
GYNAECOLOGY

Primary Epithelial Cancer and Malignant Germ Cell Tumor of the Ovary: a Review of 368 Cases

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ABSTRACT

Objective To analyze the clinical characteristics, histological types, surgical findings, and staging of primary epithelial cancer and malignant germ cell tumors of the ovary.

Design Cross-sectional study.

Setting Department of Obstetrics and Gynecology, Faculty of Medicine Siriraj Hospital, Mahidol University.

Subjects Three hundred and sixty-eight patients with primary epithelial cancer and malignant germ cell tumor of the ovary were evaluated retrospectively between January 1988 and December 1997. Information on patients' characteristics was identified according to age, parity, menopausal status, symptomatology, tumor size, laterality, histological type, and staging.

Results The incidence of primary ovarian cancer was 23.7% of all ovarian tumors. Epithelium was the most common histological type (84.3%), and germ cell was the second most common tumor (9.1%) found in this study. Serous (36.4%) and dysgerminoma (30.6%) were the most common cell type among epithelial and germ cell tumor, respectively. The mean age of patients with germ cell tumor was significantly less than that of patients with epithelial tumor ($p < 0.001$). Nulliparity was found more commonly in patients with germ cell tumor than those with epithelial tumor ($p < 0.001$) and almost all patients with germ cell tumor were in reproductive age. The majority of patients with germ cell tumor had unilateral ovarian involvement (83.3%), while bilaterality was found more commonly in epithelial group ($p < 0.01$). The most common presenting symptoms of patients with epithelial tumor was abdominal distention, while palpable abdominal mass was the most common symptoms in the germ cell group. More than half of the patients in both groups had advanced stage of disease at the time of diagnosis. However, presenting symptoms and staging showed no significant difference between the two groups.

Conclusion Ovarian malignancies are not uncommon among ovarian tumors. While malignant germ cell tumor tends to occur in young women, epithelial ovarian cancer is primarily the disease of older group. It is one of the most challenging problems in gynecology, since more than half of the patients already have stage III or IV disease at the time of diagnosis.

Key words: Ovarian tumor, epithelial tumor, malignant germ cell tumor

Ovarian cancer presents an increasing challenge to the physician. Although there have been many advances in treatment of the disease, the overall 5-year survival rate is only 40% as the vast majority of cases are diagnosed at advanced stage of disease.⁽¹⁾ Ovarian cancer is the leading cause of death among gynecological malignancies in the United States.^(2,3) In Thailand, it comprises about 16% of all gynecological cancers and is the second most common cancer of the female genital tract after cervical cancer.⁽⁴⁾ Three main varieties arise from the three types of ovarian tissue: epithelial, germ, and stromal cell. Epithelial tumors are the most common cell type, accounting for 80-90% of all ovarian cancers.⁽⁵⁻⁷⁾ Germ cell tumors comprise 5-15% of ovarian cancers and is the second most common ovarian cancer.⁽⁷⁻⁹⁾ The objective of this study was to analyze the clinical characteristics, histological types, surgical findings, and staging of primary epithelial cancer and malignant germ cell tumor of the ovary at Siriraj Hospital over a ten-year period.

Materials and Methods

The study comprises all women with a histological diagnosis of primary epithelial cancer and malignant germ cell tumor of the ovary, treated at Siriraj Hospital between January 1, 1988 and December 31, 1997. Information on patients' characteristics, including age, parity, menopausal status, presenting symptoms, tumor size (greatest diameter), laterality, histological types, and staging was obtained from the medical records and pathology reports of the Department of Obstetrics and Gynecology, Faculty of Medicine Siriraj Hospital, Mahidol University. The tumors were classified according to the WHO histological classification,⁽¹⁰⁾ and the staging of cancer was performed according to the system adopted by FIGO.⁽¹¹⁾

Descriptive statistics was used to describe patients and tumor characteristics. Chi-square test was used to compare the characteristics of epithelial cancer and malignant germ cell tumor of the ovary. Statistically significant results were taken at the conventional level of the *p* value being less than 0.05.

Results

During the year 1988-1997, 1,665 women with primary ovarian tumor underwent surgical removal at the Department of Obstetrics and Gynecology, Siriraj Hospital. One thousand two hundred and twenty-one patients (73.3%) had benign tumors, 394 (23.7%) and 50 (3.0%) had malignant and borderline ovarian tumors, respectively. Of the 394 cases of ovarian cancer, epithelium was the most common histological type, comprising 84.3% and germ cell was the second most common tumor, comprising 9.1%. (Table 1)

Table 2 shows the distribution of histological types of epithelial cancer and malignant germ cell tumor of the ovary. Serous was the most common histological type of epithelial ovarian cancer, accounting for 36.4% and mucinous was the second most common epithelial tumor (24.4%). Among malignant germ cell tumor, dysgerminoma was the most common histological type, account for 30.6% and endodermal sinus tumor was the second most common germ cell tumor (25.0%).

Table 3 shows comparison between patients with epithelial cancer and malignant germ cell tumor of the ovary. The mean age of patients with germ cell tumor was significantly less than that of patients with epithelial tumor ($p < 0.001$). Nearly half of the patients with epithelial ovarian cancer were in postmenopausal period, while almost all of those with malignant germ cell tumor were in reproductive age ($p < 0.001$). Nulliparity was found more commonly in patients with germ cell tumor than those with epithelial tumor (72.2% vs 31.6%, $p < 0.001$). The most common presenting symptoms of patients with epithelial ovarian cancer were abdominal distention (37.4%) and palpable mass (35.5%), while abdominal mass (47.2%) and pain (25.0%) were the most common symptoms in the germ cell group. However, it was not statistically significant ($p = 0.06$). Among tumors less than 20 cm in greatest diameter, two-thirds of malignant germ cell ovarian tumor were between 11-20 cm, while it was equal for small (< 10 cm) and medium size (11-20 cm) in the epithelial group (42.5% and 40.1%, respectively). The majority of malignant germ cell tumors tended to be

unilateral (83.3%). Bilaterality was more commonly found in epithelial than in germ cell tumor (42.8% vs 16.7%, $p < 0.01$). More than half of the patients with epithelial ovarian cancer (59.3%) and malignant germ

cell tumor (52.8%) were in advanced stage of disease, when the disease was discovered. Staging showed no significant difference between the two groups ($p = 0.42$).

Table 1. Histological category of primary ovarian tumors

	Common Epithelium	Germ Cell	Stromal Cell	Others *	Total
Benign	571	608	40	2	1,221
Borderline	50	-	-	-	50
Malignant	332	36	26	-	394
Total	953	644	66	2	1665

* Gonadoblastoma (2 cases)

Table 2. Histological distribution of epithelial cancer and malignant germ cell tumor of the ovary

Histological types	Number	Percent
Common epithelium	332	100
Serous	121	36.4
Mucinous	81	24.4
Endometrioid	47	14.2
Brenner	2	0.6
Clear cell	26	7.8
Undifferentiated	4	1.2
Mixed epithelium	49	14.8
Others	2	0.6
Germ cell	36	100
Dysgerminoma	11	30.6
Endodermal sinus tumor (EST)	9	25.0
Choriocarcinoma	1	2.8
Immature teratoma	3	8.3
Embryonal cell	1	2.8
Mixed germ cell	8	22.2
Others	3	8.3

Table 3. Comparison of patient and tumor characteristics between epithelial cancer and malignant germ cell tumor of the ovary

	Epithelium (N = 332)	Germ Cell (N = 36)	P value
Mean(\pm SD) age(years)	49.3 (\pm 13.3)	28.0 (\pm 14.2)	< 0.001*
Parity			< 0.001**
0	105 (31.6)	26 (72.2)	
1-2	81 (24.4)	9 (25.0)	
3	146 (44.0)	1 (2.8)	
Status			< 0.001**
Premenopause	180 (54.2)	34 (94.4)	
Postmenopause	152 (45.8)	2 (5.6)	
Presenting symptoms			0.06**
Abdominal mass	118 (35.5)	17 (47.2)	
Abdominal pain	41 (12.4)	9 (25.0)	
Abdominal distention	124 (37.4)	7 (19.4)	
Incidental	23 (6.9)	1 (2.8)	
Others	26 (7.8)	2 (5.6)	
Tumor sizes (cm)			< 0.01**
< 10	141 (42.5)	7 (19.4)	
11-20	133 (40.1)	24 (66.7)	
> 20	48 (14.4)	5 (13.9)	
Unknown	10 (3.0)	-	
Laterality			< 0.01**
Unilateral	181 (54.5)	30 (83.3)	
Bilateral	142 (42.8)	6 (16.7)	
Unknown	9 (2.7)	-	
Staging			0.42**
Early stage (1 or 2)	133 (40.1)	17 (47.2)	
Advanced stage (3 or 4)	197 (59.3)	19 (52.8)	
Unknown	2 (0.6)	-	

* Student t-test

** Chi-square test

Discussion

Ovarian cancer is very insidious and silent in terms of signs and symptoms. It is one of the most challenging problems in gynecology, since it is often detected in more advanced stages, resulting in a high case fatality rate.⁽¹⁾ During the 10-year period of the study, the incidence was 23.7% of all ovarian tumors.

The finding that epithelium was the most common histological type in this study is consistent with those previously reported.^(5,6,12,13) However, the proportion of germ cell tumor found in our series (9.1%) is higher than the 5 percent reported in Western countries,⁽⁷⁾ but is consistent with the series from Asian societies in which up to 15% of ovarian cancers are germ cell in

origin.⁽⁸⁾ The observation that serous was the most common histological type among epithelial cancer, and dysgerminoma was the most common tumor in germ cell group in the present study is similar to those reported in the literatures.^(7,12,14-7)

Epithelial ovarian cancer is primarily a disease of postmenopausal women with the large majority of cases occurring in women between 50 and 75 years old.^(8,18) The mean age in this study (49.3 ± 13.3 years) is less than the series reported in Western countries.^(13,19) The proportion of patients in postmenopausal status (45.8%) is also much less than those reported in the West in which up to 80% were in postmenopausal period.^(7,20,21) The finding that abdominal distention and mass were the two most common presenting symptoms in our series is consistent with those observed by others.^(20,22) It is well known that bilateral involvement is one of the common surgical findings of epithelial ovarian cancer.^(5,15,23) Our study confirm this characteristic. The observation that nearly two-thirds of our patients had advanced stage of disease at the time of diagnosis is consistent with other reports.^(24,25)

With regard to malignant germ cell tumor of the ovary, it is the disease of young women, since two-thirds of patients are under 30 years of age.^(7,22) This may be the reason why nulliparity was found more commonly in this group of patients than those with epithelial tumor. Our study confirms this observation, in which the mean age was 28.0 ± 14.2 years and almost all the patients were in reproductive age. Although the presenting symptoms of patients with malignant germ cell tumor of the ovary were not significantly different from those with epithelial tumor, the finding that abdominal mass was the most common presenting symptoms is consistent with other reports.⁽¹⁷⁾ Most malignant germ cell tumors of the ovary tended to be unilateral when they were discovered.⁽⁸⁾ The observation that 83.3% of our series had unilateral tumor confirms this characteristic. The significant proportion of our patients (52.8%) were in advanced stage at the time of diagnosis is higher than those reported by others in which 70% of malignant germ

cell tumor of the ovary had early stage of disease.^(8,26,27) Apart from the natural course of ovarian cancer, delay in seeking medical service may contribute to the delay in diagnosis and treatment. This is one of the common health care problems in many developing countries, including Thailand.

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