Ovarian Seromucinous (Endocervical-type Mucinous and Mixed Cell-type) Tumor: A Case Report

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Objective: Ovarian tumors are commonly encountered in clinical practice. Epithelial ovarian cancers account for the majority of female ovarian neoplasms. Some uncommon ovarian mucinous tumors have recently been termed “seromucinous” tumors because they exhibit both serous and mucinous features.

Case Report: A 27-year-old female patient presented with a 2-month history of a palpable abdominal mass. Ultrasonography and computed tomography revealed a huge multilocular, solid pelvic cyst. Following staging surgery, pathological sections showed that the tumor was composed of a mixture of endocervical-type mucinous, serous, endometrioid, squamous, and undifferentiated cells. An ovarian seromucinous tumor was diagnosed. The neoplastic cells were located mainly within the ovarian epithelium with only focal stromal invasion. Metastatic implants were found in the pelvic peritoneum. The patient received six courses of chemotherapy after surgery and has been regularly followed.

Conclusion: Seromucinous tumors can be classified from atypical proliferative tumors to invasive carcinomas. Death related to this kind of tumor is rare. The tumors are not common, and their clinical behavior is not as aggressive as other types. Prognostic factors have been studied, including morphologic cellular atypia, tumor necrosis, mitotic index, and depth of tumor invasion. Adjuvant therapy is necessary for patients with poor prognostic factors.

Key Words: atypical proliferative ovarian tumor, borderline ovarian cancer, endocervical-type mucinous tumor, seromucinous tumors

Introduction

Ovarian tumors are common diseases of the female genital tract. Epithelial ovarian cancers account for the majority of female ovarian neoplasms. In the USA, the incidence of ovarian cancer is 14.5–18.1/100,000 in the general population [1]. There is a higher incidence in white women (19.8/100,000) but a lower incidence in black women (9.0/100,000) [2]. Epithelial ovarian cancers usually originate from single colonies. Tumors composed of a mixture of endocervical-type (Mullerian) mucinous cells, serous cells, endometrioid cells, squamous cells, and undifferentiated cells are classified as “seromucinous” tumors as they exhibit both serous and mucinous features. We report a patient who presented with an ovarian seromucinous tumor.

Case Report

A 27-year-old female, gravida 2, para 2, abortus 0, with no significant prior medical history presented with a palpable abdominal mass and abdominal distension. There was no abdominal pain, abnormal vaginal discharge, or bowel habit change. Physical and pelvic examinations revealed a palpable mass with mild tenderness in the pelavoabdominal region. The uterus and cervix were normal. Gynecologic ultrasonography and pelavoabdominal computed tomography revealed a huge multilocular cyst measuring 22 x 17 cm on the
right side of the pelvis (Figure 1). A focal solid part was also noted. The other pelvic and abdominal organs appeared normal on gross inspection. There were no obvious lymphadenopathies or ascites. The serum CA-125 level was initially 114 U/mL. During staging surgery, a tumor about the same size was found on the right ovary. The outer surface was smooth. The tumor was filled with clear fluid and had multiple septum formation. Papillary growth was noted on the inner surface. Approximately 200 mL of ascites was drained from the intraperitoneal cavity. Some papillary growth was noted in the pelvic peritoneum. Pathological sections of the right ovarian tumor revealed a mixture of endocervical-type mucinous, serous, endometrioid, squamous, and undifferentiated cells (Figure 2). These neoplastic cells were located mainly within the ovarian epithelium with only focal stromal invasion (Figure 3). The left ovary was normal. Metastatic implants were found in the pelvic peritoneum. Malignant cells were seen in the ascites. The surgical stage of the tumor was IIIC. The patient received six courses of chemotherapy with a combination of carboplatin and paclitaxel. Since the operation, she has been regularly followed at our hospital. The CA-125 level was within the normal range until the time of writing.

Discussion

The term “seromucinous ovarian tumor” was proposed by Shappell et al to classify endocervical mucinous tumors that have similar morphologic and behavior patterns to serous tumors [3]. In 1963, the International Federation of Gynecology and Obstetrics (FIGO) accepted an intermediate group of ovarian carcinomas of low malignant potential. In 1973, the World Health Organization (WHO) adopted the term “borderline malignancies” to describe these tumors. Borderline tumors represent approximately 10–15% of all epithelial ovarian malignancies. There are discrepancies in the reported incidence of ovarian borderline malignancies [2,4].

Borderline mucinous cystic tumors are characterized by obvious and extensive intestinalization of their epithelial lining. A minority of these tumors (5% in a tumor registry series) lack obvious intestinal epithelium. The cells resemble endocervical gland cells morphologically; therefore, they have been designated “endocervical-like” cells or “of Mullerian type”. Microscopically, they do not contain the goblet or Paneth cells seen in intestinal epithelium. Papillary architec-

![Figure 1.](image1.png) Right pelvic multilocular cystic mass extends to the abdominal cavity. No enlarged lymph nodes are evident in the retroperitoneal area, para-aortic area, and inguinal regions.

![Figure 2.](image2.png) Histopathologic features of the right ovarian tumor: it is composed of a mixture of endocervical-type mucinous, serous, endometrioid, squamous, and undifferentiated cells. (A) Papillary epithelium of mixed cell types (hematoxylin & eosin, x 40); (B) endocervical mucinous-type cell (hematoxylin & eosin, x 100); (C) serous type cell (hematoxylin & eosin, x 200); (D) endometrioid type cell (hematoxylin & eosin, x 400).

![Figure 3.](image3.png) (A) Atypical proliferating tumor in most of the ovarian epithelium in the main tumor (hematoxylin & eosin, x 200); (B) focal stromal invasion (arrow) less than 5 mm in depth (microinvasion) (hematoxylin & eosin, x 40); (C) confluent micropapillary structure more than 5 mm in diameter (hematoxylin & eosin, x 40); (D) invasive peritoneal implants with lymphovascular space invasion (double arrow) (hematoxylin & eosin, x 400).
ture is also found in these tumors, in contrast to intestinal-type mucinous tumors, which are usually multilocular, glandular, and cystic [3].

Seromucinous ovarian tumors are composed of either pure endocervical-type cells or a mixture of endocervical-type mucinous, serous, endometrioid, squamous, and undifferentiated cells with abundant eosinophilic cytoplasm. They used to be termed “mixed epithelial papillary cystadenoma of borderline malignancy of Mullerian type”. Because the tumors lack stromal invasion, they were initially termed “Mullerian mucinous or endocervical-type papillary cystadenoma of borderline malignancy”. They are reported to be primarily limited to borderline and microinvasive tumors. Tumor-related death has rarely been reported.

Atypical proliferative tumors, intraepithelial, microinvasive, and invasive carcinomas are classified according to their pathologic characteristics [3]. The presence of either intraepithelial carcinoma or microinvasion has no adverse effect on behavior. Shappell et al found that marked cytologic atypia, tumor necrosis, and mitotic index have no independent adverse impact on survival. All noninvasive tumors as well as those with microinvasion (< 5 mm) behave in a benign fashion. Micropapillary structure is related to tumor recurrence and death in advanced-stage diseases [3]. The same is true for serous ovarian tumors. Our patient had stage IIC disease. Micropapillary structures and microinvasion were both noted on pathology (Figure 3). The patient has been disease-free for 2 years at the time of writing.

DNA cytophotometry has revealed that aneuploidy is an indicator of the aggressiveness of tumors [5,6]. DNA aneuploidy also indicates a high risk of recurrence [2]. Most borderline tumors are diploid and have good prognosis. Studies of other molecular markers have not uncovered a reliable predictor of tumor behavior. Studies involving the clinical course, prognostic analysis, and optimal therapy for this interesting group of tumors are needed. Accurate diagnosis and clinical staging lead to better treatment results, and reduce the use of unnecessary aggressive therapies.

References