

Endometriosis in an Adolescent Population: the Severance Hospital in Korean Experience

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The records of adolescent patients (10-21), who were admitted to the severance hospital between 1990 and 1999, were reviewed retrospectively to evaluate the age distribution, diagnosis, clinical stage, and treatment for endometriosis in adolescents. Thirty-nine patients who had undergone a laparotomy or laparoscopy and were diagnosed with endometriosis were identified. Endometriosis was classified according to the revised American Fertility Society classification (AFS). The chief symptoms leading to the diagnosis, clinical stage, age distribution, and treatment modality were reviewed. All patients, whose average age of menarche was 14.2, were diagnosed with endometriosis with an average interval of 5.9 years after menarche. The chief symptoms leading to the diagnosis were chronic pelvic pain (27%), acute pelvic pain (21%), a palpable pelvic mass (21%), and dysmenorrhea (18%). A laparoscopy was performed in 20 (51%). The majority of patients (44%) presented with the revised AFS classification stage II. Four patients (10%) presented with stage I, 11 (28%) with stage III and 7 (18%) with stage IV. Management after surgery included GnRH agonists (64.1%), expectant managements (25.7%), OCPs (5.1%) and danazol (5.1%). In adolescents with chronic pelvic pain, endometriosis is not rare. Therefore, early referral to a gynecologist to diagnose the etiology of the pelvic pain and initiate appropriate therapy is recommended.

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INTRODUCTION

Endometriosis is characterized by the presence

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and growth of the endometrial glands and stroma in an aberrant location. Theories regarding the pathogenesis include coelomic metaplasia (Meyer's theory), transplanted endometrial tissue via a hematogenous and lymphatic spread, and retrograde menstruation (theory of Sampson).^{1,2} Although no single theory provides an adequate explanation, the epidemiologic evidence supports the retrograde menstruation theory because patients with endometriosis have a shorter cycle length, a longer duration of flow, and a heavier flow than do the controls,³ and many adolescents with obstructive mullerian anomalies have endometriosis. However, cases of premenarcheal patients with endometriosis⁴ or primary amenorrhea have been reported, which does not explain endometriosis at sites remote from the pelvis, such as the lung. Immunologic susceptibility may be involved, and strong evidence of a genetic influence exists. Simpson et al reported that 6.9% of women who had close relatives with endometriosis also had endometriosis themselves. Only 1% of women had endometriosis without a family history of endometriosis.⁵

Although endometriosis is recognized to be a common cause of chronic pelvic pain of women in the reproductive periods, its occurrence in adolescents has long been underestimated. Adolescent endometriosis is not rare. In fact, its prevalence may be similar to that of endometriosis among older women. Meigs reported a 6% incidence among adolescents, which is similar to the 5-15% reported among reproductive age women who had undergone a laparotomy.^{6,7}

It is difficult to discern the incidence of endometriosis in adolescents because a surgical ex-

ploration is required, and physicians in the past have been reluctant to operate on this age group. With the availability of laparoscopy and the growing awareness of the possibility of endometriosis in the population, more accurate assessments are becoming available. Still, some asymptomatic cases remain undiagnosed. Among adolescents with chronic pelvic pain, the reported rates of endometriosis have ranged from 19% to 65%.⁸⁻¹² More recent studies have shown that the incidence of endometriosis in adolescents with chronic pelvic pain, and who are unresponsive to OCPs and NSAIDs, ranged from 69.6% to 73.0%.^{4,13}

The records of adolescent endometriosis cases in the severance hospital during the previous 10 years was reviewed to evaluate the age distribution, diagnosis, clinical stage, and treatment of endometriosis in adolescents of Korea.

MATERIAL AND METHODS

The main symptoms leading to the diagnosis of endometriosis, the method of operation, the stage and age distribution, and the surgical and medical treatment options of 39 adolescent girls aged 14-21 years¹⁴ who had undergone a laparoscopy or laparotomy between 1990-1999, and who were diagnosed with endometriosis by pathology at the Yonsei university medical college were retrospectively reviewed. Each case of endometriosis was staged according to the Revised American Fertility Society classification of endometriosis (RAFS).

RESULTS

During the period 1990-1999, 39 cases of endometriosis were diagnosed in adolescents aged between 14 and 21 years (mean age 20.1 years) (Table 1). 25.7% (10 cases) of these cases were diagnosed in the 14 -to 19 year -old group and 74.3% (29 cases) in the 20-to 21-year-old group. The

adolescents had a mean age of 14.2 years at menarche and the interval between menarche and surgery was 5.9 years (Table 2).

The main symptoms leading to a diagnosis of endometriosis were incidental findings without symptoms (10%), dysmenorrhea (18%), chronic pelvic pain (27%), acute pelvic pain (21%), palpable pelvic mass (21%), and infertility (3%) (Table 3). A laparotomy was performed in 19 cases (49%) and laparoscopy in 20 (51%).

10% (4 cases) of the 39 adolescents with endometriosis had stage I disease and 44% (17 cases) had stage II disease. Stage III disease was found in 11 cases (28%) and stage IV disease occurred in 7 cases (18%) (Table 4).

Regarding the treatment modality, surgery only was performed in 10 cases (25.7%), and medical management following surgical treatment was performed in 29 (74.3%). Surgical treatment included an ooporectomy, ovarian cystenucleation, endocoagulation and unipolar or bipolar electrocoagulation. Medical treatment included oral contraceptives (5.1%), Danazol (5.1%) and gonadotropin-releasing hormone (GnRH) agonists (64.1%) (Table 5).

Table 2. Age Distribution at Date of Menarch, Operation (n=39)

	Mean age (yr)	Range (yr)
Menarche	14.2	12 - 15
Operation	20.1	14 - 21

Table 3. Symptoms Leading to Diagnosis of Endometriosis in Adolescents (n=39)

Symptoms	No. of patients (%)
Incidental finding	4 (10%)
Dysmenorrhea	7 (18%)
Chronic pelvic pain	11 (27%)
Acute pelvic pain	8 (21%)
Palpable pelvic mass	8 (21%)
Infertility	1 (3%)

Table 1. Age Distribution in Adolescent Girls with Endometriosis (n=39)

Age (year)	14 <	<18	18 <	<19	19 <	<20	20 <	<21
No. of patients (%)	5 (12.9)		5 (12.9)		10 (25.7)		19 (48.6)	

Table 4. Stage Distribution in Adolescent Girls with Endometriosis (n=39)

Stage	No. of patients (%)
I	4 (10%)
II	17 (44%)
III	11 (28%)
IV	7 (18%)

Table 5. Medical Treatments after Surgery

	No. of patients (%)
Expectant management	10 (25.7%)
Oral contraceptives	2 (5.1%)
GnRH agonists	25 (64.1%)
Danazol	2 (5.1%)

One case of premenarcheal endometriosis and one case of a unicornuate uterus with a rudimentary horn was found.

DISCUSSION

Endometriosis is found in all ethnic and social groups, and predominantly affects patients of reproductive age. However, it can occur in women ranging from 10.5 years to 76 years of age.^{15,16}

Emans et al., after analyzing 282 girls suffering from chronic pelvic pain, found a 45% prevalence of endometriosis among adolescents.¹⁶ Reese et al and Laufer et al reported that endometriosis was diagnosed in approximately 70% of young women who had undergone a laparoscopy due to pelvic pain, which was not responsive to standard dysmenorrhea treatments.^{4,13}

Adolescents presenting with dysmenorrhea refractory to nonsteroidal anti-inflammatory drugs and oral contraceptives should be evaluated for endometriosis.⁸ A precise diagnosis is of utmost importance, as a disease-specific management can relieve the symptoms (dysmenorrhea, dyspareunia and dyschezia) and improve the quality of life.

In Korea, where the main sociocultural norm is based on Oriental Confucianism, it is quite rare and difficult for unmarried adolescent women to visit a gynecology clinic simply with dysmenorrhea and chronic pelvic pain, and even for a

diagnostic operation of those symptoms. However, in western countries those with dysmenorrhea and chronic pelvic pain find it easy to see a gynecologist and be treated appropriately according to a planned schedule, which allows early detection by a diagnostic laparoscopy.

Emmert et al. reported that the most frequent indication for a laparoscopy in girls with endometriosis was chronic pelvic pain (38.2% of girls with stage I and 66.6% of girls with stage II disease).¹⁷ In this study, the most frequent symptoms leading to a diagnosis of endometriosis was chronic pelvic pain (27%). However, a high percentage of our patients reported acute pelvic pain (21%) and a palpable pelvic mass (21%).

Laufer et al. reported that the incidence of endometriosis in adolescents with chronic pelvic pain increases with age, from 12% in the 11 to 13 year-old group to 54% in the 20 to 21 year-old group.¹⁸ In this study, the incidence of endometriosis in adolescents increased with age, from 12.9% in the 14 to 18 year-old group to 48.6% in the 20 to 21 year-old-group, although their main symptoms varied. One case of a premenarcheal patient with endometriosis was found. This does not support Sampson's theory of retrograde menstruation.

There may be a natural progression of endometriosis from atypical lesions in adolescents to the classic lesions observed in adults. Martin et al. reported an evolution pattern of subtle lesions in adolescence to more-classic lesions a decade later.^{19,20} Redwine reported that clear and red lesions occur at an average of 10 years earlier than the black ones.²¹ Laufer et al reported that 77.4% of adolescents with endometriosis had stage I disease, and 22.6% had stage II disease, while none of the 31 adolescents with grossly visible endometriosis had stage III or IV disease.¹³ In a study by Hornstein et al., the incidence of stage III or IV disease in women at the time of diagnosis was 27%.⁹

The change in the appearance of endometriotic lesions and the stage of endometriosis suggests the probable progression of endometriosis with age. In this study, 10% of the adolescents with endometriosis had stage I disease, and 44% had a stage II disease. The incidence of stage III or IV disease in adolescents with endometriosis at the

time of diagnosis was 46%. The reason for the high percentage of advanced stage of endometriosis in our adolescents is most likely that those adolescents did not visit a gynecologist until they were indicated for an operation due to acute abdominal pain or a palpable mass. This fact is in contrast to western countries where a diagnostic laparoscopy for endometriosis is common among women with chronic pelvic pain or dysmenorrhea, which much earlier detection of endometriosis.

There appears to be two reasons for the higher rates of acute laparotomy with acute abdominal pain or palpable masses than with elective surgery and laparoscopy, and in the higher percentage of advanced stage of endometriosis detected in late adolescence, where the reproductive ability would already be affected. The first is that, as previously mentioned, it is not easy for adolescents to consult a gynecologist for a pelvic examination or surgery due to Korean sociocultural circumstances. Secondly, there appears to be need for a planned education program on endometriosis.

No literature evaluating the treatment modalities in the adolescent population is available. Consequently, adolescents are treated in the same manner as adults. However, the outcomes may be different in adolescents.

Treatment may be medical, surgical, or a combination of the two. In adolescents, surgical treatment is usually conservative. Surgical therapy involves a number of techniques that remove most of or destroy the visible lesions. Different techniques include excision of the lesions, laser vaporization, endocoagulation, and unipolar or bipolar electrocoagulation.¹⁹ Whatever the surgical approach, the goal is the removal or destruction of all the visible endometriosis lesions, lysis or resection of adhesions and the restoration of a normal pelvic anatomy.

After an initial optimal surgical resection or destruction of endometriosis, medical therapy can be initiated. It can achieve two goals; pain control and hormonal suppression of the disease to minimize progression. In the selection of medical therapy, it is important to consider the patient's age, severity of symptoms, duration of symptoms and the extent of the disease. Medical treatment consists of hormonal suppression, and several

regimens are available. These include OCPs, danazol, depomedroxy progesterone acetate (DMPA), and gonadotropin-releasing hormone (GnRH) agonists. In our practice, surgical treatment only was performed in 25.7% of adolescents with endometriosis. Medical treatment consisted of OCPs (5.1%), GnRH agonists (64%), and Danazol (5.1%). GnRH agonists were the most frequently used medical therapy for endometriosis. Danazol treats patients with endometriosis by creating a low-estrogen, high androgen environment. Although extremely effective, it is rarely used in adolescents because of its unacceptable side effects. These include acne, irregular menses, weight gain, decreased breast size, fluid retention, hot flushes, atrophic vaginitis, hirsutism, and a deepening of the voice. Some of the masculinizing side effects may not be reversed after the medication is discontinued. In the adolescent population, compliance is a major issue and should be discussed with the patient before selecting a regimen. In the European Goserelin Multicenter Trial, significantly fewer patients withdrew during goserelin treatment than during danazol treatment (6.4% vs. 20.4%).²² Other studies have also shown a greater proportion of dropouts with danazol therapy. Therefore, it appears that the hypoestrogenic effects induced by GnRH agonists more tolerable than the androgenic effects caused by danazol. In our practice, danazol was used in only two adolescents before 1995, and GnRH agonists is the first-line and is the most widely used medical therapy for endometriosis.

An accurate and early diagnosis is important to relieve symptoms and suppress a possible natural disease progression that could affect a patients' potential reproductive ability.

After comparing this study with western studies, the ages onset was similar, but the stages in Korean adolescent endometriosis was far more advanced than those in western countries.

Therefore, the health care provider should bear in mind adolescent endometriosis in Korea. Considering the fact that there has been changes in dietary habits where the diet is becoming more westernized, and there is an increasing exposure to environmental toxins, which containing estrogen like compounds that are considered to be predisposing factors for endometriosis,²³⁻²⁵ an

educational program for endometriosis embracing adolescent dysmenorrhea and pelvic pain should be introduced.

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