Primary peritoneal borderline tumor. A case report and review of the literature

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Summary

A case report and review of the literature of a primary peritoneal borderline tumor is presented. A patient with primary peritoneal borderline tumor diagnosed by elevated of serum CA-125 and asymptomatic pelvic cysts, two years after laparotomy due to mullerian cysts, is discussed.

Key words: Primary peritoneal borderline tumor; Endosalpingiosis.

Introduction

Non-invasive peritoneal implants are often found in association with ovarian serous tumors of borderline malignancy. When identical lesions occur in the peritoneum of women without ovarian pathology, they are referred to as peritoneal serous tumors of borderline malignancy. Diffuse peritoneal serous borderline tumors are thought to develop from pre-existing endosalpingiosis, which is concurrently present in 70-80% of cases [1, 2, 3].

Peritoneal epithelial proliferations, indistinguishable from noninvasive implants of ovarian borderline serous tumors, have been described within the category of primary papillary peritoneal neoplasia or as atypical endosalpingiosis or as serous papillary borderline tumors of the peritoneum [3, 4, 5]. Serous borderline malignancy of the peritoneum is a relatively rare lesion [2]. Only a small number of cases have been previously reported. In this case report, we discuss a woman with a primary peritoneal borderline tumor, together with a review of the literature.

Case report

A 42-year-old female, married with one child, was admitted to the Gynecologic Department for surgery due to pelvic and abdominal cysts and elevated serum levels of CA-125. She was asymptomatic. Her medical background was remarkable for epilepsy treated with tegretol. No seizures had occurred during the last few years. Her menstrual periods were regular, and she did not use any contraception. Many years before she had undergone diagnostic laparoscopy due to primary infertility that revealed no visible pelvic pathology. Her hormone profile was within normal limits and she had undergone IVF treatments that resulted in one pregnancy and the birth of one child by cesarean section. Two years prior to the present admission, she underwent explorative laparotomy due to large peritoneal and pelvic cysts, which were detected on routine examination, even though she was asymptomatic. On that laparotomy, three large peritoneal cysts were removed together with her left adnexa that was adherent to one of the cysts. The cysts were histologically defined as peritoneal mullerian cysts. The diagnosis was confirmed in two pathologic institutions based on the cellular microscopic characteristics and on immunohistochemical staining that was negative for calretinin and thrombomodulin.

Following the above-mentioned surgery, the patient was followed-up every few months by pelvic and ultrasound examination. Four months prior to the current admission, two large cysts were diagnosed on routine ultrasound examination, about 4 x 4 cm each, with clear fluid and no papillations or solid components. Due to these findings, the CA-125 levels were measured and found to be elevated to 800 U/ml. Two further ultrasound examinations revealed a continuous growth of both cysts with subsequent CA-125 levels of 475 and 180 U/ml at one and two-month intervals. Due to these findings the recent second laparotomy was performed. Intraoperative findings showed a few large pelvic cysts adherent to each other and one cyst adherent to the recto-sigmoid. No other macroscopic lesions were noted in the entire peritoneal cavity. Total abdominal hysterectomy, right salpingo-oophorectomy, excision of the pelvic cysts and surgical staging including retroperitoneal lymph node sampling were carried out.

Histopathology

The pathologic examination revealed a normal right ovary with small epithelial inclusion cysts, a normal size uterus and cervix with adenomyosis and a small leiomyoma. In addition, the pathology report showed mullerian cysts attached to the right fallopian tube, endosalpingiosis in the right pelvis next to the right fallopian tube, endosalpingiosis in one of the right pelvic lymph nodes and a serous low malignant potential tumor in one of the pelvic cysts. The diagnosis of an extraovarian (peritoneal) serous tumor of borderline malignancy was based on an epithelial cyst that had columnar partially ciliated, stratified epithelium with branching (or tufting) papillations, mild

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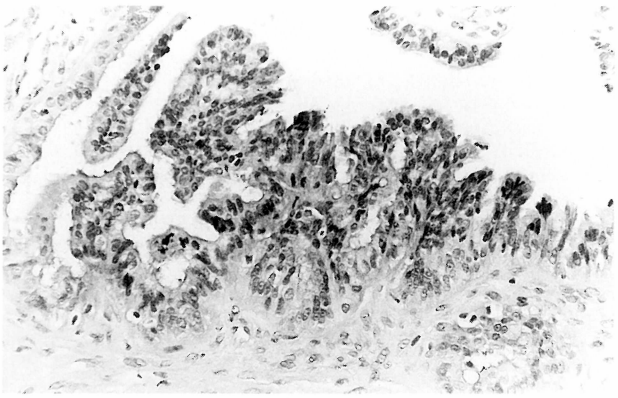

Figure 1. — Microscopic appearance of the tumor. Note stratification of the serous epithelium with formation of branching papillas and mild cytologic atypia. Hematoxylin-eosin, 200x.

cytologic atypia and some mitosis. No evidence of invasive carcinoma was found (Figure 1).

Her diagnosis was defined as a primary peritoneal borderline tumor. The postoperative recovery was uneventful and she did not receive any postoperative treatment. During a follow-up of ten months she has been asymptomatic, with no clinical or sonographic evidence of disease.

Discussion

Pathologic aspects

Primary neoplasms of the female peritoneum may be mesothelial or mullerian in nature. Mesothelial lesions can be either benign or malignant or a non-neoplastic reactive mesothelial proliferation [1, 6]. In a study of 37 patients with mesothelial tumors [6], only nine had a history of previous surgery and none had previous pelvic inflammatory disease. This would seem to support the theory that mesothelioma is a neoplasia and not a reactive mesothelial proliferation.

Primary mullerian tumors of the peritoneum are thought to occur within the secondary mullerian system. The mullerian system is derived embryologically from the coelomic epithelium and the adult derivatives of these structures – the surface epithelium of the ovary and the peritoneum. They retain a potential for developing tumors that may be benign, of borderline malignancy or malignant. Most of these tumors are serous and probably develop from pre-existing edosalpingiosis [1, 7].

Endosalpingiosis is a metaplastic lesion in the peritoneal cavity, and is a precursor for primary peritoneal serous tumors. It is extremely common, occurring in 26% of females, usually in women of reproductive age. The pathologic features comprise multiple simple glands lined by a single-layered tubal-type epithelium. Endosalpingiosis is a benign lesion and no treatment is indicated [1, 7]. Primary peritoneal serous tumors of borderline malignancy are identical histologically to the peritoneal 'implants' that are sometimes found in association with ovarian serous tumors of borderline malignancy [1]. Both epithelial and desmoplastic noninvasive lesions can be seen. Psammoma bodies are a prominent feature and concomitant endosalpingiosis is also very common [2, 3].

The recognition of a primary peritoneal serous neoplasm of borderline malignancy relies on the presence of either normal ovaries, ovaries containing only a fully benign neoplasm or ovaries showing only minimal surface involvement. Extraovarian borderline serous tumors usually develop in the broad ligament. The lesions are usually visible. They appear as cystic tumors with intra-luminal papillations, as granular lesions, as a mass on the broad ligament or as mesenteric plaque. Peritoneal lesions can be focal or diffused, with multiple adhesions [1, 2, 3, 8].

Clinical presentation

In our case, the patient was 42 years old at the time of diagnosis, with a history of infertility that is very similar to previously reported cases. Patients with peritoneal serous borderline tumors are commonly under the age of 40 years, although there have been occurrences in postmenopausal women [1, 2, 3].

Limited information exists regarding risk factors for developing a peritoneal borderline tumor. Nulliparity, infertility and use of infertility drugs appear to increase the risk, while pregnancies, breast-feeding and use of oral contraceptives appear to have a protective effect [8, 9]. No association with hereditary ovarian cancer syndromes has been reported [9].

The clinical presentation of peritoneal borderline tumors in previously reported cases included infertility, abdominal pain, chronic pelvic inflammatory disease, small bowel obstruction, amenorrhea, pelvic mass, ascites or incidental findings at laparotomy [1, 2, 3, 5]. Our patient presented with an elevated CA-125 serum level that led to further investigation and diagnosis. The prognostic value of CA-125 as a tumor marker does not seem to be as important in borderline tumors as it is in invasive carcinomas [8, 9, 10]. Makar *et al.* [10] evaluated the levels of CA-125 in 85 patients with borderline ovarian tumors. They found no correlation between the preoperative marker levels and FIGO stage, nor between postoperative levels and residual tumor, and a poor relation between elevated levels and recurrent disease.

Treatment and prognosis

Surgical removal of as many as possible of the peritoneal lesions is recommended and adjuvant therapy is unnecessary. A large number of patients with residual disease remain asymptomatic for many years (up to16 years) [1, 2, 3]. The prognosis of patients with peritoneal serous tumors of borderline malignancy is very good [1,3]. The survival associated with this tumor is 99% at a mean follow-up of seven years for patients with Stage I disease, and 92% for those with Stage II and III disease [9]. Biscotti *et al.* studied 17 cases of serous borderline tumors of the peritoneum and reported that two (14%) had recurrent disease six months and 14.5 years after

initial surgery. Both had intestinal obstruction which necessitated surgical intervention. At the time of publication of the study, they were both alive, 10.9 and 16.2 years, respectively, after the first surgery. He also described a patient who developed a low-grade peritoneal serous adenocarcinoma [2].

The favorable prognosis allows conservative surgical management with conservation of the uterus and ovaries in young women when the presence of a primary ovarian tumor has been excluded. The risk of recurrence or transformation to low grade serous carcinoma justifies resection of all visible disease in older women and warrants careful follow-up.

In summary, besides the unusual presentation with previous laparotomy and elevated level of CA-125, this case raises the question as to whether mullerian cysts are a predisposing condition to the development of primary borderline peritoneal tumors.

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