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CASE REPORT

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Diagnostic challenges of ovarian hemangioma: a case report

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Abstract

Background: In postmenopausal women, ovarian malignancies are a major concern among various neoplasms. Ovarian hemangiomas are extremely rare and present diagnostic challenges, particularly in elderly patients. This report highlights a unique case of postmenopausal ovarian capillary hemangioma, emphasizing the challenges in differentiating it from malignant neoplasms. **Case**: A woman in her mid-70s with a history of breast cancer presented with an ovarian mass that resembled a borderline tumor. Imaging and laparoscopic findings indicate a septated cystic mass, which was later confirmed as a primary ovarian capillary hemangioma through histopathological analysis. **Conclusions**: This case underscores the diagnostic challenges related to ovarian capillary hemangioma in postmenopausal women and highlights the significance of awareness to prevent unnecessary radical surgery.

Keywords

Case report; Diagnostic challenges; Hemangioma; Ovarian neoplasm; Postmenopausal women

1. Introduction

Various ovarian neoplasms can develop in postmenopausal women. Epithelial neoplasms are the most common, followed by germ cell tumors and sex cord-stromal tumors [1]. The likelihood of malignancy increases with age, and over 30% of ovarian masses in women above 50 years are malignant [2]. Hemangiomas are common soft tissue tumors made up of several vascular proliferations, accounting for 7% of benign tumors [3]. However, ovarian vascular tumors are rare, complicating diagnosis [3]. In postmenopausal women, ovarian hemangiomas may be mistaken for malignant tumors, potentially leading to unnecessary radical surgery [4].

Ovarian hemangiomas are histologically classified as cavernous or capillary, with the most being cavernous [5]. In this study, we report a case of ovarian capillary hemangioma in a postmenopausal woman that mimicked borderline ovarian malignancy on ultrasound (US) exam.

2. Case

A 75-year-old woman was referred from a local clinic after an ovarian tumor was discovered during a routine medical examination. She had undergone breast-conserving surgery, followed by chemotherapy and radiotherapy for breast cancer in 2014. She was on annual follow-up with no evidence of recurrence and had been administered antihypertensive medication for the past 4 years.

An US examination revealed a multi-septated cyst in the right ovary measuring 4.6 $\times$ 2.6 cm, along with fluid accumulation around the uterus. Tumor markers, including cancer antigen 125 (CA-125), carbohydrate antigen 19-9 (CA 19-9), human epididymis protein 4 (HE4), and carcinoembryogenic antigen (CEA), were within normal ranges. The Risk of Ovarian Malignancy Algorithm (ROMA) score was 18.3, indicating low risk of malignancy, while the Risk of Malignancy Index (RMI) score for ovarian cancer was 306, indicating high risk. An magnetic resonance imaging (MRI) scan showed a 4.2 $\times$ 3.1 $\times$ 3.1 cm septated cystic mass with no signs of inner diffusion restriction or enhancement (Fig. 1).

During laparoscopy, a thin-walled cystic tumor containing hemoserous fluid was observed at the right ovary (Fig. 2). The patient underwent a laparoscopic bilateral salpingo-oophorectomy, and the specimens were sent for histopathologic analysis.

Microscopic examination of the right ovary revealed numerous small blood vessels with hemorrhagic infarct (Fig. 3A). Immunohistochemical analysis revealed positive staining for vascular endothelial markers, including erythroblast transformation-specific regulated gene-1 immunostaining (ERG) and cluster of differentiation 34 (CD34) (Fig. 3B), confirming the diagnosis of primary ovarian capillary hemangioma.

3. Discussion

Although the ovary is a highly vascular organ, ovarian hemangiomas are rare benign tumors, with $<$60 cases reported in the medical literature [5]. Owing to their rarity and the similarity of their US appearance to malignant tumors, they are

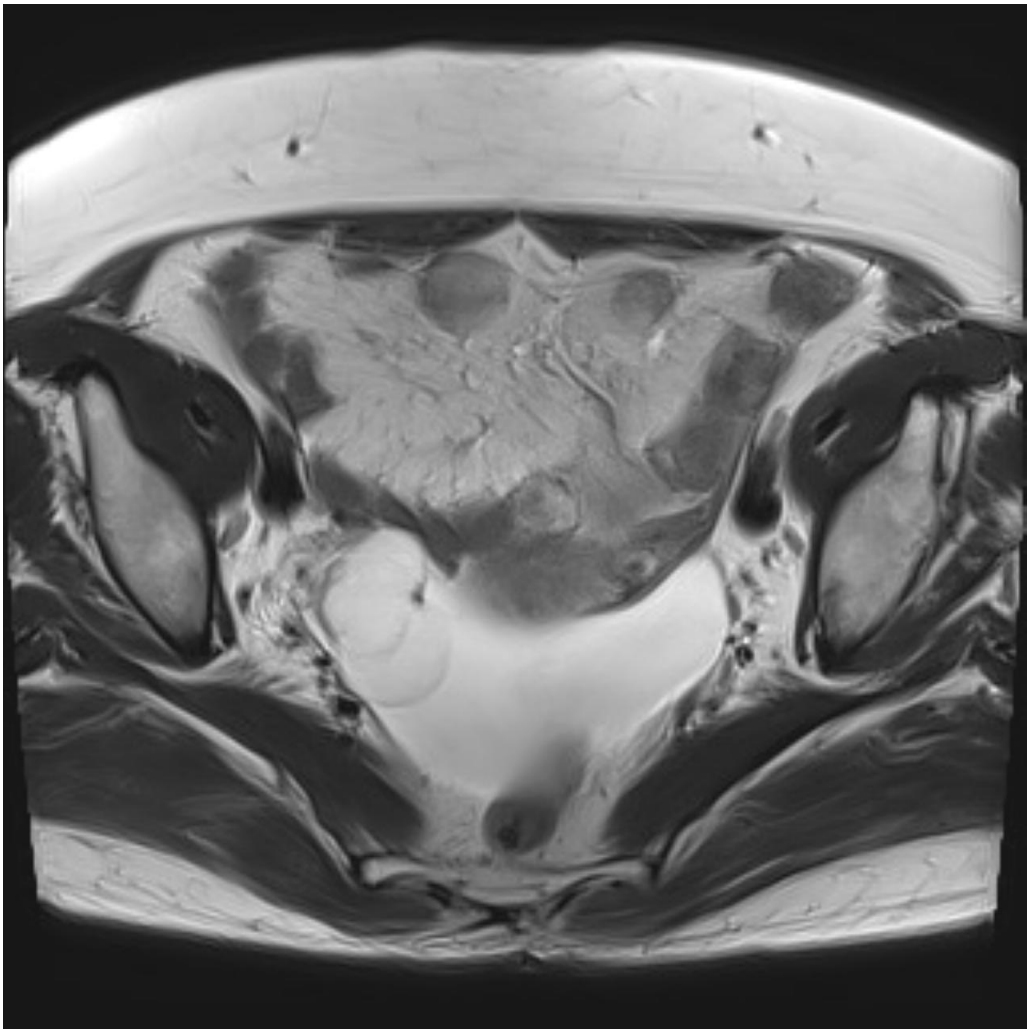

FIGURE 1. Magnetic resonance imaging (MRI) of a 4.2 × 3.1 × 3.1 cm septated cystic mass in the right ovary with no inner diffusion restriction or enhancement and the presence of ascites.

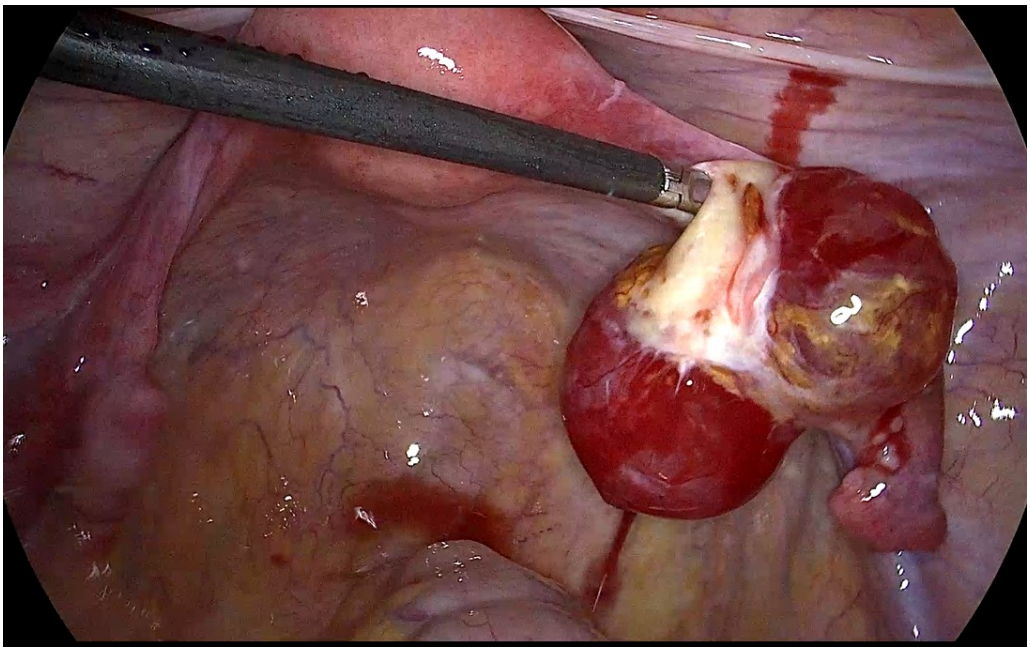

FIGURE 2. Laparoscopic view of a cystic tumor with a thin wall and hemoserous fluid in the right ovary.

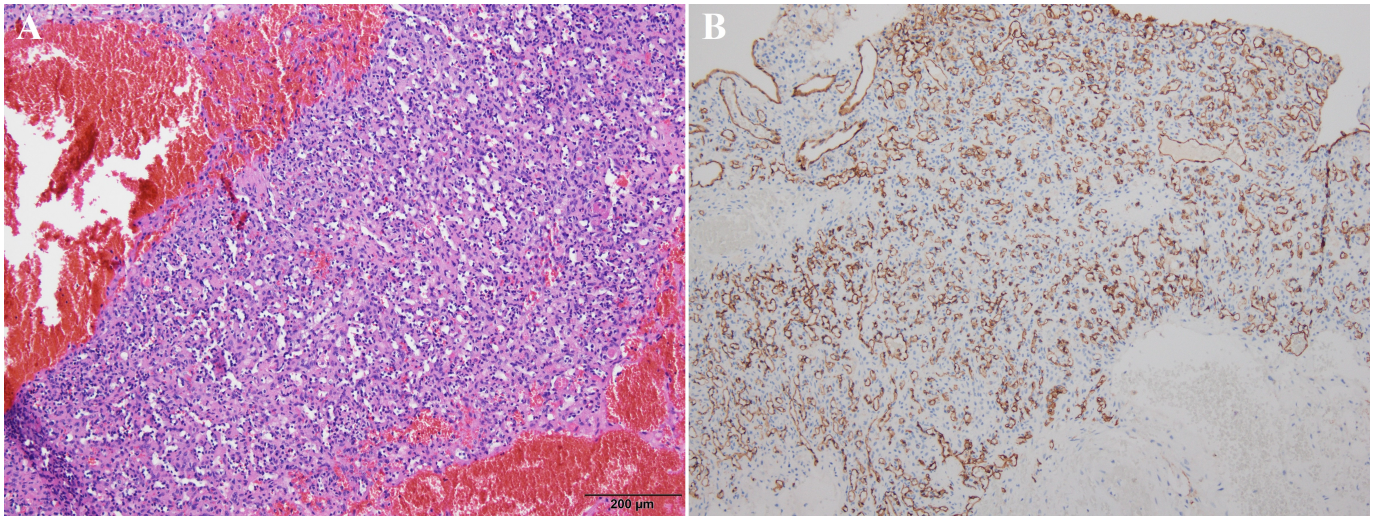

FIGURE 3. Microscopic findings. (A) Hematoxylin and eosin stain revealing proliferation of capillary-sized vascular spaces (H&E stain, 100×). (B) Immunohistochemical staining of CD34 highlighting endothelial cells lining the vascular spaces (CD34 stain, 100×).

often misdiagnosed as ovarian cancer, leading to unnecessary radical surgery [6]. Jha *et al.* [6] reported a case of a 35-year-old woman with a 10 cm ovarian tumor initially suspected to be a germ cell tumor, who underwent a hysterectomy and salpingo-oophorectomy. The final diagnosis was as ovarian hemangioma. Singh *et al.* [5] described a similar case of a 63-year-old postmenopausal woman, where ovarian hemangioma was diagnosed after total abdominal hysterectomy, bilateral salpingo-oophorectomy, total omentectomy, and lymph node removal.

MRI is highly useful for characterizing masses in patients with inconclusive US findings, especially when tumor markers are normal [7]. In our patient, the US revealed multi-septated cystic lesion in the ovary with ascites, raising suspicion of ovarian malignancy. However, the MRI showed no signs of inner diffusion restriction or enhancement, suggesting that the tumor was more likely benign than malignant. These findings allowed for the tumor to be safely removed through laparoscopic bilateral salpingo-oophorectomy, avoiding the need for radical surgery.

Hemangiomas are usually discovered incidentally and are often asymptomatic [8]. However, some cases have been associated with massive ascites and elevated serum CA-125 levels. Kaneta *et al.* [9] documented a case of ovarian hemangioma with massive ascites and elevated serum CA-125, suggesting pseudo-Meigs' syndrome. The exact cause of ascites in ovarian hemangioma remains unclear; however, vascular disturbances from the hemangioma are considered a potential cause [10]. In our case, the patient also had ascites, raising suspicion of a borderline ovarian tumor. After surgery, US follow-up revealed no recurrence of ascites.

Ovarian hemagiomas are classified into two histologic types: cavernous and capillary, with the cavernous type being more common [5]. The primary distinction between these types lies in the size of the blood vessels they contain. Of the approximately 50 reported cases of ovarian hemangiomas in the English literature, most are cavernous [5]. However, our case involved a capillary-type ovarian hemagioma characterized by multiple capillary-sized vascular proliferations. While both types are generally benign, understanding their differences is essential for accurate diagnosis.

4. Limitations of the study

This study has certain limitations. Although MRI played a crucial role in distinguishing the ovarian hemangioma from malignancy, additional imaging modalities, such as contrast-enhanced computed tomography (CECT) or positron emission tomography-computed tomography (PET-CT), were not utilized. Incorporating these techniques might have provided further diagnostic insights and enhanced preoperative assessment. Additionally, our case was identified as the capillary type, which is the rarer subtype of ovarian hemangioma. However, we were unable to determine any clinical significance or distinguishing features compared to the more common cavernous type. Due to the extreme rarity of ovarian hemangiomas, conducting comparative studies on these subtypes remains challenging. Nevertheless, future research exploring potential differences between these histologic subtypes would be valuable.

5. Conclusion

Ovarian hemangioma is a rare benign neoplasm of the ovary, and its preoperative findings can be misleading. It may be misdiagnosed as a malignant neoplasm, potentially resulting in unnecessary radical surgery, particularly in elderly patients. Hemangioma should be considered in the differential diagnosis of ovarian tumors before planning radical surgery. Additionally, MRI can be useful for characterizing masses when US findings are ambiguous.

AVAILABILITY OF DATA AND MATERIALS

All data generated or analyzed during this study are included in this article.

AUTHOR CONTRIBUTIONS

CHK and MKC—conceived the case report, conducted the literature review, and critically revised the manuscript for intellectual content. HKR—collected and analyzed the patient data, and drafted the manuscript. NIK—conducted the histopathological examination and interpretation. All authors reviewed and approved the final version of the manuscript.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

This study was reviewed and deemed exempt by the Chonnam National University Hospital Institutional Review Board. The Chonnam National University Hospital Institutional Review Board granted an exemption from requiring informed consent due to the nature of the study.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

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