Metastases of the digestive tract and ovarian tumors – or vice versa: an analysis

M. Gojnic[1], V. Dugalic[2], V. Jeremic[2], D. Filimonovic[3], N. Popovic[4]

[1]Institute of Gynecology and Obstetrics, Clinical Center of Serbia, Belgrade University; [2]Institute of Surgery, [3]University Hospital 'Narodni Front', Belgrade; [4]Institute of Anesthesia, Clinical Center of Serbia, Belgrade University (Serbia and Montenegro)

Summary

Ovarian carcinoma may appear regardless of age, including during childhood. Predisposing factors for the development of ovarian carcinoma are age (usually over 40), positive family history, *mumps parotitis*, small number of deliveries, environmental factors, persistant ovulation, etc. Metastases may appear in the ovary from almost all primary sites.

Key words: Ovarian carcinoma; Gastrointestinal tract.

Introduction

Ovarian carcinoma may appear at any age, including in childhood. Predisposing factors for the development of ovarian carcinoma include: age (usually above 40), positive family history, *mumps parotitis*, small number of deliveries, environmental factors, persistant ovulation, etc. There are also differences in histological types of carcinoma appearing in the younger and older population. Germ cell tumors are more often present in younger patients, and changes of epithelial origin are more frequently present in the older population [3, 5].

Metastases may appear in the ovary from almost all primary sites. The ovary presents a very suitable environment for the development of metastases, especially from the digestive tract (Krukenberg tumor). Most commonly they originate from the stomach although they may appear from other sites of the gastrointestinal tract [4]. Besides metastases originating from gastrointestinal tract tumors, primary breast cancers must always be kept in mind. Metastases from the colon and rectum create cystic spaces which imitate primary ovarian tumors (mucus and endometrioid adenocarcinoma). Metastases from the GI tract into the ovary often present with a cribriform appearance, with fields of intraluminal necrosis. The presence of a squamous metaplasia field contributes to the primary tumor. Findings of malignant cells in the blood and lymph vessels indirectly help in the evaluation of metastatic processes in unclear cases [2, 4].

Results and Discussion

By analyzing ovarian carcinoma cases at three institutions (the Institute of Gynecology and Obstetrics, University Hospital 'Narodni Front', and the Emergency Center), we obtained interesting data.

Table 1. — *International classification of ovarian tumors* [2].

1) Epithelial tumors
   a) serous (benign, malignant, borderline)
   b) mucous (benign, malignant, borderline)
   c) endometrioid
   d) clear cell (mesonephric) (benign, malignant, borderline)
   e) Brenner tumor (benign, malignant borderline)
   f) mixed epithelial (benign, malignant, borderline)
   g) non-differentiated carcinomas
   h) non-classified epithelial tumors
2) Sex-cord stromal tumors
   a) granulosa cell tumors
      i. granulosa cellular tumors
      ii. thecoma/fibroma group
   b) androblastoma (Seroli Leydig)
   c) gynandroblastoma
   d) non-classified
3) Lipid cell tumors
4) Germ cell tumors
   a) dysgerminoma
   b) endodermal sinus tumors
   c) embryonal carcinoma
   d) polyembryoma
   e) choriocarcinoma
5) Gonadoblastoma
6) Connective tissue tumors non-specific for the ovary
7) Non-classified tumors
8) Metastastic tumors
9) Tumor-like conditions
   a) pregnancy luteoma
   b) hyperthecosis
   c) ovarian edema
   d) folicular cysts, corpus luteum cysts
   e) polycystic ovary
   f) lutein cysts
   g) endometriosis
   h) inclusive cysts
   i) simple cysts
   j) inflamatory lesions
   k) paraovarian cysts

Revised manuscript accepted for publication February 8, 2006

Table 2. — *FIGO staging of ovarian tumors* [5].

Stage I:	growth limited to ovaries
Stage Ia:	growth limited to one ovary, without ascites 1) no tumors on the outer surface, capsule intact 2) tumor present on the outer surface and/or ruptured capsule
Stage Ib:	growth limited to both ovaries, without ascites 1) no tumors on the outer surface, capsule intact 2) tumor present on the outer surface and/or ruptured capsule
Stage Ic:	tumor either Stage Ia or Ib, but with ascites or positive peritoneal sample to malignant cells
Stage II:	growth includes one or both ovaries with spread to the pelvis
Stage IIa:	spread and/or metastases to the uterus and/or tubes
Stage IIb:	extension on other pelvic tissues
Stage IIc:	tumor is either Stage IIa or IIb, but with ascites or positive peritoneal sample to malignant cells
Stage III:	growth includes one or both ovaries with interperitoneal metastases outside the pelvis and/or positive retroperitoneal lymph nodes; tumor includes the pelvis, small intestine or omentum
Stage IV:	growth includes one or both ovaries with distant metastases; if pleural effusion is present then cytology must be positive in order to declare Stage IV; liver metastases also denote Stage IV [1].

Table 3. — *Factors which should be analyzed in ovarian tumors* [3].

1. Tumor diameter before cytoreduction (cm)
   < 5 cm; 5-10 cm; > 10 cm
2. Largest metastasis diameter before cytoreduction (mm)
   < 15 mm; 15-50 mm; 50-100 mm; > 100 mm
3. Ascites volume (ml): 0, 0-1000, > 1000 ml
4. Peritoneal carcinomatosis: present/not present
5. Karnofsky: performance < 89, < 80
6. Age: < 50, 50-70, > 70
7. Menopausal status: before/after
8. Histology: serous, mucinous, clear cell endometrioid, nondifferentiated
9. Grade: 1, 2, 3
10. FIGO stage

In 38% of the cases, metastatic changes were present. In 15% of the cases rectum carcinoma was found, and in 23% of the cases we found stomach carcinoma.

All the patients had a definitive diagnosis of ovarian carcinoma before surgery and the contribuiting but ignored factors of abdominal pain, periodical rectal bleeding, constipation and vomiting were highly important. The operation was performed together with other surgeons. In all cases the Bilrott II procedure was carried out as well as one total gastrectomy and colostomy.

The operations were longer, and more psychologically dramatic for the patients because only afterwards were they completely informed about the situation. Thus we suggest that in all cases of malignancy, especially of the ovaries, all the necessary tests, surgical and structural procedures be made pre- and postoperatively.

Conclusions

1) During examination of women suspected of having genital tract pathologies, the gastrointestinal tract should be examined in all borderline cases.

2) Risk is not age-dependent to the extent previously considered.

3) It is necessary to examine the gastrointestinal tract in all cases with a suspected link between the processes.

References

[1] National Institutes of Health (NIH): "Consensus Conference. Ovarian cancer. Screening, treatment, and follow-up". *JAMA,* 1995, *273,* 491.

[2] Gershenson D.M. *et al.*: "Ovarian intraepithelial neoplasia and ovarian cancer". *Obstet. Gynecol. Clin. North. Am.,* 1996, *23,* 475.

[3] Heintz A.P., Hacker N.F., Lagasse L.D.: "Epidemiology and etiology of ovarian cancer: a review". *Obstet. Gynecol.,* 1985, *66,* 127.

[4] Gershenson D.M.: "Primary cytoreduction for advanced epithelial ovarian cancer". *Obstet. Gynecol. Clin. North Am.,* 1994, *21,* 121.

[5] Curtin J.P., Shapiro F.: "Adjuvant therapy in gynecologic malignancies. Ovarian, cervical, and endometrial cancer". *Surg. Oncol. Clin. North Am.,* 1997, *6,* 813.

Address reprint requests to:
M. GOJNIC, M.D., Ph.D., Asst. Prof.
Medical Faculty of Belgrade
Institute of Gynecology and Obstetrics
38 Milesevska Street
11000 Belgrade (Serbia and Montenegro)