Case Report

Concurrent Benign Brenner Tumor and Mucinous Cystadenoma of an Ovary in a Postmenopausal Woman: A Case Report

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Abstract

Ovarian cancer is the most fatal gynecologic malignancy. The surface epithelial tumor is the most common type of ovarian cancer. Among these, mucinous tumors account for 10-15% of ovarian tumors. Surgical pathologists find that mucinous ovarian tumors are among the most challenging ovarian neoplasms to interpret. Sometimes, other types of surface epithelial cancers coexist with mucinous tumors. Because of this, it's critical to diagnose mucinous tumors accurately. On the other hand, the association of Brenner tumors with other neoplasms is rare. Ovarian Brenner tumor has always been discussed by pathologists as an enigmatic tumor because of its rarity and disputed histogenesis. Here, we report a rare case of mucinous cystadenoma of the ovary with a Brenner component in a 68-year-old postmenopausal woman.

Keywords:

Mucinous cystadenoma, Brenner tumor, epithelial tumor, ovarian tumors

Introduction

Ovarian tumors are one of the most common types of neoplasia in women. About 30% of female genital malignancies are ovarian cancers, making it the seventh most frequent disease among women worldwide in terms of diagnoses. Among gynecological cancers, ovarian cancers have the highest cancer-related mortality rate, and in the early stages, they are typically asymptomatic. Additionally, the symptoms are vague and nonspecific [1, 2]. Based on their origin, ovarian tumors can be divided into three basic categories: germ cell, stromal, and epithelial tumors. Epithelial tumors are the most common type [3]. These tumors account for about two-thirds of all primary ovarian tumors. Transitional cell tumors are a rare subtype of surface epithelial tumors that make up approximately 2% of all ovarian malignancies [4]. Approximately 20% of these tumors coexist with benign mucinous or serous cystadenomas or teratomas [5].

Case Report

A 68-year-old postmenopausal, multiparous woman was admitted to the hospital with chief complaints of abdominal pain, distension, dyspepsia, and grade IV hemorrhoids for 9 years. The abdominal pain was gradual in onset, had a progressive course, was diffuse in nature, and was not associated with any gastrointestinal symptoms. The patient was a known case of hemiparesis for the last 10 years. She was on medications (losartan, amitriptyline). The patient was a chronic tobacco smoker for 40 years (2 bidis/day). She had no history of postmenopausal bleeding or weight loss.

On clinical examination, a per abdominal examination showed a 34-week-sized mass (cystic and solid) seen arising from the pelvis. A per vaginal examination showed the cervix is pulled up, the uterine size could not be estimated, and a firm mass was felt.

A CT scan of the abdominopelvic region showed a large well-defined complex cystic mass lesion measuring 13.1 x 12.5 x 17.2 cm in the pelvis, extending into the abdomen and reaching up to the epigastric region. The lesion showed multiple thick enhancing septae as well as an abnormal enhancing solid component along with a few calcific foci within. The left ovary was not seen separate from the lesion. Anteriorly, the lesion was reaching up to the abdominal wall and laterally displacing the bowel loops. No evidence of free fluid in the pelvic cavity was observed.

Tumor markers were done: serum beta HCG (<1.20 Miu/ml), CEA (3.66 ng/ml), AFP (2.24 IU/ml), CA-19.9 (29.13 U/ml), CA-125 (19.26 U/ml), and LDH (277 U/L). All the markers were within normal limits.

The patient underwent exploratory laparotomy with total abdominal hysterectomy, bilateral salpingo-oophorectomy, and infracolic omentectomy. The massive tumor was carefully dissected.

Grossly, an intact specimen of the left ovarian mass with the left fallopian tube attached measuring 15 x 14.5 x 11 cm was received. The external surface was intact, shiny, grayish-white, and bosselated. (Figure 1) On cutting open, a solid-cystic tumor was noted. The cystic areas ranged from 0.3-8 cm in diameter. Eighty cc of mucinous fluid oozed out. The maximum wall thickness was 3.1 cm. The solid area measured 7 x 5 x 3 cm. It was gray-white in color and firm in consistency. (Figure 2) The attached fallopian tube measured 5 cm in length. The uterus with the cervix was received in the same container, measuring 6 x 5 x 2.5 cm. The cervix measured 3 x 3 x 2 cm. Externally, it was congested. On the cut surface, the endometrial thickness was 0.2 cm. The myometrial thickness was 1.5 cm. The attached right fallopian tube measured 5.5 cm in length. Bilateral fallopian tubes were unremarkable. The attached right ovary measured 3 x 1.5 x 0.8 cm. The external and cut surface was gray-white and congested. The omentum measured 30 x 7 x 0.4 cm and was unremarkable.

Microscopy of the left ovarian mass revealed numerous cysts lined by a single layer of mucin-containing columnar cells. The cells had small, bland, and uniform nuclei. (Figure 3) The underlying fibrocollagenous stroma showed mild chronic inflammation and congested vessels. There was no evidence of dysplasia or stromal invasion. The solid area showed a tumor composed of variably sized round to elongated, sharply demarcated nests of transitional epithelial cells with rounded borders embedded in a fibroblastic stroma. (Figure 4) Individual tumor cells were polygonal to ovoid in shape, had pale cytoplasm, and oval nuclei. (Figure 5) A few nests were cystically dilated with focal mucinous metaplasia in the lining epithelium. There was no evidence of infiltrating borders, necrosis, or surface deposits over the ovarian surface.

The endometrium showed a proliferative pattern. There was no evidence of endometrial hyperplasia or malignancy. The cervix and myometrium were unremarkable. Bilateral fallopian tubes and the right ovary were unremarkable. The omentum showed the presence of mild mixed inflammatory infiltrate. There was no evidence of atypia or malignancy. The left ovarian mass was diagnosed as mucinous cystadenoma with a benign Brenner tumor.

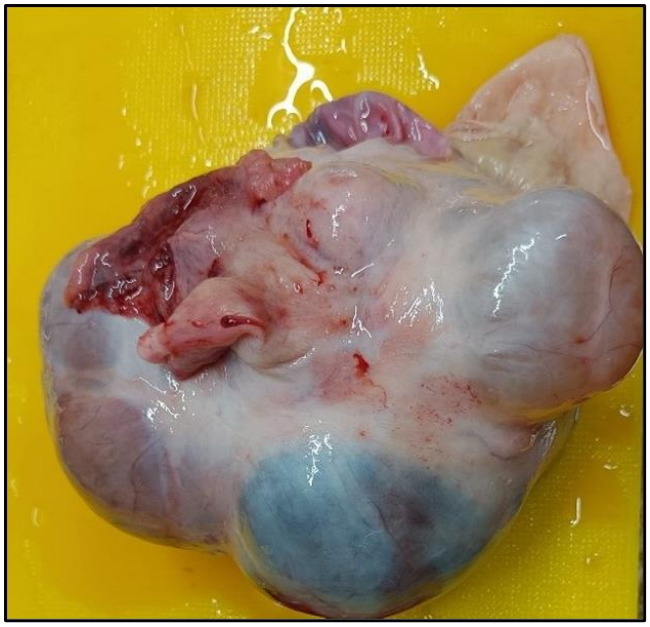

Figure 1: Intact specimen of left ovarian mass with left fallopian tube attached to it. The ovarian mass measures 15 x 14.5 x 11 cm. The mass is well-circumscribed with an externally intact shiny capsule. It is grayish white in color with congested areas. The serosal surface is smooth and bosselated.

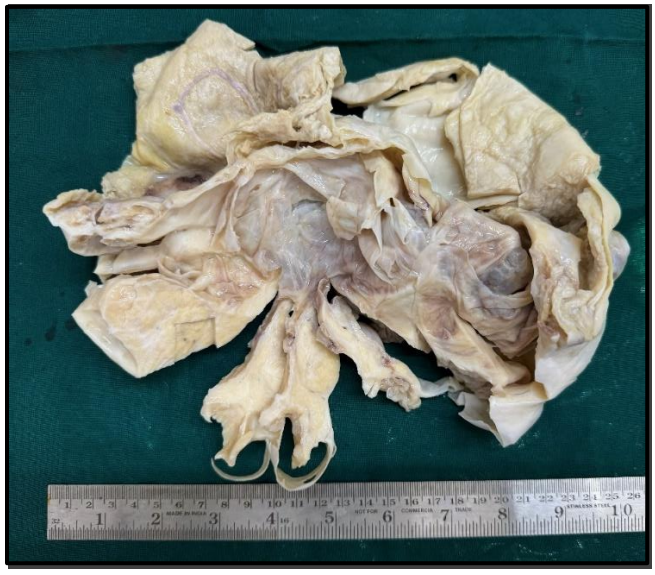

Figure 2: Cut surface is gray-white to yellowish in color. The cut surface shows solid areas, fibrous areas, and cystic areas. A few cysts show the presence of gelatinous material. Lobulated areas are seen and the inner areas show a smooth inner surface.

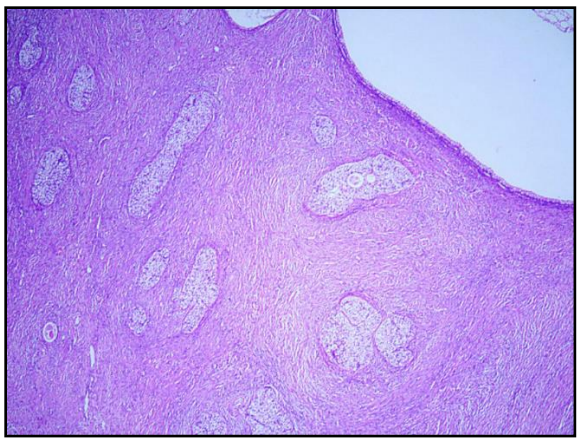

Figure 3: The above section shows a solid cystic tumor with a cyst lined by tall columnar epithelium filled with mucin (right upper corner) and nests of epithelial cells of the transitional type in a dense fibroblastic stroma. The nests have smooth contours. (H&E stained, 4x)

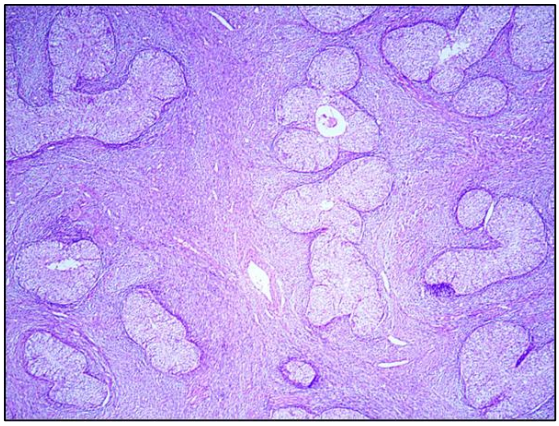

Figure 4: The above section shows variable-sized round, ovoid, and elongated, sharply demarcated nests and islands of transitional epithelial cells embedded in a fibroblastic stroma. The nests have smooth contours. One nest at the center is cystic and contains eosinophilic material. (H&E stained, 10x)

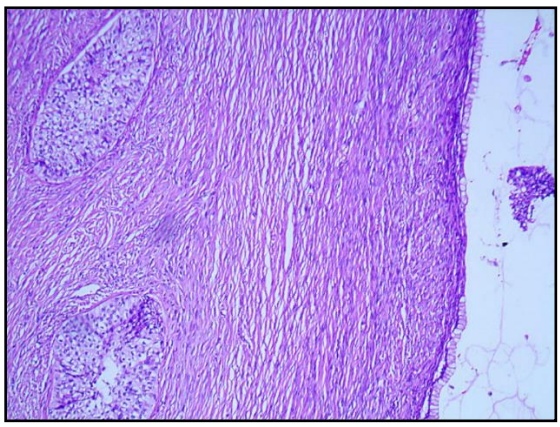

Figure 5: The above section shows a cyst lined by tall columnar epithelium with basally located nuclei and intracellular pale-staining mucin. Two Brenner nests are present beneath the layer of benign mucinous epithelium. The nests are composed of cells, polygonal to ovoid in shape, have pale cytoplasm, and oval nuclei. (H&E stained, 10x)

Discussion

The ovarian tumors are classified based on differentiation and the extent of proliferation of the epithelium [6]. Epithelial tumors, numerically the most important group of neoplasms, have traditionally been thought to derive from the ovarian surface epithelium (OSE) and were thus referred to as surface epithelial tumors. It is now appreciated that the epithelial tumors of the ovary are of diverse origins, histogenetically. Epithelial ovarian tumors are subclassified based on cell type as serous, endometrioid, clear cell, mucinous, seromucinous, or transitional (Brenner) [7].

About 10-15% of all ovarian tumors are ovarian mucinous neoplasms, of which 80% are benign. Compared to serous neoplasms, ovarian mucinous neoplasms include a smaller proportion of epithelial diseases [8]. Approximately 2-4% of ovarian tumors are epithelial Brenner tumors, which are rare and seldom aggressive. Brenner tumors are frequently identified incidentally following resection of other lesions, with as many as 30% of Brenner tumors identified as combined lesions. Postmenopausal individuals with a mean age of approximately 60 years often present with these lesions [9].

The co-occurrence of Brenner tumor and mucinous cystadenoma implies a shared Mullerian histogenesis. Although the relationship between ovarian mucinous tumor and Brenner tumor is well known, there are few reported cases of the coexistence of these two types of ovarian tumors in the literature [5]. Mucinous tumors are multiloculated tumors filled with sticky, gelatinous fluid rich in glycoproteins [10]. Histologically, mucinous cystadenoma is lined by tall columnar epithelial cells with apical mucin and basal nuclei [11]. About 20% of Brenner tumors coexist with a benign cystic teratoma or a mucinous or serous cystadenoma [12].

Brenner tumor is usually sited in the ovarian cortex and may also occur as a mural nodule in a mucinous cystadenoma. The Brenner tumor is a type of adenofibroma in which nests of transitional epithelium grow in a fibrous stroma. Grossly, Brenner tumors are circumscribed, firm, pale yellow or gray-white solid fibrous tumors. Many are of microscopic size and most measure less than 2 cm in diameter. On cut section, they are formed of hard whitish gray tissue and have a light whorled appearance [7]. However, in our case, the Brenner tumor component was 7 cm in maximum diameter, which is a rare finding. Microscopically, the lesion is composed of well-delineated epithelial nests set in a fibrous stroma. The epithelial cells are round or polygonal with round or oval nuclei, and have small nucleoli, and the cytoplasm ranges from clear to eosinophilic [13].

The central portion of the cell nests is cystic, often lined by flattened endothelial-like cells to cuboidal or columnar cells. The coexistence of Brenner and mucinous cystadenoma supports the theory of a common origin either from coelomic epithelium or remnants of the embryonic mesonephric system. In postmenopausal women, abdominal hysterectomy combined with bilateral salpingo-oophorectomy is the standard treatment for Brenner tumors. This was performed for our patient because of her menopausal status and the possibility of malignancy.

The clinicopathological features of similar studies are mentioned and compared with our case report in Table 1.

Conclusion

Ovarian masses, particularly those appearing benign, should be thoroughly examined for the presence of malignant components. This case report promotes awareness among surgeons and pathologists about the unusual occurrence of a combination of ovarian mucinous cystadenoma and benign Brenner tumor. Comprehensive sampling is necessary to rule out the malignant counterpart of ovarian surface epithelial tumors, which might aid in the patient's postoperative care, as these tumors may coexist with other

subtypes.

Table 1: Clinicopathological characteristics of similar case studies.

	Pradhan et al. [14]	**Nazari et al. [15]**	**Sridevi et al. [5]**	**Our Case**
Year	2017	2020	2015	2023
Age	52 Years	58 Years	52 Years	68 Years
Clinical History	Abdominal pain	Abdominal pain and distension	Pelvic discomfort	Abdominal pain, distension, dyspepsia
Duration of disease	6 months	6 months	1 month	9 years
Size	25x20x18 cm	20x13 cm	8x7x5 cm	13.1x12.5x17.2 cm
Site of lesion	Right ovary	Right ovary	Left ovary	Left ovary
Treatment	Total abdominal hysterectomy with bilateral salpingo-oophorectomy.	Total abdominal hysterectomy with bilateral salpingo-oophorectomy.	Total abdominal hysterectomy with bilateral salpingo-oophorectomy.	Total abdominal hysterectomy with bilateral salpingo-oophorectomy.

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