 months, deliver by cesarean delivery
Fields et al.	1996	16	Hispanic	22 weeks pregnant, periumbilical pain	Unknown	Pelvic ultrasound	Expectant	Not specified
		20	Hispanic	Pregnancy with fetal distress/amnionitis	6–7	Pelvic ultrasound	Expectant	Not specified
		19	Hispanic	Increased abdominal girth, dysmenorrhea, back pain	790 g	Pelvic ultrasound CT scan	Myomectomy	Not specified
		19	Hispanic	Pregnancy with labor pain	Not specified	Pelvic ultrasound	Expectant	Not specified
		21	Hispanic	Vaginal discharge and abdominal pain	11 × 4 × 6	Pelvic ultrasound	Expectant	Not specified
Nguyen-Duc et al.	2003	15	Not specified	AUB, abdominal pain	11 × 13	TA ultrasound [§]	Abdominal myomectomy	No evidence of the disease at 6 months
Bekker et al.	2004	15	African American	AUB, abdominal pain	26 × 21 × 6	Pelvic ultrasound	Abdominal myomectomy	Not specified
Grapsa et al.	2006	16	Not specified	AUB, abdominal pain	30 × 23 × 10	Pelvic ultrasound CT scan	Abdominal myomectomy	No evidence of disease at 6 years

Table 1 (Continued)

Authors, reference	Year of publication	Age	Ethnicity	Clinical manifestation	Myoma size (cm)	Evaluation	Management	Outcome
Diesen et al.	2008	14	African American	Dysmenorrhea, abdominal distension	15 × 15 × 10	Pelvic ultrasound MRI ^{II}	Abdominal myomectomy	No evidence of disease at 3 months
Perkins et al.	2009	17	African American	Pelvic mass	10	Pelvic ultrasound MRI	Abdominal myomectomy	Pregnant after unspecified time, delivered at term by cesarean delivery
Karim et al.	2010	16	Not specified	Pelvic mass, increased abdominal volume	25 × 15 × 10	TV [#] /TA ultrasound	Abdominal myomectomy	Not specified
Tsili et al.	2010	16	Not specified	Abdominal pain and distension	Multiple, largest 13	TV/TA ultrasound MRI	Laparoscopic myomectomy	Recurrence of multiple myomas at 2 years
Khorrani et al.	2011	17	Caucasian	AUB, refractory anemia	2.2 × 4.2 × 1.7	TV ultrasound	Hysteroscopic myomectomy	No evidence of the disease at unspecified time
Taskin et al.	2011	16	Not specified	Pelvic mass protruding through vagina	4 × 4	TA ultrasound	Hysteroscopic myomectomy	No evidence of the disease at 9 months
Wright et al.	2011	14	Caucasian	AUB, abdominal pain, increased abdominal volume	16	Pelvic ultrasound MRI	Abdominal myomectomy	Asymptomatic 3 cm myoma at 1 year follow-up
Naiditch et al.	2011	15	Not specified	Pelvic mass, abdominal pain, associated ovarian teratoma	6	TV ultrasound MRI	Abdominal myomectomy and teratoma resection	Not specified
Pérez-Colon et al.	2011	15	Not specified	AUB	5	Not specified	Not specified	Not specified
Maggiore et al.	2013	14	Caucasian	AUB, abdominal and back pain	13 × 10 × 10	TA ultrasound MRI	Abdominal myomectomy	No evidence of the disease at 6 months

Table 1 (Continued)

Authors, reference	Year of publication	Age	Ethnicity	Clinical manifestation	Myoma size (cm)	Evaluation	Management	Outcome
Kayadibi et al.	2014	15	Not specified	Pelvic mass, increased abdominal volume	17 × 20 × 16	Pelvic ultrasound MRI	Abdominal myomectomy	No evidence of the disease at 6 months
Salehi et al.	2016	15	Caucasian	Pelvic pain	17.5 × 14.8 × 4.5	Pelvic ultrasound CT scan	Laparoscopic myomectomy	Not specified
Giannella et al.	2016	18	Black	Dyspareunia	7	TV ultrasound CT scan	Laparoscopic myomectomy	No evidence of disease at 8 months
Zigman et al.	2018	16	Not specified	Vaginal discharge	8	MRI	Vaginal myomectomy	Not specified
Morita et al.	2019	13	Not specified	Abdominal distension	11	TA ultrasound MRI	Laparoscopic myomectomy	No evidence of disease at 18 months
Vaz et al.	2019	16	Hispanic	Abdominal pain and distension	15 × 10 × 12	TV ultrasound CT scan MRI	Abdominal myomectomy	Leiomyosarcoma in the benign myomectomy site
Kumura et al.	2020	12	Asian	AUB	2.9 × 2.1 × 2.7	TA ultrasound	Hysteroscopic myomectomy	Not specified
Murphy et al.	2020	16	Not specified	AUB, anemia, pelvic mass	9	TA ultrasound	Abdominal myomectomy	No evidence of the disease at 5 months
Gong et al.	2021	19	Not specified	Pelvic pain	9 6 2	TA ultrasound MRI	Single-incision laparoscopic myomectomy	Lost in follow-up
Foo et al.	2021	21	Black	Menorrhagia and dysmenorrhoea	9.4 × 8.3 × 8.7 3.7 × 2.7 × 3.2	TV ultrasound MRI	Abdominal myomectomy	Not specified FH tumor predisposition syndrome
Derme et al.	2023	16	Caucasian	Abdominal pain	2.6 × 1.9 × 1.6	TV and TA US	Expectant	Ongoing follow-up

* Abnormal uterine bleeding.

† Computer tomography scan.

‡ Bilateral salpingo-oophorectomy.

§ Transabdominal ultrasound.

|| Magnetic resonance imaging.

Transvaginal ultrasound.

with retroverted uterus, inadequate bladder distension, significant bowel gas or obese patients. Transabdominal method, however, is superior for the assessment of large and fundal leiomyomas and it is appropriate even for virgo patients. The examiner should provide a detailed description of the position and the diameter of the lesions, in order to facilitate the follow-up of the mass, according to the FIGO classification system. In addition to ultrasound, MRI can improve further characterization of soft tissues and of mass features such as margins, vascularization, necrosis and growth. The differential diagnosis between leiomyomas and leiomyosarcomas remains, however, difficult.

Different options are currently available for the treatment of uterine leiomyomas. Medical strategies include contraceptive steroids, selective progesterone receptor modulators, gonadotropin-releasing hormone (GnRH) agonists and antagonists, aromatase inhibitors. Other surgical and non-surgical approaches include hysterectomy, myomectomy by hysteroscopy, laparotomy or laparoscopy, uterine artery embolization (UAE) and other interventions performed under radiologic or ultrasound.¹⁰ Regarding the management of leiomyomas in adolescents, there are no specific guidelines for this age group. Although fertility preservation is crucial, the treatment proposed should always be targeted to patient desire, symptoms and to dimension of the fibroid.

In the cases reported in literature, most of the patients underwent myomectomy, which can be a valid option for large, symptomatic fibroid not responsive to medical therapy. Extensive counseling regarding recurrence after surgical treatment and future obstetrical implications, such as the possible need to perform a cesarean section, should be provided to the patients. When facing myomas of small dimension, paucisymptomatic or asymptomatic, with no signs of malignancy, we suggest, however, an expectant management. A strict echographic follow-up is mandatory to monitor increase in dimension or number of fibroid or the appearance of suspicious signs.

In conclusion, uterine leiomyomas are uncommon yet encountered in younger fertile women and their treatment should be targeted.

Ethical disclosures

Protection of human and animal subjects. The authors declare that no experiments were performed on humans or animals for this study.

Confidentiality of data. The authors declare that they have followed the protocols of their work center on the publication of patient data.

Right to privacy and informed consent. The authors declare that no patient data appear in this article.

Patient consent

The authors declare that the protocols of their institutions on the publication of patient data have been followed and the privacy has been respected.

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Conflict of interest

The authors certify that there is no conflict of interest with any financial organization regarding the material discussed in the manuscript.

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