

Malignant Sarcomatous Mural Nodule Associated with Ovarian Serous Cystadenoma: Case Report and Review of Literature

Ovaryan Seröz Kistadenoma ile İlişkili Sarkomatöz Mural Nodül: Olgu Sunumu ve Literatür Eşliğinde Tarama

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ABSTRACT We present a rare case of ovarian serous cystadenoma with malignant mural nodules. The patient, a 76-year-old woman, was admitted to our hospital with right lower abdominal pain and swelling which was going on for 4 months. A gross tumor, measuring 20 x 15 x 7 cm in size and containing solid and cystic areas, was found and removed. Inner surface revealed a poor-circumscribed nodule measuring 7 x 5 cm. Areas of hemorrhage and necrosis in the nodule were noted. Histopathologic examination of the mass showed cystadenoma with malignant mural nodule. Cases of ovarian serous tumors associated with mural nodules are very rare, and this is the ninth reported case so far.

Key Words: Ovarian neoplasms; sarcoma

ÖZET Nadir bir malign mural nodüllü ovaryan seröz kistadenoma olgusunu sunmayı amaçladık. 4 aydır devam eden sağ alt kadranda ağrısı ve şişkinlik şikâyeti olan 76 yaşında kadın hasta hastanemize başvurdu. Batında 20 x 15 x 7 cm boyutta, solid ve kistik alanlar içeren büyük bir tümör tespit edildi. Kistin iç yüzeyinde 7 x 5 cm boyutunda nodül izlendi. Nodülün kesitinde kanamalı ve nekrozu alanlar saptandı. Kitlenin histopatolojik incelemesinde seröz kistadenom içinde gelişim gösteren malign mural nodül tanısı kondu. Ovaryan seröz kistadenom içerisinde gelişim gösteren malign mural nodüller oldukça seyrekdir. Sunulan olgu literatürde bildirilenlerle birlikte 9. olgudur.

Anahtar Kelimeler: Over tümörleri; sarkoma

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Mucinous and serous cystic tumors of the ovary, whether benign, borderline or malignant, may contain one or more mural nodules that differ notably in their microscopic features from those of the underlying neoplasm. The nodules have been classified into three major subtypes: sarcoma-like mural nodules, nodules of anaplastic carcinoma, and sarcoma.¹ Mixed nodules have also been described. Mural nodules of sarcomatous and carcinomatous origin associated with cystic ovarian tumors should be separated from sarcoma-like mural nodules because of the poor prognosis of the former compared to the favourable prognosis of the latter.² Mural nodules in mucinous cystic tumors of the ovaries are very rare. However, solid mural nodules of different origins have been described in cystic common epithelial tumors of the ovary in a small number of re-

ports, mostly associated with mucinous tumors, yet mural nodules in the serous cystic tumors of the ovaries are much rarer.³ The subject of this report is to discuss a case of ovarian serous cystadenoma with a sarcomatous mural nodule.

CASE REPORT

A 75-year-old postmenopausal (for 26 years) woman, Gravida:6, Para:5 presented with a 4-month history of abdominal pain and swelling. She had an ongoing diabetes mellitus. Imaging studies revealed a huge mass localized in pelvis and right lower abdomen. Preoperative tumor markers were within normal limits. In exploratory laparotomy, there was a 25 x 20 cm mass adherent to lateral abdominal wall and intestines. Adhesiolysis, total hysterectomy, and bilateral salpingo-oophorectomy were performed. Detailed pathologic examination was done. No malignant cells were found in cytologic examination of the peritoneal washing. The gross tumor measured 20 x 15 x 7 cm in size and contained solid and cystic areas. On opening, it disclosed a cystic lesion filled with white liquid material. Inner surface revealed a poor-circumscribed nodule measuring 7 x 5 cm. Areas of hemorrhage and necrosis in the nodule were noted (Figure 1). Microscopically, the pelvic mass showed cystadenoma (Figure 2) with malignant mural nodules. The poor-circumscribed, expansive nodule contained spindle-shaped cells, with atypical pleomorphic cells with bizarre nuclei and multinucleated cells at different places. Areas of hemorrhage and necrosis, and 10-15 atypical multipolar mitotic figures were also observed. No vascular invasion was seen, but capsular invasion was noted (Figure 3). Immunohistochemically, the sarcomatous element was strong positive for vimentin (Figure 4) and negative for smooth muscle actin (SMA), desmin and scattered positive for cytokeratin. The formal pathologic report represented malignant sarcomatous mural nodule associated with ovarian serous cystadenoma. Following the operation which was carried out on Sept. 15th, 2009, the patient was offered chemotherapy, but she refused to receive it and developed disseminated disease and died 5 months later.

DISCUSSION

Mucinous cystic tumors of the ovary, whether benign, borderline, or malignant, may be associated with mural nodules of different types, including sarcoma-like mural nodules (SLMNs), true sarcomas, and anaplastic carcinomas.⁴⁻⁷ Pathologically, sarcoma-like mural nodules may be confused on gross and microscopic examinations with mural nodules of true sarcomas and anaplastic carcinoma. Although the clinico-pathological features of the nodules suggest that SLMNs are reactive rather than neoplastic, their exact nature remains controversial. According to Bague S, et al., the SLMNs most likely represent an abnormal but self-limited submesothelial proliferation of mesenchymal cells, which normally undergo transformation into epithelial cells.¹ This neometaplasia would count for the characteristically ambiguous phenotype of the SLMNs at light microscopic and immunohistochemical levels. Thus, the distinction of SLMNs from true sarcomatous mural nodules and the foci of anaplastic carcinoma is extremely vital. Poor circumscription of the nodules, vascular invasion, absence of a prominent inflammatory reaction with multinucleated giant cells of the epulis type, and poor prognosis may help the diagnosis of anaplastic carcinoma (shown in Table 1).⁸ On the contrary, the sarcoma-like nodules represent a heterogeneous population of epulis type, clear circumscription, lack of vascular or stromal invasion, absence of peritoneal dissemination, and good prognosis. Therefore, in the light of all these data, the distinction between SLMNs and anaplastic carcinomas is easy, but it is very difficult to differentiate between true sarcomas and SLMNs, for each of them carries a diverse prognosis. Immunohistochemistry does not help in the distinction between SLMNs and true sarcomas as both lesions are generally negative for keratins and positive for vimentin. Also, distinction between atypical mononucleated reactive cells of presumptive histiocytic type and malignant epithelial cells is not always easy, as the former can be atypical, with numerous mitoses but cytokeratin immunostaining can aid in their distinction by labeling carcinoma cells



FIGURE 1: Malignant sarcomatous mural nodule in ovarian serous cystadenoma. The nodule is poor-circumscribed and contains areas of hemorrhage and necrosis.

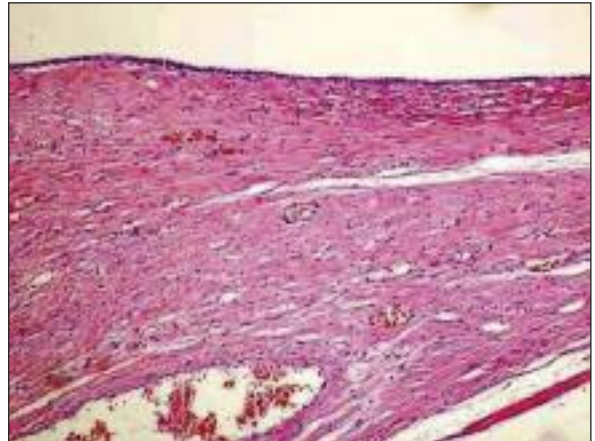
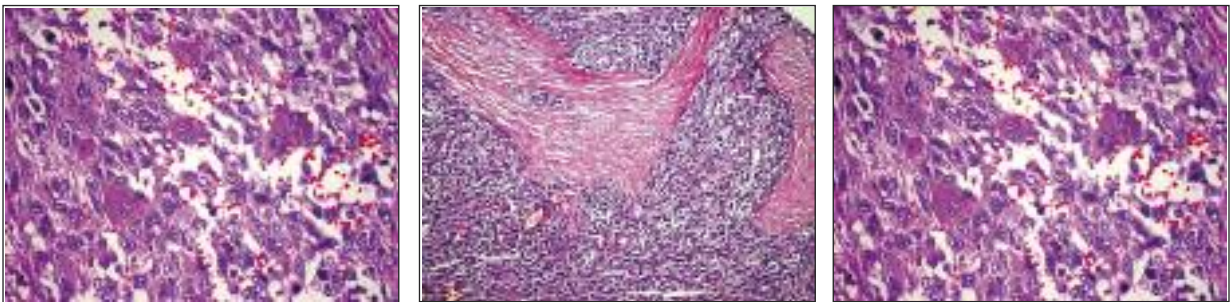


FIGURE 2: The inner wall of the ovarian cyst was lined with cuboidal epithelium without any malignant feature. (H&E; original magnification x 40).



A **B** **C**
FIGURE 3: Histologic types of malignant sarcomatous mural nodule. (A) Atypical pleomorphic cells with bizarre nuclei and multinucleated cells at different places, (B) atypical multipolar mitotic figures and (C) capsular invasion were observed (H&E; original magnification x200)

Regarding the data presented in case reports published so far about mural nodules in both mucinous and serous cystic tumors of the ovaries, it has become clear that whereas mucinous cystic tumors with mural nodules of the ovaries are found to be malignant with a 64.86% (48/74 cases), serous cystic tumors with mural nodules of the ovaries have a higher percentage of malignancy with 87.5% (7/8 cases).⁹ The present case also contributes to the high percentage of malignancy observed in mural nodules of the serous cystic tumors of the ovaries.

The sarcomatous nodules develop predominantly in older patients and are characterized by large size, poor circumscription with frequent vascular invasion and aggressive behaviour. Our case developed in a very old patient, and it was charac-

terized by large size (7cm), and poor circumscription. Microscopically, the mural nodule showed spindle-shaped cells, with atypical pleomorphic cells with bizarre nuclei and multinucleated cells at different places. Areas of hemorrhage and necrosis, and 10-15 atypical multipolar mitotic figures were also observed. No vascular invasion was seen, but capsular invasion was noted. In the light of the published data, the histopathological and immunohistochemical findings of the mural nodules in the present case demonstrate that they carry features of sarcomatous nodules. Our findings were all compatible with those presented in literature except for that there was no vascular invasion.

Cases of ovarian mucinous tumors associated with mural nodules are rare, mainly reported as individual cases, a total of 74 cases since Prat and



FIGURE 4: Vimentin was strong positive in sarcomatous area (H&E; original magnification x200).

Scully in 1979.^{4,9} However, cases of ovarian serous tumors associated with mural nodules are much rarer, a total of 8 cases over the same period.^{9,10} To the best of our knowledge, this case represents the ninth report of a mural tumor nodule in an ovarian serous tumor. The present case describes a benign serous tumor associated with mural modules carrying features of both true sarcomas and some features which may be attributed to SLMNs. Whether benign, borderline, or malignant, all cases of serous cystic ovarian tumors as well as ours, with sarcoma, sarcoma-like, and carcinosarcoma-like mural nodules are presented in Table 2. Prognosis of patients with malignant mural nodules is poor, with 50% mortality within 5 years.^{11,12}

TABLE 1: Comparison of frequency of several findings in SLMNs and anaplastic carcinomas.

Feature	SLMN	Anaplastic Carcinoma
No. nodules	One to several	Usually single
Size	Small (0.6-6 cm)	Large (1.0-10 cm)
Circumscription	Good	Poor
Vascular invasion	Absent	Occasional
Hemorrhage	Invariable	Occasional
Necrosis	Uncommon, focal	Common, extensive
Cell composition	Heterogeneous	Homogeneous
Inflammatory cells	Numerous	Few
Epulis-type giant cells	Common, abundant	Uncommon, focal
Spindle cells	Common, fibroblastic	Occasional, spindle cell carcinoma
Large cells with ample Eosinophilic cytoplasm	Occasional, focal	Common, usually diffuse
Cytokeratin	Negative or weakly	Positive
Immunoreaction	Positive	

SLMN: Sarcoma-like mural nodule.

TABLE 2: Serous cystic ovarian tumors with benign, carcinoma, sarcoma, sarcoma-like, and carcinosarcoma-like mural nodules.

Reference, year	Case	Epithelial ovarian tumor	Mural nodul
Present case (2010)	1	Serous benign	Sarcomatous
Gungor et al. (2009) ⁹	1	Serous borderline	Sarcomatous+ SLMN
Huang (2005) ¹³	1	Serous benign	Genital rhabdomyoma
Takeuchi (2005) ¹⁰	1	Serous benign	Adenofibrosarcoma
Baergen, Rutgers (1994) ¹¹	1	Serous carcinoma	Undifferentiated sarcoma
De Rosa (1991) ¹⁴	1	Serous carcinoma	Sarcomatoid carcinoma
McCullough (1988) ¹⁵	1	Serous carcinoma	Sarcomatous
Clarke (1987) ¹⁶	2	Serous borderline	Malignant (anaplastic?)

In our present case, the patient was operated on, but refused chemotherapy and died 5 months later.

In summary, ovarian serous tumors are mostly found to be malignant mural nodules. In literature, so far, few cases of ovarian serous tumors associated

with malignant mural nodules have been reported and this present case is one of such reports. Our case had a bad prognosis like primary ovarian sarcoma with capsule invasion, and this result is in accordance with literature.

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