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EVALUATION OF THE RISK OF EPITHELIAL OVARIAN CANCER IN RELATION TO PRIOR DIAGNOSIS AND OVARIAN SURGERY FOLLOWING OVARIAN CYSTS AND ENDOMETRIOSIS

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ABSTRACT

Background: Eliminating precursor lesions may help avoid a small number of ovarian neoplasms. However, there is a dearth of information in the literature currently available about risk assessment after an earlier diagnosis and surgery for endometriosis and cysts.

Aim: Assessing the risk of epithelial ovarian cancer in relation to prior diagnosis and ovarian surgery following endometriosis and ovarian cysts was the goal of the current investigation.

Methods: The current study evaluated 1624 women who received an ovarian cancer diagnosis at the Institute throughout the specified study period. In addition, 2626 females from the general community were recruited as study controls. To evaluate the collected data, regression analysis was used.

Results: ovarian cyst history was linked to a higher risk of borderline mucinous ovarian tumor, although the risk did not change significantly depending on the outcome of later ovarian surgery. Females with ovarian cysts who do not have surgery have a higher chance of developing epithelial carcinoma, whereas those who have surgery have a lower risk. This decreased risk was particularly noticeable for invasive serous cancers. Clear and endometrioid invasive tumors were three times more common in women with a history of endometriosis, but the risk was lower for those who had ovarian surgery.

Conclusion: The present study shows that ovarian cysts and endometriosis have different associations with the risk of particular subtypes of ovarian cancer. It also suggests that ovarian surgery may reduce the risk of invasive illnesses in females with these problems.

Keywords: endometriosis, epidemiology, ovarian cyst, ovarian cancer, epithelial ovarian cancer

INTRODUCTION

The tumor's subtype affects how epithelial ovarian cancer develops. It is thought that mucinous ovarian tumors may be especially amenable to lowering the risk with the removal of the benign tumor precursors. Somatic genetic alterations and risk factor patterns in mucinous tumors vary among benign, borderline, and invasive tumor subtypes, which are typically consistent with the developmental sequence from adenoma to carcinoma.[1] Serous tumors, borderline tumors, and low-grade

invasive tumors can all develop from the benign antecedents in the same way. Therefore, such a risk-reduction strategy could cause malignant tumors to spread. Both clear cell ovarian tumors and endometrioid tumors are mostly invasive, can develop from endometriosis foci, and can be removed to lower the risk of cancer.[1,2]

In the lack of a morphologically recognizable precursor, the most prevalent subtype of ovarian cancer, high-grade invasive serous disease, has long been thought to originate from the surface of the ovarian epithelium, perhaps and preferentially from epithelial cells within inclusion cysts. The fallopian tube's fimbrial end has recently been proposed as a potential alternate tumor genesis location. 3. Evidence of molecular antecedents from the ovarian and fimbrial mucosal epithelium has surfaced in some studies. Given their comparatively unknown histological appearance, a sizable fraction of invasive tumors are thought to share pathogenetic pathways with invasive serous tumors and cannot be easily categorized into any of the previous histological categories.[5]

According to their benign predecessors, a small number of ovarian cancer types are thought to occur more frequently than others. The risk impact of surgically removing ovarian tissue may differ depending on the tumor's subtype.[5] The information currently available on the study of epithelial ovarian cancer that evaluates the risk of ovarian cancer linked to ovarian surgery and a previous diagnosis of ovarian cysts or endometriosis focuses on characterizing risk among subgroups of tumors that are jointly classified based on histology and degree of invasiveness.

MATERIALS AND METHODS

The goal of the current evaluation clinical investigation was to determine the risk of epithelial ovarian cancer in relation to prior diagnosis and ovarian surgery following endometriosis and ovarian cysts. Prior to research participation, informed permission was obtained from each participant both verbally and in writing.

The current study evaluated 1624 women who received an ovarian cancer diagnosis at the Institute throughout the study period, and 2626 women from the general community were included as study controls. During the specified research period, the included ladies, who ranged in age from 35 to 74, were diagnosed with primary invasive tumors or borderline epithelial ovarian cancer. After interviewing 2116 participants, 76.6% (n=1624) of them were female, and 1190 of them had invasive illness.

The International Classification of Diseases for Oncology (ICD-O)6 was used to categorize the tumors, and the World Health Organization's recommendations were used to group these codes. 7. Subgroups of the tumors were identified as serous types (n = 904), endometrioid (n = 208), mucinous (n = 224), clear cell (n = 70), and miscellaneous epithelial tumors (n = 218).

Common histological types were categorized as carcinoma not otherwise described (n = 32), mixed cell adenocarcinoma (n = 66), and not other specified adenocarcinoma (n = 68). Random selection was used to choose the control subjects. Personal interviews were used to collect data, and lifestyle characteristics, menstrual history, reproductive history, contraceptive history, and family history of cancer were evaluated. demographic traits. Participants were asked if they had ever received a diagnosis of ovarian cyst or endometriosis, and if so, when. Prior to reference data regarding diagnosis and operation time, subjects were also asked about all ovarian surgeries. Inquiries concerning the extent of tissue removal were also made of those who had previously had ovarian surgery. Women who had ovarian surgery during the research period and those who had endometriosis or an ovarian cyst during the previous year were excluded from the study.

Prior to receiving a cancer diagnostic showing a tumor growing from remains, ladies who had previously been diagnosed with primary ovarian cancer and lateral reported having bilateral oophorectomy. The risk of both serous and mucinous histologic categories was evaluated in borderline tumors. Clear cells, endometrioid, mucinous, and/or serous tumor types were the additional categories into which histological tumor types were separated.

The collected data was statistically evaluated using the Student t-test, ANOVA (analysis of variance), Chi-square test, and SPSS (Statistical Package for the Social Sciences) software version 24.0 (IBM Corp., Armonk, NY, USA) for evaluating descriptive measures. The findings were presented as frequency, percentages, mean, and standard deviation. Statistical significance was defined as a p-value of less than 0.05.

RESULTS

Assessing the risk of epithelial ovarian cancer in relation to prior diagnosis and ovarian surgery following endometriosis and ovarian cysts was the goal of the current evaluation clinical investigation. The current study evaluated 1624 women who received an ovarian cancer diagnosis at the Institute throughout the study period, and 2626 women from the general community were included as study controls. In individuals with borderline and invasive tumors, the risk of epithelial ovarian

cancer was associated with ovarian surgery and diagnosis; in controls, 250 subjects had a history of ovarian cancer, with 50, 96, and 136 instances of borderline tumors, invasive tumors, and all cancers, respectively. In 150 patients, unilateral oophorectomy was performed on 28, 56, and 84 patients with all, invasive, and borderline cancers.

Additional procedures were performed on 100 patients with invasive, borderline, and all tumors in 22, 30, and 52 patients. Surgery was performed on all tumors, borderline, invasive, and control tumors in 228, 48, 82, and 130 at least five years prior to diagnosis. In 438, 94, 188, and 282 controls, borderline, invasive, and all cancers, an ovarian cyst was found. Following a cyst, ovarian surgery was performed in 190, 36, 50, and 86 controls, borderline, invasive, and all tumors; in 172, 34, 46, and 80 controls, borderline, invasive, and all tumors, this procedure was performed five years prior to diagnosis. Surgery was performed on 40, 8, 20, and 28 patients who had endometriosis-diagnosed borderline, invasive, and all tumors (188, 34, 128, and 162). For 32, 8, 18, and 26 participants, respectively, it was completed at least five years prior to diagnosis (Table 1).

Among 250 ovarian surgeries, 30 and 18 cases were found to be borderline mucinous and borderline serous, respectively, with unilateral oophorectomy in 16 and 12 subjects, respectively, indicating the association between the risk of epithelial ovarian cancer and ovarian surgery and diagnosis in subjects based on histopathological type. Surgery was performed on 30 and 16 borderline mucinous and borderline serous lesions at least five years after the diagnosis. 48 and 42 borderline mucinous and borderline serous lesions were diagnosed in 438 ovarian cyst diagnoses, with the procedure being performed five years prior to surgery in 22 and 10 individuals, respectively. Twelve and twenty of the 188 individuals with endometriosis had borderline mucinous and borderline serous lesions; surgery was performed on six of them and two of them prior to five years, respectively (Table 2).

According to the study's findings, the risk of epithelial ovarian cancer was associated with ovarian surgery and the type of histopathological tumor in 250 subjects who had undergone ovarian surgery. Of these, 52, 20, and 10 subjects had serous invasive, endometrioid, and clear invasive ovarian cancer, while 34, 12, and 6 subjects had oophorectomy, and 52, 18, and 8 subjects had oophorectomy within 5 years of diagnosis.

In addition to the ovarian cyst, which was diagnosed in 438 controls, ovarian surgery was performed on 22, 18, and 8 subjects, respectively, after 5 years of diagnosis in 22, 16, and 6 subjects, and on 90, 60, and 30 serous invasive, endometrioid and clear invasive, and other invasive tumors excluding mucinous tumors. Surgery was performed on 12, 6, and 2 serous invasive, Endometrioid and clear invasive, and other invasive excluding mucinous lesions, respectively, in 12, 4, and 2 subjects, after endometriosis was diagnosed in 62, 52, and 14 serous invasive, Endometrioid and clear invasive, and other invasive excluding mucinous lesions, respectively (Table 3).

DISCUSSION

The current study evaluated 1624 women who received an ovarian cancer diagnosis at the Institute throughout the study period, and 2626 women from the general community were included as study controls. In individuals with borderline and invasive tumors, the risk of epithelial ovarian cancer was associated with ovarian surgery and diagnosis; in controls, 250 subjects had a history of ovarian cancer, with 50, 96, and 136 instances of borderline tumors, invasive tumors, and all cancers, respectively. In 150 patients, unilateral oophorectomy was performed on 28, 56, and 84 patients with all, invasive, and borderline cancers. 100 individuals with 22, 30, and 52 invasive, borderline, and all cancers had further procedures.

For all cancers, borderline, invasive, and control tumors, surgery was performed at least five years before to diagnosis in 228, 48, 82, and 130 cases. 438, 94, 188, and 282 controls, borderline, invasive, and all cancers were found to have an ovarian cyst. In 190, 36, 50, and 86 controls, borderline, invasive, and all tumors, ovarian surgery was performed following a cyst; in 172, 34, 46, and 80 controls, borderline, invasive, and all tumors, this surgery was performed five years prior to diagnosis.

Endometriosis was identified in 188, 34, 128, and 162 controls, borderline, invasive, and all tumors; surgery was performed on 40, 8, 20, and 28 of these participants, respectively, and at least five years prior to diagnosis in 32, 8, 18, and 26 of these subjects. These results were consistent with the studies of Melin A et al[8] in 2006 and Erzen M et al[9] in 2001 where authors reported distribution of ovarian tumors similar to the present study in their respective studies.

According to the study's findings, out of 250 ovarian surgeries, 30 and 18 cases were determined to be borderline mucinous and borderline serous, respectively, with unilateral oophorectomy performed on 16 and 12 subjects, respectively, in relation to the risk of epithelial ovarian cancer and ovarian surgery and diagnosis in subjects based on histopathological type. Surgery was performed on 30 and 16 borderline mucinous and borderline serous lesions at least five years after the diagnosis. 48 and

42 borderline mucinous and borderline serous lesions were observed in 438 ovarian cyst diagnoses; surgery was performed on 22 and 12 cases, respectively, five years prior to surgery on 22 and 10 subjects, respectively.

Twelve and twenty of the 188 individuals with endometriosis had borderline mucinous and borderline serous lesions; surgery was performed on six of them and two of them prior to five years, respectively. These results were consistent with those of Brinton LA et al. (2005) and Kobayashi H et al. (2007), who found that the risk of epithelial ovarian cancer associated with ovarian surgery and diagnosis in subjects based on histopathological type was similar to the findings of the current study. It was shown that in 250 patients who had undergone ovarian surgery, the risk of epithelial ovarian cancer was associated with ovarian surgery and diagnosis based on histological tumor type: serous invasive, endometrioid, and clear invasive, and other invasive excluding mucinous were seen in 52, 20m and 10 subjects respectively where In 34, 12, and 6 participants, oophorectomy was performed; in 52, 18, and 8 subjects, it was performed at least 5 years after diagnosis. In addition to the ovarian cyst, which was diagnosed in 438 controls, ovarian surgery was performed on 22, 18, and 8 subjects, respectively, after 5 years of diagnosis in 22, 16, and 6 subjects, and on 90, 60, and 30 serous invasive, endometrioid and clear invasive, and other invasive tumors excluding mucinous tumors. Surgery was performed in 12 cases of serous invasive endometriosis, 6 cases of endometrioid and clear invasive endometriosis, and 2 cases of serous invasive endometriosis.

Twelve, four, and two participants had endometrioid and clear invasive procedures, as well as additional invasive procedures that did not include mucinous lesions. These findings were consistent with those of Borgfeldt C et al. (2004) and Dal Maso L et al. (2001), who proposed that the risk of epithelial ovarian cancer was associated with ovarian surgery and diagnosis in subjects based on histopathological tumor type similar to the one used in this study.

CONCLUSION

Taking into account its limitations, the current study comes to the conclusion that ovarian cysts and endometriosis have different relationships with the risk of particular subtypes of ovarian cancer. It also suggests that ovarian surgery may reduce the risk of invasive diseases in females who have these conditions.

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Parameters	Controls (n=2626)	Borderline tumor cases (n=430)	Invasive tumor cases (n=1182)	All tumor cases (n=1612)
Ovarian surgery ever				
Yes	250	50	96	136
Unilateral oophorectomy	150	28	56	84
Others	100	22	30	52
No	2364	378	1088	1466
Surgery minimum 5 years before diagnosis	228	48	82	130
Ovarian cyst diagnosis ever				
Yes	438	94	188	282
No	2142	320	962	1282
Ovarian surgery following cyst				
Yes	190	36	50	86
No	242	58	134	192
Ovarian surgery minimum 5 years before diagnosis	172	34	46	80
Diagnosed with endometriosis ever				
Yes	188	34	128	162
No	2398	390	1042	1432
Ovarian surgery after endometriosis				
Yes	40	8	20	28
No	146	24	106	130
Ovarian surgery after endometriosis minimum 5 years before diagnosis	32	8	18	26

Table 1: Epithelial ovarian cancer risk related to ovarian surgery and diagnosis in subjects with borderline and invasive tumors

Parameters	Controls (n=2626)	Borderline mucinous tumors (n=178)	Borderline serous tumors (n=232)
Ovarian surgery ever			
Yes	250	30	18
Unilateral oophorectomy	150	16	12
Others	100	14	6
No	2364	148	212
Surgery minimum 5 years before diagnosis	228	30	16
Ovarian cyst diagnosis ever			
Yes	438	48	42
No	2142	124	180
Ovarian surgery following cyst			
Yes	190	22	12
No	242	26	30
Ovarian surgery minimum 5 years before diagnosis	172	22	10
Diagnosed with endometriosis ever			
Yes	188	12	20
No	2398	160	212
Ovarian surgery after endometriosis			

Yes	40	6	2
No	146	6	16
Ovarian surgery after endometriosis minimum 5 years before diagnosis	32	6	2

Table 2: Epithelial ovarian cancer risk related to ovarian surgery and diagnosis in subjects based on histopathological type

Parameters	**Controls (n=2626)**	**Serous invasive tumors (n=664)**	**Endometrioid and clear invasive tumors (n=266)**	**Other invasive excluding mucinous (n=206)**
Ovarian surgery ever				
Yes	250	52	20	10
Unilateral oophorectomy	150	34	12	6
Others	100	18	8	4
No	2364	608	242	176
Surgery minimum 5 years before diagnosis	228	52	18	8
Ovarian cyst diagnosis ever				
Yes	438	90	60	30
No	2142	568	188	168
Ovarian surgery following cyst				
Yes	190	22	18	8
No	242	66	40	22
Ovarian surgery minimum 5 years before diagnosis	172	22	16	6
Diagnosed with endometriosis ever				
Yes	188	62	52	14
No	2398	596	210	192
Ovarian surgery after endometriosis				
Yes	40	12	6	2
No	146	48	46	12
Ovarian surgery after endometriosis minimum 5 years before diagnosis	32	12	4	2

Table 3: Epithelial ovarian cancer risk related to ovarian surgery and diagnosis in subjects based on histopathological tumor type