Case Report
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Ovarian Angiosarcoma: A Case Report

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Abstract

Background: Sarcomas are one of the major groups of rare cancers and account for <1% of cancers worldwide. Ovarian angiosarcomas are rare and probably arise from carcinosarcomas, teratomas, or the rich ovarian vasculature. Here we present a case of ovarian angiosarcoma.

Case: A 35-year-old Iranian woman presented with a 6-month history of vague abdominal pain and a previous history of dermoid cyst. A pelvic MRI reported a large solid and cystic pelvic mass of ovarian origin. She underwent a left oophorectomy. The final pathologist's conclusion was malignant germ cell tumor including teratoma with malignant transformation in favor of transformation to angiosarcoma. The patient underwent total abdominal hysterectomy and right salpingo-oophorectomy and left salpingectomy. Surgical specimen revealed no malignancy including germ cell tumor, sarcoma or angiosarcoma

Conclusion: Dermoid cyst or mature cystic teratoma is the most common solid type tumor and the most common ovarian tumor occurring at a young age. Angiosarcomas of the ovary, like most other ovarian tumors, are discovered in late stages. There is no standard therapy for angiosarcoma of the ovary. In a review of previous cases, some have observed patients especially in the early stages while others have used adjuvant chemotherapy in the non-metastatic setting, basically doxorubicin-based.

Keywords: Angiosarcoma, Ovary, Dermoid Cyst

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Introduction

Angiosarcomas are rare neoplasms. Around 2% of soft tissue sarcomas in general and 5.4% of cutaneous soft tissue sarcomas are angiosarcomas (1). Cutaneous angiosarcoma is more frequent in males than in females, with a male-to-female ratio of 2:1 but bone and soft tissue angiosarcoma have a similar sex distribution (2).

Among gynecological sarcomas, uterine sarcomas are the most common. Sarcomas of the ovary comprise less than 1 percent of ovarian malignancies, mostly seen as components of carcinosarcomas (3).Visceral angiosarcoma has been reported in the liver, spleen, adrenal and thyroid glands, and heart, and less commonly in the vagina, vulva, cervix and rarely the ovary (4).

Sarcomas are a heterogeneous group of malignant neoplasms of mesenchymal origin (5). They are one of the major groups of rare cancers and account for <1% of cancers worldwide (6). The etiology of most cases of angiosarcoma is unknown. The tumors may develop as a consequence of conditions such as Radical mastectomy, radiotherapy, for-

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↑What is "already known" in this topic:
Sarcomas are one of the major groups of rare cancers. Ovarian angiosarcomas are rare and probably arise from carcinosarcomas, teratomas, or the rich ovarian vasculature.

→What this article adds:
There is no standard therapy for angiosarcoma of the ovary. In a review of previous cases, some have observed patients especially in the early stages while others have used adjuvant chemotherapy in the non-metastatic setting, basically doxorubicin-based.

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eign materials, environmental carcinogens, AIDS, Pre-existing benign lesions and genetic factors (7, 8).

Ovarian angiosarcomas are rare and probably arise from carcinosarcomas, teratomas, or the rich ovarian vasculature . Angiosarcoma of the ovary occurs at any age (range seven to 81 years, mean 48 years); with few exceptions, it is a sarcoma mostly found in premenopausal women (9). According to a report by Ye et al. in most cases, the tumors were unilateral with the majority at the right ovary and 3 cases were bilateral. there is usually misdiagnosis of primary ovarian angiosarcomas due to high malignant degree, diverse clinical presentations and rapid progression, which causes poor prognosis (10). here we present a case of angiosarcoma accompanying malignant teratoma of the ovary.

Case

The patient was a 35-year-old Iranian woman, gravid 1 para1, who presented with a 6-month history of vague abdominal pain. Pain was not associated with eating ,activity or any other factor. She did not report any changes in menstrual cycles. She had a history of caesarian about 4 years ago and had a history of small size dermoid cyst in her left ovary from 2 years ago. The exact size of the lesion could not be confirmed because her medical records were not available. Otherwise, she did not report any other medical conditions or diseases. She had no history of cancer or radiotherapy. She didn't use any medications in the prior year. In the physical exam patient had tenderness in the hypogastric area, and the vaginal examination revealed a firm mass. Physical exam of other parts was unremarkable.

A pelvic MRI was done for the patient which reported a large solid and cystic pelvic mass of ovarian origin with multiple irregular internal septations, mural nodules and solid components with marked enhancement after gadolinium injection (Figure 1).

Consequently, she underwent a left oophorectomy. Intraoperative consultation by means of a frozen section was requested to rule out malignancy which on gross examination, reported a solid cystic mass with areas of hemorrhage and necrosis and areas of fat and hair content were noted. On microscopic examination, sheets of undifferentiated cells with markedly pleomorphic hyperchromatic nuclei and many mitoses were seen. Surgery finished with a left oophorectomy.

The final pathology report indicated a tumor with the greatest diameter of 11 cm. The ovarian surface was not involved. Section from the tumor showed sheets of undifferentiated polygonal to spindle cells with markedly pleomorphic nuclei, prominent nucleoli, frequent bizarre anaplastic giant cells and frequent mitoses. A few foci of mucinous epithelium, skin adnexal tissue and fatty tissue are noted (Figure 2).

Comprehensive immunohistochemistry was done for the specimen. Malignant cells were positive for vimentin and CD34, weak and partially positive for SALL4, and negative for OCT3/4, CD30, GATA3, Inhibin, AFP, Glypican 3 and EMA.

The final pathologist's conclusion was a malignant germ cell tumor including teratoma with malignant transformation in favor of transformation to angiosarcoma FIGO stage IA.

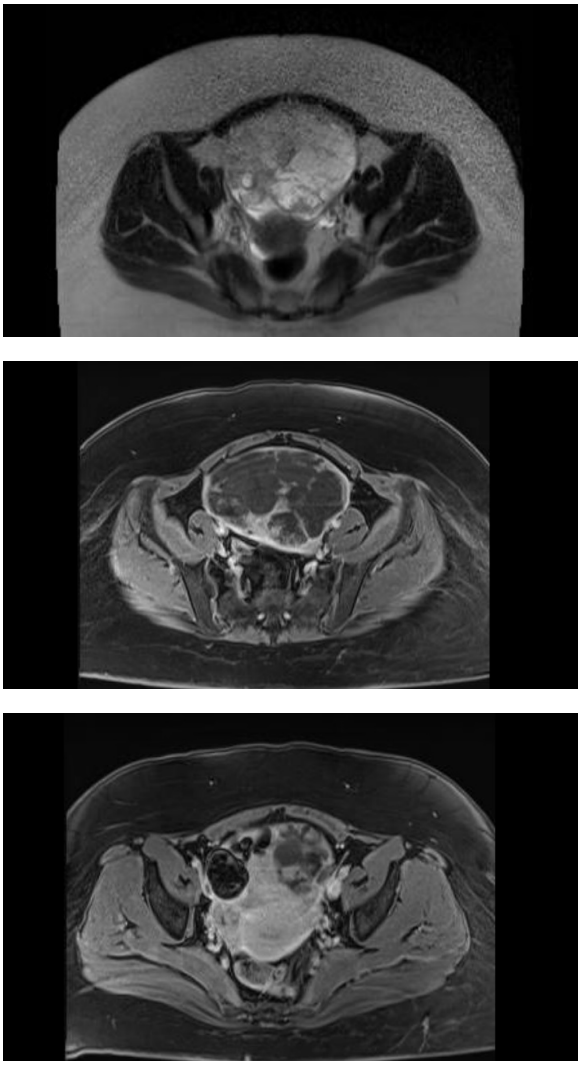

Figure 1. MRI sequences show a large 130*80*135 mm solid and cystic pelvic mass arising from the left ovary with multiple irregular internal septations, mural nodules and solid components with marked enhancement of its internal septations and solid components. Tumor markers, CA 125 and CEA were within normal limits.

Due to the early stage of disease adjuvant chemotherapy and/or radiotherapy were not pursued. Instead, the patient underwent total abdominal hysterectomy right salpingo-oophorectomy and left salpingectomy. Surgery included bilateral pelvic lymph node dissection and omental biopsy. Comprehensive and meticulous microscopic examination of the surgical specimen revealed no malignancy including germ cell tumor, sarcoma or angiosarcoma.

Discussion

Angiosarcoma is a rare histology of sarcoma. There are multiple types of angiosarcoma, including cutaneous angiosarcoma, soft tissue angiosarcoma and visceral angiosarcoma. It is especially rare in the gynecologic system and is seen even less in ovaries (11).

Ovarian angiosarcoma can be primary, or it can arise from carcinosarcomas or teratomas. It has been postulated

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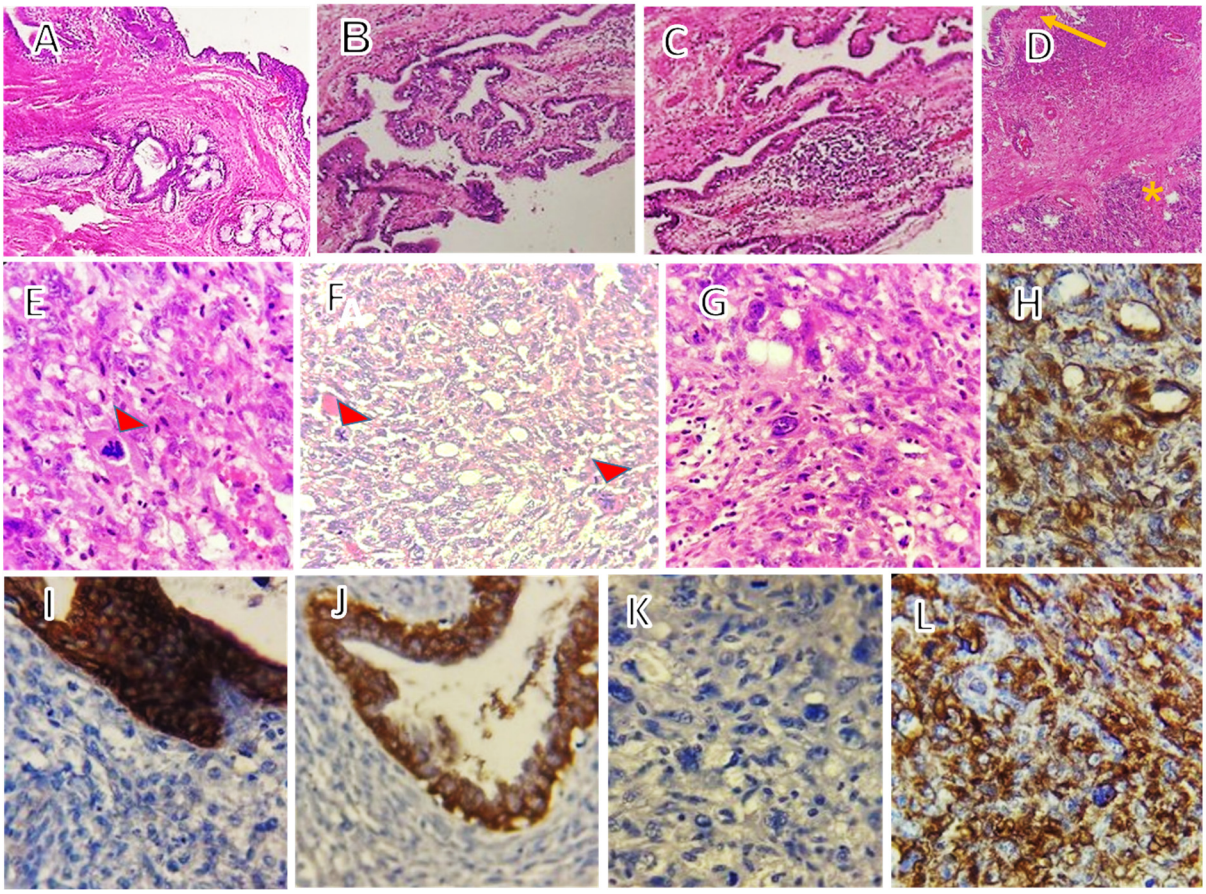

Figure 2. Histopathological findings and immunohistochemical study of ovarian tumor. A, B, C. Presence of mature epithelial components represents mature teratoma (H&Ex100). D. Epithelial component (arrow) with underlying malignant tumor cells (star) (H&Ex100). E, F. Atypical mitosis (arrowheads) (H&Ex400). G. Marked nuclear pleomorphism in malignant cells (H&Ex400). H. Diffuse cytoplasmic staining of malignant cells with vimentin (x400). I, J. CK and EMA respectively, are positive in epithelial components and are negative in adjacent malignant cells (x400). K. CD30 immunostain is negative in malignant cells (x400). L. Strong CD34 staining in malignant cells (x400).

that the dedifferentiation phenomenon, malignant transformation of some mesenchymal elements within teratomas are involved in developing a sarcoma in teratomas (12, 13).

The permanent pathology report showed undifferentiated polygonal to spindle cells with marked atypia. Due to poor differentiation, differential diagnosis can include poorly-differentiate carcinoma, other more common sarcomas such as leiomyosarcoma, adenosarcoma with sarcomatous overgrowth, carcinosarcoma, or even malignant melanoma, yolk sac tumor, and choriocarcinoma (14, 15, 16).

Immunohistochemically, angiosarcomas are positive for at least one endothelial cell marker, including CD34, CD31, FLI1, ERG and Factor VIII-related antigen (17, 18, 19). Due to the initial pathology of malignant germ cell tumor and suspected sarcoma, a comprehensive panel of IHC was used by the pathology department including OCT3/4, CD30, GATA3, Inhibin, AFP, Glypican 3, EMA, vimentin and CD34.Because of the unavailability of other endothelial markers, only CD34 was used.

There is no standard therapy for angiosarcoma of the ovary. In a review of previous cases, some have observed patients, especially in the early stages (20, 21,) while others have used adjuvant chemotherapy in the non-metastatic setting, basically doxorubicin-based (22, 23).

Histopathologically, angiosarcomas have irregular vascular lumen structures that are usually seen in tumor tissues along with atypical cells in lumen cavities (24). In some cases, tumor cells form solid sheets with cytologic atypia, large nuclei, significant nucleoli, and common mitotic figures (25).

Dermoid cyst or mature cystic teratoma is the most common solid type tumor and the most common ovarian tumor occurring at a young age (26). Risk factors of malignant transformation in dermoid cysts are the age of over 45 years, cyst size of more than 10 cm, rapid growth, and abnormal sonographic and Doppler findings including increased vascularity, hetero echo pattern, papillary projections and septation (27).

Angiosarcoma of the ovary usually occurs in premenopausal women, and our patient was also in the premenopausal range.

Angiosarcomas of the ovary, like most other ovarian tumors, are discovered in late stages. This is in part due to vague and nonspecific symptoms of this disease such as abdominal pain or gastrointestinal discomfort.

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Our patient's pathology resembles the latter. In a recent case report of stage I primary ovarian angiosarcoma, the patient was given 15 fractions of radiotherapy as well as olaparib and anti-PD-1 immunotherapy (the name of a specific drug was not given). In the 9-month follow-up, no evidence of disease was discovered

Our patient had a long-standing history of abdominal pain, but fortunately, she had a FIGO stage IA and no lung or other metastases.

Regarding surgical operation, because of the intraoperative frozen section report of probable malignant germ cell tumor, fertility-sparing unilateral salpingo-oophorectomy was opted for the patient according to NCCN guidelines.

Currently, our patient is within the 6th postoperative month. Every 3 months, a complete thorax, abdominal, and pelvic CT scan has been done, and fortunately, no evidence of disease has been discovered up to the writing of this manuscript.

Authors' Contributions

All of the authors contributed to writing and preparing the manuscript.

Ethical Considerations

The study was approved by Qom University of Medical Sciences. The study conforms to the recognized standards of the Declaration of Helsinki. An informed written consent form was obtained from the patient.

Acknowledgment

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Conflict of Interests

The authors declare that they have no competing interests.

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