Case Report

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Coexistence of uterine adenosarcoma and endometrioid endometrial carcinoma: A case report and literature review

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Abstract

Uterine adenosarcoma coexisting with endometrial carcinoma is a very rare disease. Herein, we reported the case of uterine adenosarcoma coexisting with endometrioid endometrial carcinoma. Transvaginal ultrasound, computed tomography, and magnetic resonance imaging examinations all indicated a space-occupying lesion in the uterine cavity, and initially was considered endometrial carcinoma. Subsequently, total hysterectomy combined with bilateral salpingo-oophorectomy, pelvic lymphadenectomy, and para-aortic lymphadenectomy were performed. The coexistence of uterine adenosarcoma and endometrioid endometrial carcinoma was histologically confirmed postoperatively. The patient recovered well after surgery and was discharged on postoperative day 7. At a follow-up examination 10 months after surgery, we found no evidence of discomforting symptoms and recurrence or metastasis. Since the coexistence of uterine adenosarcoma and endometrial carcinoma is rare, it is easy to be overlooked the presence of uterine adenosarcoma on imaging or morphology, and thus be misdiagnosed as a more common disease, namely endometrial carcinoma. Observing the cystic structure within the lesion on magnetic resonance imaging is helpful for the diagnosis of uterine adenosarcoma. This article summarizes the imaging characteristics, clinicopathological features, molecular correlation, treatment, and prognosis of the disease.

Keywords

Uterine adenosarcoma, endometrial carcinoma, endometrioid endometrial carcinoma, magnetic resonance imaging, imaging

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Introduction

Uterine adenosarcoma (UAS), first reported by Clement and Scully,[1] is rare, accounting for only 0.2% of all uterine malignancies.[2] UAS coexisting with endometrial carcinoma (EC) is even rarer. Only six literatures in English about the disease have been reported to date.[3–8] Herein, we presented a case of UAC coexisting with EC and performed a literature review in order to understand the imaging characteristics, and clinicopathological features of the disease better and reduce misdiagnosis.

Case report

A later 50 s female patient, was admitted to Guiqian International General Hospital on 9 November 2023 due to postmenopausal vaginal bleeding. Transvaginal ultrasound, computed tomography (CT), and magnetic resonance imaging (MRI) examinations all indicated a space-occupying lesion in the uterine cavity (Figure 1), and initially EC was considered.

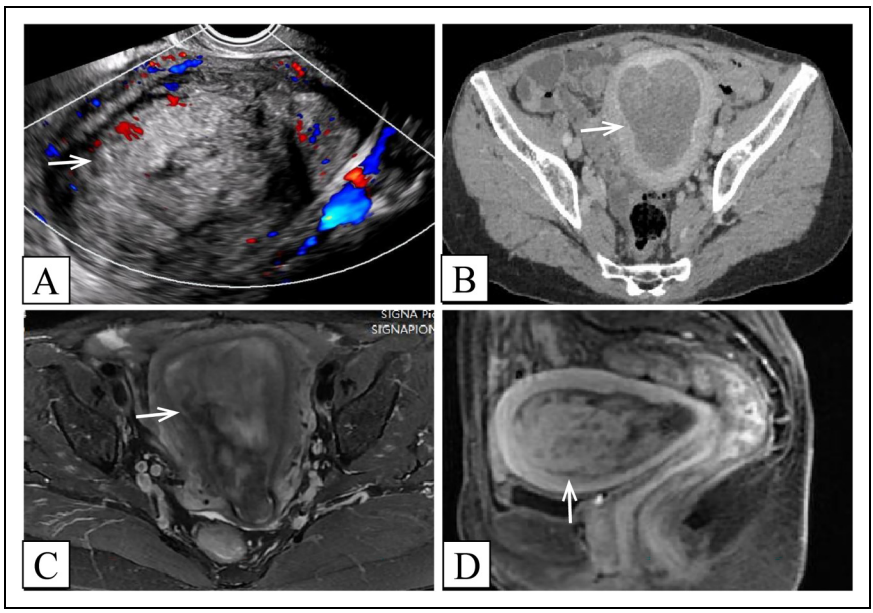

Figure 1. Imaging characteristics of this case. (A) Transvaginal ultrasound showed a mixed echogenic mass in the uterine cavity, and the endometrium was unclear. (B) CT enhanced scan showed mass shadows in the uterine cavity with progressive uneven enhancement, and uneven thickening of the endometrium. (C) MRI T2WI transverse view showed mixed slightly high signal and isointense mass shadow in the uterine cavity, with higher signal small cystic lesions in it, and uneven thickening of the endometrium. (D) MRI enhanced scan T1WI showed that the mass in the uterine cavity was obviously unevenly enhanced, and the degree of enhancement was similar to that of the myometrium. There were small cystic non-enhanced lesions in the mass. The thickened endometrium was slightly enhanced.
CT: chemotherapy; MRI: magnetic resonance imaging.

Subsequently, total hysterectomy combined with bilateral salpingo-oophorectomy, pelvic lymphadenectomy, and para-aortic lymphadenectomy was performed. The gross appearance showed that the endometrium was thickened (about 4 mm) and uneven. Another isolated polypoid mass was found (Figure 2A). Microscopically, the thickened endometrium showed a complex glandular structure. The glandular epithelial cells with eosinophilic cytoplasm, round irregular nuclei, and prominent nucleoli were arranged in a disorderly, depolarized, and stratified manner. The pathological diagnosis was endometrioid endometrial carcinoma (EEC) (Figure 2B). Immunohistochemical results showed that estrogen receptor (ER), progesterone receptor (PR), and mismatch repair proteins (MLH1 (Figure 2C), MSH2, MSH6, and PMS2) were positive in endometrial glandular epithelial cells, and P53 was positive in more than 80% of endometrial glandular epithelial cells, showing a mutant expression pattern. The polypoid mass showed bidirectional differentiation and was composed of epithelium and mesenchyme. The morphology of glandular epithelium was benign, with focal atypia areas. The periglandular mesenchyme was abundant and clustered with a focal leafy conformation, and the mitosis was easy to be found (an average of three mitoses per high-power field). Immunohistochemical results showed that CD10 was positive in stromal cells while negative in epithelial cells. P53 was also positive in more than 80% of stromal cells, showing a mutant expression pattern. The pathological

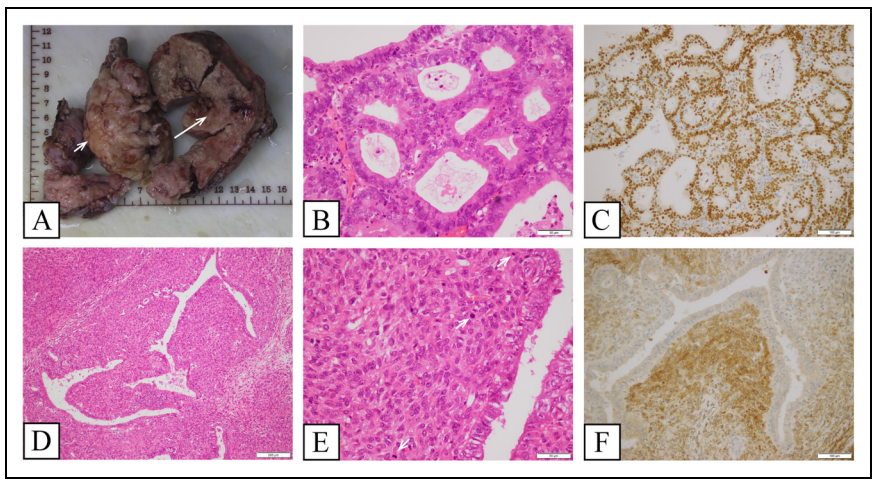

Figure 2. Pathological features of this case. (A) The gross appearance showed the thickened endometrium (long white arrow) and the polypoid mass (short white arrow). (B) The glandular epithelial cells of EEC with eosinophilic cytoplasm and round irregular nuclei and prominent nucleoli were arranged in a disorderly, depolarized, and stratified manner (H&E staining, 400 ×). (C) Immunostaining for MLH1 showed a positive reaction (200 ×). (D), The UAS showed bidirectional differentiation (H&E staining, 100 ×). (E) The mitosis was easy to be found in stroma (400 ×). (F) Immunohistochemical staining showed CD10 was positive in stromal cells while negative in epithelial cells (200 ×).

EEC: endometrioid endometrial carcinoma; UAS: uterine adenosarcoma; MLH: mismatch repair protein; H&E: hematoxylin and eosin.

diagnosis was approved for UAS (Figure 2D to F). No tumor metastasis was found in all lymph nodes. The final integrated diagnosis was approval for UAS (stage IA according to FIGO) coexisting with EEC (stage IA2 according to FIGO). The patient recovered well after surgery and was discharged on postoperative day 7. At a follow-up examination 10 months after surgery, we found no evidence of discomforting symptoms and recurrence or metastasis. Our team had obtained the patient's consent for treatment. The patient's details have been de-identified. The reporting of this study conforms to CARE guidelines.[9]

Discussion

Imaging features

Both EC and UAS have no characteristic manifestations in ultrasound and CT examinations. MRI is considered the most accurate imaging technique for preoperative evaluation of EC due to its excellent soft tissue contrast resolution.[10] Typical MRI manifestations of EC include reduced endometrial signal on T2WI, significantly increased signal on DWI, significantly reduced ADC value, and mostly mild enhancement in enhanced scans (significantly lower than myometrium enhancement).[10] In this case, the thickness of the endometrium was not obvious (about 4 mm), and the polypoid mass filled the uterine cavity, making it difficult to identify EC on MRI.

UAS appears as a heterogeneous polypoid mass in the uterine cavity on MRI. It often fills the uterine cavity with clear and sharp borders. UAS shows a moderate signal on T1WI and a slightly high or high signal on T2WI. Multiple separated small cystic areas are common, which are the benign glands of adenosarcoma, and the most characteristic manifestations of UAS. On the MRI of this case, characteristic cystic structures were also visible within the polypoid mass.

Clinicopathological features

UAS, presenting as a polypoid mass occupying the uterine cavity, is a biphasic neoplasm composed of a benign or occasionally atypical epithelial component and a malignant stromal component. Histologically, it is characterized by phyllode-form cleft-like or dilated glands, with periglandular stromal condensation, cytological atypia, and mitoses. Immunohistochemical staining of most UAS shows positive expression of ER and PR in the epithelial component and positive expression of CD10 in the sarcomatous component.[11]

UAS needs to be differentiated from carcinosarcoma, atypical polypoid adenomyoma, endometrial polyp, uterine adenomyoma, etc. Carcinosarcoma is composed of malignant epithelium and malignant stroma, while the epithelial component of UAS is benign or atypical. Atypical polypoid adenomyoma is composed of atypical endometrial glands and benign myomatous or fibromyomatous stroma. Immunohistochemistry shows a negative expression of CD10 in the stroma of atypical polypoid adenomyoma, while often a positive expression of CD10 in UAS. The endometrial polyp is composed of benign endometrial glands and benign endometrial stroma. The density of stromal cells

is low and mitoses are rare, while the density of malignant stromal cells in UAS is high and mitoses are common. Uterine adenomyoma is composed of benign endometrioid-type glands, endometrioid-type stroma, and smooth muscle.[11]

The main clinical symptom of EEC is postmenopausal vaginal bleeding, and the typical histopathological manifestations are endometrial gland hyperplasia, fusion, villoglandular structure, and stromal disappearance or desmoplastic stromal reaction. Immunohistochemistry shows diffuse strong positivity for ER and PR. Since the first case of UAS coexisting with EC was reported in 1981, 28 cases including one case in this report have been reported. Their clinicopathological characteristics are summarized in Table 1. Patients of UAS coexisting with EC ranged in age from 43 to 87 years. Most patients presented with abnormal vaginal bleeding or abdominal/pelvic pain. The gross appearance almost always showed a polypoid mass in the uterine cavity. The main type of EC is EEC, but occasionally clear cell carcinoma or dedifferentiated carcinoma may be found. Regardless of EC or UAS, the FIGO stages were mostly in stage I.

Molecular correlation

Of all the cases of UAS coexisting with EC described to date, four have undergone targeted next-generation sequencing testing. Among them, the first case contained components of UAS, EEC, and undifferentiated carcinoma. These three tumor components shared the same genetic mutations, including KRAS (p.G12D), PIK3CA (p.R88Q), and PTEN (p.R130G).[5] The second and third cases were admixed of UAS and EEC. There was the same gene mutation in both tumor components, KRAS (p.G12V) in the second case, and KRAS (p.G13D), PIK3CA (p.E542K), and FBXW7 (p.R479G) in the third case.[6] The fourth case was UAS coexisting with clear cell carcinoma, which showed seven identical somatic variants including CDK4 and MDM2 gene amplification.[8] Although molecular analysis was not performed in this case, p53 immunohistochemistry showed a mutant expression pattern in both EEC and UAS. In summary, in cases of coexistence of UAS and EC, the two components may be homologous.

Treatment and prognosis

Most patients with UAS are in the early stages and the prognosis is favorable. The recommended treatment is total hysterectomy with bilateral salpingo-oophorectomy and lymphadenectomy.[12] When UAS consists of 25% or more of sarcomas without accompanying glandular components, it is referred to as sarcomatous overgrowth. Most UAS lacking sarcomatous overgrowth are relatively indolent, with low recurrence rates, low distant metastasis rates, and low overall mortalities. Such tumors are treated primarily with surgery. Whereas those with sarcomatous overgrowth are often treated with chemotherapy, radiation therapy, or combined.[13] Among the 26 reported cases of UAS coexisting with EC, most patients who underwent surgical resection had a favorable prognosis, and only a few patients with distant metastases died of the disease.

Table 1. Summary of reported cases of UAS coexisting with EC from 1981 to 2023.

	Literature	Publication year	Number of cases	Age (years)	symptoms	Gross appearances	Sarcomatous overgrowth	types of EC	FIGO stage of UAS	FIGO stage of EC	Surgical resection	Follow-up treatment	Status after surgery
1	Gašljević et al.[8]	2023	1	85	AbnVB	Mass	Absent	CCC	IC	IA	TH-BSO and PLND	Absent	Alive (18 mo)
2	Osman and Abu-Sinn[7]	2022	1	59	AbnVB	Mass	Absent	EEC	IA	IA	TH-BSO and PLND	BT	Alive (20 mo)
3	Hallani et al.[6]	2021	22	43–87	AbnVB or AP/PP	No stated	Some cases were present	EEC or DC	I–IV	I–III	TH-BSO with or without PLND, or resection of the tumor only	Some cases underwent CT, RT, or BT	Eight cases alive (2–189 mo), 2 cases DOTD (7–8 mo)
4	Bai et al.[5]	2020	1	66	AbnVB and AP	Polypoid mass	Absent	DC	No stated	No stated	TH-BSO, PLND, and PALND	RT	DOTD (2 mo)
5	Bahari et al.[4]	1986	1	64	AbnVB	Polypoid mass	No stated	EEC	IB	IA	TH-BSO and PLND	No stated	No stated
6	Street and Du Toit[3]	1981	1	47	AbnVB	Polypoid mass	No stated	EASC	IC	IA	TH-BSO, PLND, and PALND	CT	Alive (20 mo)
7	Present literature		1	58	AbnVB	Polypoid mass	Absent	EEC	IA	IA	TH-BSO, PLND, and PALND	Absent	Alive (4 mo)

UAS: uterine adenosarcoma; EC: endometrial carcinoma; AbnVB: abnormal vaginal bleeding; PP: pelvic pain; AP: abdominal pain; EEC: endometrioid endometrial carcinoma; CCC: clear cell carcinoma; DC: dedifferentiated carcinoma; EASC: endometrial adenosquamous carcinoma; TH-BSO: total hysterectomy combined with bilateral salpingo-oophorectomy; PLND: pelvic lymphadenectomy; PALND: para-aortic lymphadenectomy; DOTD: died of the disease; BT: brachytherapy; CT: chemotherapy; RT: radiotherapy; Mo: months.

Conclusion

In summary, although the coexistence of UAS and EC is rare, the occurrence of this situation needs to be taken into consideration when diagnosing uterine space-occupying lesions clinically and radiographically, and MRI is an important method to evaluate these two coexisting tumors. UAS and EC share the same molecular changes when coexisting, and they may be homologous. The main treatment method for the coexistence of UAS and EC is surgical resection. The prognosis of cases without distant metastasis is favorable.

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Not applicable.

Authors' contributions

Wenyan Wang, Jianyu Li, and Deyu Guo conceived and designed the case report. Juan Xu, Hao Tang, and Ying Chen made the pathological diagnosis of the patient. Wenyan Wang contributed to the data analysis, and Deyu Guo rechecked it. All authors contributed to the writing of the paper and approved the final version for publication.

Availability of data and materials

All data generated or analyzed during this presented case are included within this article. Any other identifying information related to the authors and/or their institutions, funders, approval committees, etc., that might compromise anonymity: Not applicable.

Consent to participate

Written informed consent was obtained from the patients for this study.

Consent for publication

For this study, photos, and writing of our manuscript, the patient has given their written informed consent.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Ethical approval

This study was approved by the ethics committee of Guiqian International General Hospital. Approval number: GQGJ202407010015. Our institution approved the publication of the case details.

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Supplemental material

Supplemental material for this article is available online.

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