

Advanced Stage Endometriosis in Adolescents and Young Women



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ABSTRACT

Study Objective: To describe the prevalence and characteristics of advanced stage endometriosis in adolescents and young women treated in a tertiary referral center.

Design: Retrospective cohort.

Setting: Tertiary referral center.

Patients and Interventions: 86 adolescents and young women (≤ 22 y) who underwent surgery for endometriosis. The operative reports were reviewed for endometriosis stage, surgical findings, surgical procedures, and pathology.

Main Outcome Measures: Endometriosis stage reported according to the revised American Fertility Society classification.

Results: Early stage endometriosis (stage I or II) was found in 66 (76%) and advanced stage endometriosis (stage III or IV) in 20 (23%). The surgical findings in the 20 patients with advanced stage endometriosis included ovarian endometriomas in 14 cases, rectovaginal nodule in 1 case, and diaphragmatic and pulmonary endometriosis in 1 case. Women with advanced stage endometriosis were found to be slightly older at time of diagnosis than those with early stage disease (mean age 20.4 ± 1.4 y vs 18.7 ± 2.2 y respectively, $P < .001$).

Conclusion: In adolescents and young women with endometriosis, advanced stage disease is not uncommon. The main presentation of advanced stage endometriosis in this age group is ovarian endometriomas rather than extensive peritoneal or adhesive disease.

Key Words: Endometriosis, Adolescents, Endometrioma

Introduction

Endometriosis is a common condition in adult women, estimated to occur in 5%-10% of the female population.¹ In adolescents, the true incidence of endometriosis is unknown; however, the prevalence of endometriosis in select groups of adolescents has been previously studied in referral centers for pediatric and adolescent gynecology. Goldstein et al² reported a 47% prevalence of endometriosis in adolescents (10.5-19 y old) undergoing laparoscopy for pelvic pain, while Laufer et al³ reported a prevalence of almost 70% in adolescents (younger than 22 y) with pelvic pain refractory to combination hormone therapy. In the latter study, all adolescents were found to have early stage endometriosis, ie, stage I-II endometriosis according to the revised American Fertility Association classification.⁴ Reese et al⁵ also reported that more than 90% of adolescents (11-19 y old) with endometriosis had stage I-II disease. These authors concluded that advanced stage endometriosis (and in particular ovarian endometrioma) is rare in young patients. However, more recent studies reported a much higher prevalence of severe endometriosis in adolescents, reaching 40%-50% of cases.⁶⁻⁸ In addition, a recent meta-analysis by Janssen et al⁹ found that 32% of

adolescents undergoing laparoscopy for pelvic pain had moderate to severe endometriosis.

Early studies assessing the prevalence of endometriomas in adolescents reported those cysts to be relatively unusual. A study by Moore et al¹⁰ found that endometriomas comprised 4.7% of adnexal masses in adolescents. However, 2 recent studies reported the diagnosis of endometriosis in younger patients. Ozyer et al¹¹ reviewed 63 patients diagnosed with endometriomas who were age 24 or younger. Another study by Lee et al¹² described endometriomas in 376 Korean women, of which 35 (9%) were under the age of 21. Although these 2 studies suggest that endometriomas may be more common than previously thought in adolescents, they do not provide data on the prevalence or the incidence of this condition. Another study using a different approach investigated the onset of significant pain symptoms in women who were later diagnosed with deep infiltrating endometriosis.¹³ More than 20% of these patients with advanced endometriosis reported receiving a prescription for combined oral contraceptive pills for treatment of severe dysmenorrhea prior to age 18. The significant pain symptoms during teenage years, suggests an early onset of advanced endometriosis.

Although conventional thought has been that adolescents tend to present with early stage endometriosis and that endometriomas are rare in young women, the more recent literature summarized above appears to contradict this paradigm.^{6-9, 11-13} The purpose of this study was to address this controversy and describe the characteristics and stage of endometriosis among adolescents and young

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women surgically treated for endometriosis in a gynecology tertiary care referral center.

Methods

The electronic medical records of the department of Obstetrics and Gynecology at the University of Michigan Health System were searched for the ICD-9 diagnoses related to endometriosis sites. All medical records of patients with 1 or more of the these ICD-9 diagnoses were retrospectively reviewed to identify adolescents and young women who underwent surgery for suspected/confirmed endometriosis at this medical center from January 2000 to August 2011 and were ≤ 22 years old at time of surgery. To reflect a broad population of endometriosis patients, we included patients treated through a range of clinical services, including gynecologic oncology, chronic pelvic pain/minimally invasive surgery clinic, general gynecology, and pediatric and adolescent gynecology.

Those patients with a surgical diagnosis of endometriosis (defined as a visual confirmation of endometriosis lesions, and/or a pathology specimen showing endometrial glands and stroma outside the uterine cavity, and/or an ovarian endometrioma) were included in this study. Patients with obstructive Müllerian anomalies, unclear surgical diagnosis of endometriosis or incomplete records were excluded from the study.

A standardized data abstraction form was used to abstract information from outpatient clinic visits, operative reports, and pathology reports. Information was collected on patients' demographics, surgical history, current surgical and medical treatments for endometriosis, operative findings and procedures, pathology reports, and postoperative follow-up. Endometriosis stage was defined according to the revised classification of the American Fertility Association,⁴ and was abstracted from the operative report. Subsequently, the patients were classified into 2 groups according to the endometriosis stage. The first groups ("early stage endometriosis") consisted of patients diagnosed with stage I and stage II disease, and the second group ("advanced stage endometriosis") consisted of patients diagnosed with stage III and stage IV disease. In those patients who underwent more than 1 surgery at our institution, the progression of endometriosis stage was also analyzed.

Statistical analysis was performed with the SPSS software, version 20 (SPSS Inc, Chicago, IL). Two-tailed statistical significance was set at 0.05. Continuous variables were compared with the Student t-test for normally distributed variables or with the Mann-Whitney rank test for other variables. Proportions were compared with the chi-square test. The study was approved by the Institutional Review Boards of the University of Michigan Medical School.

Results

Eighty-six adolescents and young women who met inclusion and exclusion criteria underwent surgery for endometriosis during the study period. Their baseline demographic characteristics are shown in Table 1. The

Table 1

Comparison of Pain Symptoms of Adolescents and Young Women with Early versus Advanced Stage Endometriosis

Parameter	All patients (N = 86)	Early stage (N = 66)	Advanced stage (N = 20)	P-value
Age at diagnosis (y)	19.9 \pm 1.9	18.7 \pm 2.2	20.4 \pm 1.4	<.001
BMI (kg/m ²)	24.9 \pm 4.9	24.2 \pm 4.2	26.9 \pm 6.5	.09
Parity	0 (0-1)	0 (0-1)	0 (0-1)	.2
Smoker	25 (29)	20 (33)	5 (29)	.8
Race				.2
White	78 (91)	61 (92)	17 (85)	
Black	1 (1)	1 (2)	0	
Other/Unknown	7 (8)	4 (6)	3 (15)	
First degree relative with endometriosis,	24 (28)	17 (26)	7 (35)	.4
Prior surgical diagnosis of endometriosis at outside institution	33 (38)	27 (41)	6 (30)	.4

BMI, body mass index

Except as noted, data is presented as mean \pm SD, median (range) or number (%).

majority of women (48 cases, 56%) were managed and underwent surgery by providers from the division for minimally invasive surgery (which also includes a referral clinic for endometriosis and chronic pelvic pain); the remainder were treated by general gynecologists (18 cases, 21%), pediatric and adolescent gynecologists (10 cases, 12%), reproductive gynecologists (7 cases, 8%) and gynecologic oncologists (3 cases, 4%).

The primary indication for surgery was pelvic pain in 70 (81.4%) cases, adnexal cysts in 14 (16%) cases, and infertility in 2 (2%) cases. Laparoscopy was the surgical approach in 91.9% of cases, laparotomy in 7%, and robot-assisted laparoscopy in 1%. Stage I endometriosis was found in 58 (67%) cases, stage II in 8 (9%) cases, stage III in 7 (8%) cases, and stage IV in 13 (15%) cases, for a combined rate of advanced stage endometriosis of 23%. The surgical procedures included: diagnostic laparoscopy in 6 (7%) cases, excision of implants in 28 (32.6%) cases, ablation of implants in 48 (56%) cases, lysis of adhesions in 18 (21%) cases, cystectomy for endometrioma in 11 (13%) cases, and unilateral salpingo-oophorectomy in 5 (6%) cases.

Fourteen patients (14/86, 16%) were found to have endometriomas. These cysts were located on the left side in 71% of cases, on the right side in 14% of cases, and bilaterally in 14% of cases. The median size of the ovarian endometrioma was 8 cm (range, 5–20 cm), and the median age at time of surgery for endometrioma was 20 years (range, 17–21 y). Other endometriosis findings in these patients included pelvic sidewall adhesions in 7 (50%), adhesions of the posterior cul-de-sac in 5 (36%), and superficial peritoneal endometriosis implants in 3 (21%).

The remaining 6 patients with advanced stage endometriosis who did not have endometriomas were found to have significant adhesive disease in 2 cases, obliteration of the posterior cul-de-sac in 3 cases, and a rectovaginal nodule in 1 case. Their presenting symptoms were pelvic pain (N = 4), infertility (N = 1), and rectovaginal nodule on exam (N = 1). Two of these patients underwent a previous surgery for endometrioma at other institutions, but did not have endometriomas at the time of their surgery at our institution.

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