

Adenomyosis at hysterectomy: prevalence and relationship to operative findings and reproductive and menstrual factors

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Summary

In order to estimate the frequency and risk factors for adenomyosis, the clinical records of 594 women undergoing hysterectomy were retrieved. Data were collected on indications for the intervention, age at surgery, age at menarche, parity, abortions, mode of delivery, abnormal uterine bleeding, dysmenorrhea, and menopausal status at surgery. Adenomyosis was found in 116 of the 594 patients (19.5%). A pathologic condition was present in 63 patients with fibroids (20.5%), 11 with genital prolapse (25.6%), 11 with benign ovarian tumors (17.8%), six with endometrial hyperplasia (13.6%), two with cervical cancer (18.2%), ten with endometrial cancer (16.1%), and 13 with ovarian cancer (21.3%). No relationship was found between adenomyosis and endometriosis. On the contrary, a strong relationship was found between adenomyosis and parity, cesarean section, induced abortions, dysmenorrhea, abnormal uterine bleeding, and late age at menarche. These results show that adenomyosis is a common pathologic finding, significantly related to reproductive and menstrual characteristics of the patients.

Key words: Adenomyosis; Hysterectomy; Risk factors; Uterus.

Introduction

Adenomyosis is a benign gynecologic disease characterized by heterotopic deposits in the myometrium and distortion of the myometrial architecture due to smooth muscle hyperplasia – hypertrophy [1]. It may be asymptomatic, may be detected as an incidental pathologic finding, or may cause abnormal uterine enlargement or dysmenorrhea [2].

Adenomyosis has been recognized as a clinical entity for over a century [3]. In spite of long knowledge and many published surgical series regarding adenomyosis, there is still widespread disagreement as to its incidence and risk factors, possibly because only post – hysterectomy diagnoses were possible. Moreover, research in which biostatistical analysis of data has been performed are extremely limited.

It was the aim of this retrospective study to determine the incidence of adenomyosis in uteri removed at surgery and to evaluate the relationship between age, menstrual and reproductive history, symptoms, operative findings and the risk of the disease.

Materials and Methods

The data in our study have been derived from clinical records of 594 consecutive women undergoing hysterectomy at the 2nd Department of Obstetrics and Gynecology of the Aristotelian University of Thessaloniki from January 1991 to January 1995. It should be noted that only files without missing data were studied. Data were collected on indications for the intervention, age at surgery, age at menarche, abortions, parity, mode of deli-

very, menopausal status at surgery, presence of endometriosis, history of abnormal uterine bleeding, and dysmenorrhea. Indications for surgery were myomas in 308 cases, genital prolapse in 43, benign ovarian tumors in 62, endometrial hyperplasia in 44, cervical cancer in 11, endometrial cancer in 62, ovarian cancer in 13, and leiomyosarcoma in 3. The presence or absence of adenomyosis was obtained from the pathology records. Adenomyosis was diagnosed by the presence of normal appearing endometrial glands and stroma-one or more standards low – power fields away from the endometrial myometrial junction [4]. It should be noted that the aim of the study was unknown to the pathologists in order to exclude the under or upper diagnosis of the disease.

Biostatistical analysis of data was performed by the SPSS statistical package for the MS Windows (Version 7.0, International Use, C SPSS Inc. 1996), and Statcalc of EpiInfo (Version 6.04, C WHO and CDC, 1996). The Chi-square crosstab procedure and Chisquare test divided by Mantel-Haenszel was applied to compare the occurrence of adenomyosis between subgroups of each variable [5]. To estimate the risk of adenomyosis, crude odd ratios (OR) were calculated as approximations of relative risks and their exact lower and upper 95% confidence intervals (95% C.I.).

Results

Adenomyosis was present in 116 out 594 uteri, an incidence of 19.5%. There was a 20.5% co-association of the disease with myomas, 25.6% with genital prolapse, 17.8% with benign ovarian tumors, 13.6% with endometrial hyperplasia, 18.2% with cervical cancer, 16.1% with endometrial cancer, 21.3% with ovarian cancer and 0% with leiomyosarcoma (Table 1). These differences were not statistically significant.

Table 1. — Frequency of adenomyosis in hysterectomy specimens according to the main disease

Indication for hysterectomy	Adenomyosis n (%)	No adenomyosis n (%)
1. Myoma	63 (20.5)	245 (79.5)
2. Genital prolapse	11 (25.6)	32 (74.4)
3. Benign ovarian tumor	11 (17.8)	51 (82.2)
4. Endometrial hyperplasia	6 (13.6)	38 (86.4)
5. Cervical cancer	2 (18.2)	9 (81.8)
6. Endometrial cancer	10 (16.1)	52 (83.9)
7. Ovarian cancer	13 (21.3)	48 (78.7)
8. Leiomyosarcoma	0 (0)	3 (100)

Chi-square test

Groups 2, 4, 5 and 8, because of small samples, were taken in to account

Table 2. — Frequency of adenomyosis in hysterectomy specimens according to selected characteristics

	Adenomyosis n	No adenomyosis n	Odds ratio (95% confidence interval.)
Age at surgery (yrs)			
<50	61	234	1.00 (Ref.)
50-59	39	97	1.54 (0.94-2.54)
≥60	16	147	0.42 (0.22-0.78)
* χ^2_{M-H}			p<0.001
Age at menarche (yrs)			
<11	8	64	1.00 (Ref.)
12-13	80	272	2.35 (1.04-5.55)
≥14	28	142	1.58 (0.64-3.99)
* χ^2_{M-H}			p<0.05
Parity			
0	2	38	1.00 (Ref.)
≥1	116	438	5.03 (1.16-30.61)
* χ^2			p<0.05
Induced abortions			
0	64	328	1.00 (Ref.)
≥1	52	150	1.78 (1.15-2.74)
* χ^2			p<0.01
Spontaneous abortions			
0	88	296	1.00 (Ref.)
≥1	28	182	0.52 (0.32-0.84)
* χ^2			p<0.01
Caesarean Section			
Yes	22	20	1.00 (Ref.)
No	94	458	0.19 (0.09-0.39)
* χ^2			p<0.001
Abnormal uterine bleeding			
Yes	54	66	1.00 (Ref.)
No	66	288	0.15 (0.09-0.26)
* χ^2			p<0.001
Dysmenorrhea			
Yes	23	18	1.00 (Ref.)
No	93	460	0.16 (0.08-0.32)
* χ^2			p<0.001
Endometriosis			
Yes	10	38	1.00 (Ref.)
No	70	202	1.32 (0.52-2.99)
* χ^2			**NS
Menopausal status			
Premenopause	64	312	1.00 (Ref.)
Postmenopause	52	166	1.53 (1.00-2.53)
* χ^2			p<0.05

* χ^2_{M-H} = Chi-square test devised by Mantel-Haenszel; **NS = not significant

The distribution of patients with and without adenomyosis according to selected characteristics is shown in Table 2. The disease was significantly less common in women over 60 years old (OR 0.42, 95% CI 0.22-0.78) and slightly more common (OR 1.54, 95% CI 0.94-2.54) in women between 50-59 years old compared to women under 50 years old. Regarding menarche, the risk of adenomyosis was significantly higher in women whose menarche occurred from 12-13 years (OR 2.35, 95% CI 1.04-5.55) or at age 14 or older (OR 1.58, 95% CI 0.64-3.99) compared to women whose menarche occurred at age 11 or younger. In women with one or more births as well as in women reporting induced abortions the disease was more common (OR 5.03, 95% CI 1.16-30.61; OR 1.78, 95% CI 1.15-2.74, respectively) than in nulliparous as well as in women reporting no induced abortions. On the contrary, in women reporting spontaneous abortions, the incidence of adenomyosis decreased compared to women with no spontaneous abortions (OR 0.52, 95% CI 0.32-0.84). Adenomyosis was also significantly more frequent in women reporting Caesarean section, abnormal uterine bleeding or dysmenorrhea compared to women without these variables (OR 0.19, 95% CI 0.09-0.39; OR 0.15, 95% CI 0.09-0.26; OR 0.16, 95% CI 0.08-0.32, respectively). No relationship was found between adenomyosis and endometriosis (OR 1.32, 95% CI 0.52-2.99). Finally, the disease was significantly more common in postmenopausal women in comparison with premenopausal ones (OR 1.53, 95% CI 1.00-2.53).

Discussion

The frequency of adenomyosis reported in the literature ranges widely from 5 to 70 per cent [1, 4, 6, 7, 8, 9, 10] with a mean of 20-30% [2], which is in agreement with our results.

The pathologist's awareness of the condition, the selection criteria for the myometrial specimens, and the varying histological criteria for the diagnosis of adenomyosis contribute to the disparity in estimates [2]. Autopsy series, in which uteri did not necessarily require removal for symptoms, would provide a better estimate of the prevalence of adenomyosis in the population at large. In the only necropsy study we found in the literature, a 53.7% frequency of adenomyosis has been reported [10]. Perhaps the use of noninvasive diagnostic methods, such as endovaginal ultrasound and magnetic imaging, may offer a more accurate approach to the diagnosis of adenomyosis [11, 12].

No significant correlation was found between adenomyosis and additional pelvic pathology, such as myomas, ovarian tumors, genital prolapse, endometrial hyperplasia or endometrial carcinoma. This finding is in agreement with the results of the most recent study, the only one in which statistical analysis of the data was performed [9]. It should be noted that the incidence of adenomyosis in cases of endometrial hyperplasia or carcinoma is not high. This finding is in contrast to other previous reports [13] and would tend to refute the hyperestrinism theory of etiology of the disease [14], and also negate

he value of synthetic progestins in prophylaxis [4].

In our study the frequency of adenomyosis was higher in women between 50 and 59 years of age, which is in agreement with the results of a very recent report [9], although other studies report a frequency of 70 to 80 percent of the disease in women in their fourth and fifth decades of life [1, 10, 15]. Perhaps this could be attributed to the size of the samples. In sharp contrast to previous studies [2, 9] we found a higher association of the disease at postmenopausal age. This is correlated to our finding that adenomyosis was more frequent in women in their sixth decade of life.

Regarding menarche, our results do not confirm the absence of a relationship between the age of menarche and the presence of adenomyosis that has been noted by some authors [9]. According to our findings, women with late menarche appear to be at higher risk.

Of the 118 patients with adenomyosis, 116 were parous and only two were nulliparous. The overwhelming proportion of parous women in the present study confirms previously reported data [2, 5, 9, 16] and lends support to the concept that parity seems to be a risk factor for adenomyosis [17]. Similarly, the frequency of adenomyosis in our study was higher in subjects with induced abortions. Surprisingly, the opposite was observed in subjects with spontaneous abortions, a finding that we are not able to explain. The mode of delivery seems to correlate with the frequency of adenomyosis. In our material a strong relationship was found between frequency of adenomyosis and prior cesarean section a finding that is in contrast to previous studies [9, 18].

Regarding symptoms, patients with adenomyosis often complain of abnormal uterine bleeding or dysmenorrhea [1, 4, 15]. Our results confirm this observation.

Finally, no relationship was observed between adenomyosis and endometriosis. This observation confirms previously reported data [2, 9]. This finding, in combination with the observation that parity is associated with a significantly increased frequency of adenomyosis, suggests that parity seems to have an opposite effect on adenomyosis and endometriosis, being a risk factor for the former and protective for the latter [17].

In conclusion, our study shows that adenomyosis is a common pathologic finding in surgically removed uteri, irrespective of the reason for surgery. This pathologic condition is significantly related to reproductive and menstrual characteristics of the patients.

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