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ORIGINAL ARTICLE

Endometriomas are more frequent on the left side

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Abstract

Objective. To investigate whether asymmetry exists in the left- and right-distribution of ovarian cystic lesions in women with endometriosis. *Methods.* We evaluated operative reports of women who underwent surgical treatment of endometrioma (n = 253) from January 1999 to December 2003. We included only those cases that had not been previously operated on (n = 234). Data of all operative findings consisted of a written report and a diagram, fulfilling the revised American Fertility Society Classification of endometriosis. *Results.* Endometrioma was found in the left ovary in 113 women, in the right ovary in 67, and bilaterally in 54. Left ovarian unilateral endometrioma was found more frequently (62.8%) than right endometrioma were compared with the expected 50% using Pearson's χ^2 -test. The results confirmed asymmetry (p = 0.001). We found 4 cases of ovarian cancer associated with left endometrioma without histological proof of transition. *Conclusion.* Our results confirm a left lateral predisposition of endometrioma. This predisposition may be caused by the presence of the sigmoid colon in the left side of the pelvis, which decreases peritoneal fluid movement. Our findings may support the transplantation theory of the origin for endometriosis.

Key words: Endometriosis, endometrioma, ovarian tumor

Introduction

Endometriosis is a pathologic condition commonly found in women of reproductive age. It was first described in 1860 by von Rokitansky (1), and since then has been defined as the presence of tissue resembling functioning endometrial glands and stroma outside the uterine cavity. A number of theories have attempted to explain the etiology of endometriosis. Currently, theories regarding histogenesis include the transplantation of exfoliated endometrium (2,3), coelomic metaplasia (4), and embryonic Mullerian rests (5-7). Several previous studies reported that the left ovary is more commonly affected by endometrioma than the right ovary (8,9). The purpose of our study was to confirm this suspicion with a random sample of clinical data.

Materials and methods

The medical records of 284 women with histopathologically proven pelvic endometriosis were reviewed. These patients were diagnosed between January 1999 and December 2003 by direct visualisation at laparoscopy (n = 96) and laparotomy (n = 188). Data on operative findings consisted of written reports and a diagram, which fulfills the revised American Fertility Society (AFS) classification of endometriosis (10). Histopathology examination was performed on all excised specimens. In our study, we included only 253 cases with ovarian endometrioma. Nineteen women were excluded from analysis because their histories included a previous laparotomy.

We collected information on the age of the patients at the time of surgery, mean number of births, coexisting pathologies and side of endometrioma.

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Data normally distributed were analysed using the Student's *t*-test. The results were expressed as mean and 95% confidence intervals. Odds ratios were calculated. Proportions were then analysed using Pearson's χ^2 -test. Statistical analysis was performed via Stata 8.0 for Windows Program. The differences were considered statistically significant if p < 0.05.

Results

All patients in this study were Polish women living in Gdańsk. Of 284 women with histopathologically proven endometriosis, non-cystic endometriotic implants were found in 31 (10.9%) cases. Ovarian endometrioma was encountered in 253 women (89.1%). These patients underwent surgical treatment for pelvic pain caused by persistent ovarian cysts (n = 157, 62.1%), non-symptomatic ovarian tumors found during gynecological/USG examination (n = 71, 28.1%), or infertility (n = 25, 9.8%). The mean age of this group was 37.8 (SD: 8.4 years) and the mean number of births was 1.4 (SD: 1.4). In this group, we noted 58 cases of leiomyoma (22.9%), 8 cases of serous ovarian cyst (3.2%), 6 cases of peritubular cyst (2.4%), 4 cases of ovarian cancer (1.6%), and 3 cases with cystic corpus luteum (1.2%). All ovarian cancers were endometroid adenocarcinomas associated with left endometrioma without histological proof of transition. Two had a history of long-standing endometriosis (13 and 15 years from the initial diagnosis). A third patient underwent ovarian stimulation with buserelin/HMG in the long protocol for in-vitro fertilisation and embryo transfer (unsuccessful attempt).

Of 253 cases with cystic endometriotic lesions, 19 women (7.5%) had been previously operated on for other reasons and were excluded from further analysis. Of a total of 234 women operated for the first time, endometrioma was found in the left ovary in 113 cases (48.3%), in the right ovary in 67 cases (28.6%), and bilaterally in 54 cases (23.1%). Among women with unilateral ovarian endometrioma (n = 180), a left cyst was found more frequently (62.8%) than a right cyst (37.2%) (p < 0.001, odds ratio 2.8, 95% confidence interval 1.9, 4.4). This is significantly different from the expected proportions of 50% (Pearson's χ^2 -test 11.75, p = 0.0006).

Discussion

In agreement with previous reports (8,9,11), we found that the left ovary is more commonly affected by endometrioma than the right ovary.

Other studies also report (12,13) that deep endometriosis and ureteral endometriosis are more common on the left side. Endometriotic implants are also found more frequently on the left hemipelvis (8).

We could not analyse the distribution of endometriotic implants because written reports and diagrams omitted information about the side of these lesions. We did not find any histologically proven cases of endometriotic nodules of the rectovaginal septum.

Left lateral predisposition of endometrioma could be explained by the anatomical differences in the right and left hemipelvis. The presence of the sigmoid colon on the left side may decrease elimination of exfoliated endometrial fragments coming through the fallopian tubes during menstruation. Transplanted endometrial cells could be less effectively eradicated across menstrual cycles on the left hemipelvis. Others have described a weaker and slower flow of the peritoneal fluid of the left hemipelvis compared with the right hemipelvis (14).

Chapron et al. suggest that left lateral predisposition of endometriosis is caused by the greater exposure to progesterone of the right hemipelvis. In the right ovary, progesterone levels are elevated by more frequent ovulation (12). The asymmetrical distribution of endometriotic lesions supports the transplantation theory, which states that endometriosis results from regurgitated, exfoliated endometrial cells (2). The competitive metaplastic theory postulates that endometriosis occurs as metaplasia of the coelomic epithelium (4,6,7,15). The probability of metaplasia is equal (50%) for both sides, therefore our results reporting asymmetrical distribution of the endometriomas do not support the theory of coelomic metaplasia. The analysis of additional pathologies coexisting with endometriomas indicates that the most frequent is leiomyoma (16).

Of 284 patients with endometriosis, four (1.4%)suffered from ovarian cancer. All cancers were endometroid adenocarcinomas and were recognised in the group of women with endometriomas (4/253,1.6%). The mean age in this group was 37.8 (SD: 8.4 years). Others reported similar frequencies of ovarian cancer in endometriosis patients with comparable ages at diagnosis (17). Several recently published studies show a significantly higher risk of ovarian cancer in women with endometriosis (18,19), especially among those with endometriomas (19). This increased risk is not found in women with other benign ovarian or functional cysts (20). Endometroid adenocarcinoma is the most common ovarian cancer noted in endometriosis (17). Endometroid adenocarcinoma and clear-cell carcinoma are more frequently observed in the left ovary than in the right ovary (21). This correlates with the

reported left lateral predisposition of endometriosis and endometrioma. Endometriosis and the development of malignant tumors of the pelvis require further investigation.

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