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Primary Ovarian Tumor Undergoing Surgical Management During Pregnancy

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Abstract

The aim of this study was to evaluate the preoperative symptoms of patients with primary ovarian tumors undergoing surgery during pregnancy and non-pregnancy. We retrospectively analyzed the medical records of 71 pregnant patients who underwent surgery for primary ovarian tumors (pregnant) and 580 non-pregnant patients (non-pregnant) aged 15~44 years old. In the non-pregnant group, 79.7% of the patients complained of abdominal pain at the first examination. However, in the pregnant group, 62.0% of the patients reported no symptoms and 31.0% of them reported abdominal pain ($p < 0.05$). There were no significant differences in the percentage of ovarian malignancies between the two groups (8.5% vs. 6.6%). However, the incidence of the advanced stage of \geq Ic in ovarian malignancies in the non-pregnant group was 42.1%, while it was 0% ($p < 0.05$) in the pregnant group. Ovarian tumors including ovarian malignancies were significantly more frequently diagnosed with no symptoms in the pregnant group than in the non-pregnant group.

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Key words: ovarian carcinoma, ovarian tumor, pregnancy, symptom

Introduction

Nearly 1% of all pregnant women have an adnexal tumor diagnosed on ultrasonography¹, and the percentage of malignant tumors or tumors with low malignant potential among the adnexal tumors removed during pregnancy has been reported to be 6~20%²⁻⁴.

Ovarian malignancy is often called the 'silent killer' because symptoms do not develop until advanced stages when the prognosis is poor. In 2000, Goff et al.⁵ reported that only 11% of women with Stages I/II and 3% with Stages III/IV did not complain of symptoms before their diagnosis of ovarian

carcinoma. During pregnancy, on the other hand, ultrasonographic examination is now used for routine check ups of patients with no symptoms. Thus, the incidental diagnosis of ovarian tumors including ovarian malignancies with no symptoms may be higher in pregnant women than in non-pregnant women.

The aim of this study was to investigate the preoperative symptoms in pregnant and non-pregnant patients undergoing operations for primary ovarian tumors.

Patients and methods

We retrospectively analyzed the medical records

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at Nippon Medical School Hospital between January 1991 and March 2001, during which time there were more than 5,400 deliveries in the hospital. Seventy-one patients aged 15~44 years old underwent surgery for primary ovarian tumors at 13.5 ± 4 (range: 5~37) weeks of pregnancy (pregnant group), while 580 non-pregnant patients of the same age range underwent surgery (non-pregnant group). During the time of this study, a total of 928 patients underwent surgery for primary ovarian tumors (197 malignancies) in our hospital.

In our hospital, ultrasonographic examination is routinely used in obstetrics. The indications for surgery of ovarian tumors during pregnancy in our department are as follows: (1) the ovarian tumor is 7 cm or larger and persists beyond 12 weeks of gestation; (2) the tumor contains a solid portion suggesting malignancy; or (3) the patient has symptoms associated with the tumor. On the other hand, the indications for surgery of ovarian tumors during non-pregnancy are as follows: (1) the ovarian tumor is 7 cm or larger; (2) the tumor contains a solid portion suggesting malignancy; or (3) the patient has symptoms associated with the tumor. Data collected included age, parity, symptoms, surgical pathologic findings and maximum tumor diameter in cases of mature teratoma and Stage Ia ovarian malignancies.

All data were analyzed with either χ^2 test or by Student t test when appropriate. A value of $p < 0.05$ was considered significant.

Results

Table 1 shows the patient data at the first examination. In the non-pregnant group, 79.7% of the patients complained of abdominal pain at the first

Table 1 Patient data at the first medical examination

	Non-pregnancy	Pregnancy
N	580	71
Age (yr)		
Mean \pm SD	31.1 ± 4.5	32.3 ± 5.1
Range	15—45	15—45
Multipara	171 (26.5%)	8 (11.3%)*

* $p < 0.05$ compared with the non-pregnant group.

examination. There was no measurable difference in age between the two groups. The percentage of multipara in the non-pregnant group was significantly higher than that in the pregnant group.

Table 2 shows the chief type of symptom at the first examination. However, in the pregnant group, 62.0% of the patients did not report any symptoms and 31.0% of them reported abdominal pain ($p < 0.05$). In this study, only 41 asymptomatic primary ovarian tumors were discovered by physical examination or by ultrasound during non-pregnancy (7.1% of the non-pregnant group).

Table 3 shows the histologic diagnoses based on operative findings for ovarian tumors. There were no significant differences in the percentage of ovarian malignancies between the two groups. However, the incidence of advanced stage \geq Ic in ovarian malignancies in the non-pregnant group was 42.1%, while it was 0% ($p < 0.05$) in the pregnant group.

Table 4 shows the incidence of symptoms, abdominal pain, and the maximum tumor diameter associated with ovarian mature teratoma at the first examination. There were no measurable differences in age and parity between the two groups. However, the incidences of abdominal pain in the non-pregnant group at first examination were significantly higher than those in the pregnant group for both.

Table 5 shows the incidence of abdominal pain associated with ovarian malignancies at the first examination, while **Table 6** shows the incidence of abdominal pain and maximum tumor diameter in the patients with ovarian malignancies of Stage I a in pregnant and non-pregnant women. The percentage of primipara in the pregnant group was significantly

Table 2 Chief type of symptom at the first medical examination

	Non-pregnancy	Pregnancy
N	580	71
Chief type of symptom		
No symptoms	41 (7.1%)	44 (62.0%)*
Pain	462 (79.7%)	22 (31.0%)*
Dysmenorrhea	38 (6.6%)	—
Bleeding	22 (3.8%)	1 (1.4%)
Others	17 (2.8%)	4 (5.6%)

* $p < 0.05$ compared with the non-pregnant group.

Table 3 Histologic diagnoses on operative findings of ovarian tumors.

	Non-pregnancy	Pregnancy
N	580	71
Benign tumors	542 (93.4%)	65 (91.5%)
Endometrial cyst	220	9
Mature teratoma	204	26
Serous cyst adenoma	51	27
Mucinous cyst adenoma	18	6
Others	39	3
Malignancies	38 (6.6%)	6 (8.5%)
Serous cyst adenocarcinoma	12	0
Mucinous cyst adenocarcinoma	4	2
Low malignant potential		
Mucinous cyst adenoma	5	3
Others	8	1
Others	9	0
Stage of malignancies		
I a	22 (57.9%)	6 (100%)*
I b	0 (0%)	0 (0%)
≥ I c	16 (42.1%)	0 (0%)*

*p<0.05 compared with the non-pregnant group.

Table 4 Symptoms and maximum tumor diameter in patients with ovarian mature teratoma at the first examination

	Non-pregnancy	Pregnancy
N	204	26
Age (yr)		
Mean ± SD	30.2 ± 3.4	27.6 ± 4.8
Multipara	49 (24%)	6 (19%)
Symptom		
Pain	152 (74.5%)	7 (26.9%)*
No-pain	52 (25.4%)	19 (73.1%)*
Maximum diameter (cm)		
Mean ± SD	7.2 ± 2.4	6.6 ± 1.8

*p<0.05 compared with the non-pregnant group.

Table 6 Symptoms and maximum tumor diameter in patients with Stage I a ovarian malignancies at the first examination

	Non-pregnancy	Pregnancy
N	22	6
Age (yr)		
Mean ± SD	32.2 ± 5.6	33.4 ± 5.2
Multipara	5 (22.7%)	0 (0%)*
Symptom		
Pain	19 (86.4%)	1 (16.7%)*
No-pain	3 (13.6%)	5 (83.3%)*
Maximum diameter (cm)		
Mean ± SD	7.2 ± 2.6	6.2 ± 2.0

*p<0.05 compared with the non-pregnant group.

Table 5 Symptom in patients with ovarian malignancies at the first examination

	Non-pregnancy	Pregnancy
N	38	6
Age (yr)		
Mean ± SD	34.2 ± 4.5	33.4 ± 5.2
Multipara	14 (36.8%)	0 (0%)*
Symptom		
Pain	34 (89.5%)	1 (16.7%)*
No-pain	4 (10.5%)	5 (83.3%)*

*p<0.05 compared with the non-pregnant group.

higher than in the non-pregnant group. The incidence of abdominal pain in the non-pregnant group at first examination was significantly higher than those in the pregnant group.

Discussion

In this study, the sonographic detection rate of ovarian tumor during pregnancy that met the indications for surgery in our department was approximately 1.3%, of which ovarian malignancies accounted for 8.5%. These results were consistent

with previous studies¹⁻⁴.

In 2000, a large national survey confirmed that the majority of women with ovarian malignancies are symptomatic and frequently have delays in diagnosis⁵. In this study, 89.5% of non-pregnant patients with ovarian malignancies complained of abdominal pain, and 42.2% of them were diagnosed as \geq stage Ic, although the age of the subjects was restricted to 15~44 years old. However, 83.3% of the pregnant women with ovarian malignancies reported no symptoms. We consider that this result supports our hypothesis and confirms the clinical utility of routine sonographic examination for ovarian tumors during pregnancy, because early detection is the key to saving life: 90% are cured by salpingo-ovariectomy alone if diagnosis is at Stage I⁵.

Another possible reason why the incidence of stage \geq Ic in ovarian malignancies in the non-pregnant group was higher than that in the pregnant group is that an increased risk of advanced-stage ovarian carcinoma has been associated with incessant ovulation and infertility⁷. The most important susceptibility factors for ovarian surface epithelium and carcinogenesis have been reported to be nulliparity and an affected first-degree relative⁶. In this study, the pregnant women with ovarian malignancies were all primipara and their mean age was 33.4 years old, which supports findings in previous reports^{6,7}.

In conclusion, ovarian tumors including ovarian

malignancies are diagnosed with no symptoms during pregnancy significantly more often than during non-pregnancy. Thus, innovative approaches to screening for ovarian tumors in women with no symptoms are needed.

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