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Case Report

Uterine leiomyosarcoma in a postmenopausal woman: a case report

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ABSTRACT

Uterine leiomyosarcoma (ULMS) is a rare but highly aggressive smooth muscle malignancy that often masquerades as benign fibroids, delaying diagnosis until advanced stages. The disease carries a grim prognosis, especially when clinical suspicion is low. We present the case of a 56-year-old multiparous, postmenopausal woman with a 20 day history of dysuria with unexpected vaginal bleeding. With no abdominal pain, postcoital bleeding, or systemic symptoms, the presentation initially appeared benign. However, imaging revealed a bulky uterus with mixed fibroid pathology and a thickened endometrium. Cytology was inconclusive for malignancy. Definitive diagnosis came from histopathological examination of endometrial curettage and a malignant fibroid polyp, revealing ULMS. Pelvic MRI confirmed lobulated anterior uterine wall lesions, pelvic lymphadenopathy, and endometrial collection. The patient underwent total abdominal hysterectomy with bilateral salpingo-oophorectomy and lymphadenectomy. This case highlights the silent yet aggressive nature of ULMS and the importance of a high index of suspicion, even in seemingly routine gynecological presentations. Timely surgical management remains the cornerstone of care in achieving disease control.

Keywords: Uterine leiomyosarcoma, Postmenopausal bleeding, Uterine sarcoma, Malignant smooth muscle tumor

INTRODUCTION

Uterine leiomyosarcoma (ULMS) is a rare and highly malignant tumor arising from the myometrium or smooth muscle of uterine blood vessels.[1] Representing less than 1% of all uterine malignancies, its clinical presentation often mimics benign uterine fibroids, making timely diagnosis difficult.[2] While benign leiomyomas are common in perimenopausal and postmenopausal women, leiomyosarcomas are insidious-they grow rapidly, often without pain, and frequently present with non-specific symptoms such as postmenopausal bleeding or pelvic pressure.[3] Causes of postmenopausal bleeding include endometrial atrophy, endometrial hyperplasia, polyps, vaginal atrophy, and endometrial or cervical cancer.[4] Leiomyosarcoma is a rare finding, accounting for only 1-2% of postmenopausal bleeding cases.[5] Hence, it becomes crucial to thoroughly investigate postmenopausal bleeding. We report a clinically deceptive but histopathologically confirmed case of ULMS in a 56-year-old postmenopausal woman, emphasizing the need for careful evaluation of abnormal uterine bleeding, especially in postmenopausal patients.[3,5]

CASE REPORT

A 56-year-old woman para 2, living 2 (P2L2), presented to the gynecology outpatient clinic with a complaint of dysuria for 20 days and with unexpected vaginal bleeding. Bleeding with presence of clots coming out of vagina not associated with pain in abdomen, she also had no bowel complaints. Her last menstrual period was four years ago. She also reported burning micturition persisting for the past 20 days but denied abdominal pain, fever, dysuria or bleeding in urine. She did not had complain of intermenstrual bleeding, or postcoital bleeding. Obstetric history included two lower segment cesarean sections performed approximately 30 and 29 years ago. She is a known case of hypertension and type 2 diabetes mellitus since 11 years, both well-managed on medication.

Clinical examination and investigations

General examination

Pt was afebrile, pulse: 84 bpm, BP: 140/90, CVS:S1 S2 heard, RS: Air entry equal on both sides. Per abdomen examination: abdomen soft, no tenderness, guarding and rigidity, previous LSCS Pfannenstiel scar seen supra pubic area. no mass palpable, no heaptosplenomegaly noted. Per speculum examination revealed cervix and vagina healthy with no active bleeding, no foul-smelling discharge. Pap smear taken. Per vaginal examination: uterus anteverted 6 weeks size, freely mobile, no tenderness or mass felt in bilateral fornexes. A transvaginal ultrasound revealed: bulky anteverted uterus measuring 12.1×4.9×6.7 cm, a large left wall subserosal and partly intramural fibroid measuring 6.8×4.7 cm, a submucosal fibroid of 5.3×3.3 cm extending into the lower uterine and cervical cavity, endometrial thickness of 10 mm, bilateral atrophic ovaries. The preliminary impression was a bulky uterus with coexisting fibroids and thickened endometrium.

Cervical cytology and histopathology

A cytological smear revealed adequate cellularity, few squamous metaplastic cells, Doderlein bacilli, and a sparse background of acute inflammatory cells. There was no evidence of intraepithelial lesions or malignancy. After preoperative investigations patient was posted for hysteroscopy with dilatation and curettage under general anaesthesia. In hysteroscopy polyp of approximately 3×3 cm seen. Biopsy taken from polyp and rest endometrium appeared hypertrophied.

Endometrial biopsy taken by curettage, sent for histopathological report. patient tolerated operation well no post Operative complications noted. However, endometrial curettage and biopsy from a polypoid lesion in the uterine cavity raised concern.

Histopathology revealed spindle cells with marked atypia, increased mitotic activity, and areas of necrosis, consistent with leiomyosarcoma (Figure 1 and 2).

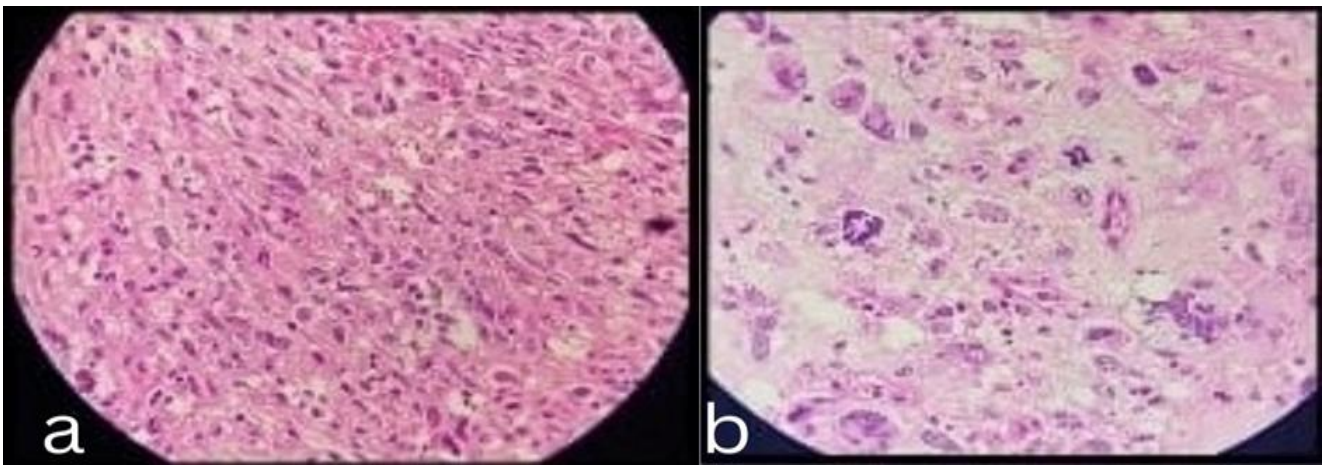

Figure 1 (A and B): Microscopic and immunohistochemical findings of uterine leiomyosarcoma.
*High power microscopy images showing a) abnormal mitotic figures, spindle cells with hyperchromatic nuclei and prominent nucleoli b) endometrial glands showing psudostratification and dedidualisation.

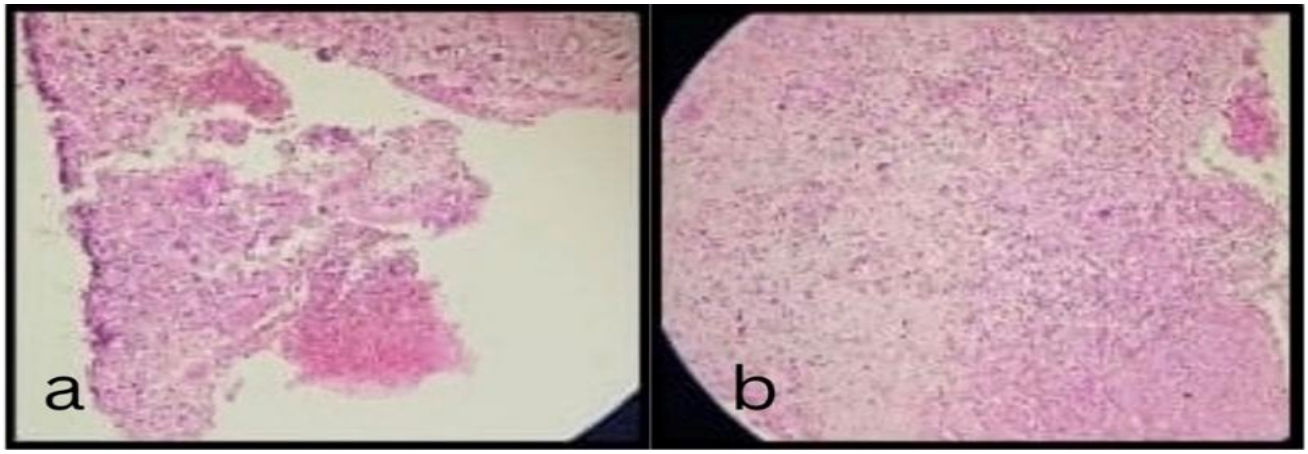

Figure 2 (A and B): Microscopic and immunohistochemical findings of uterine leiomyosarcoma.
*Low power microscopy images showing a) areas of coagulative necrosis, also presence of tumour giant cell b) spindle shaped tumour cells arranged in bundles and fascicles.

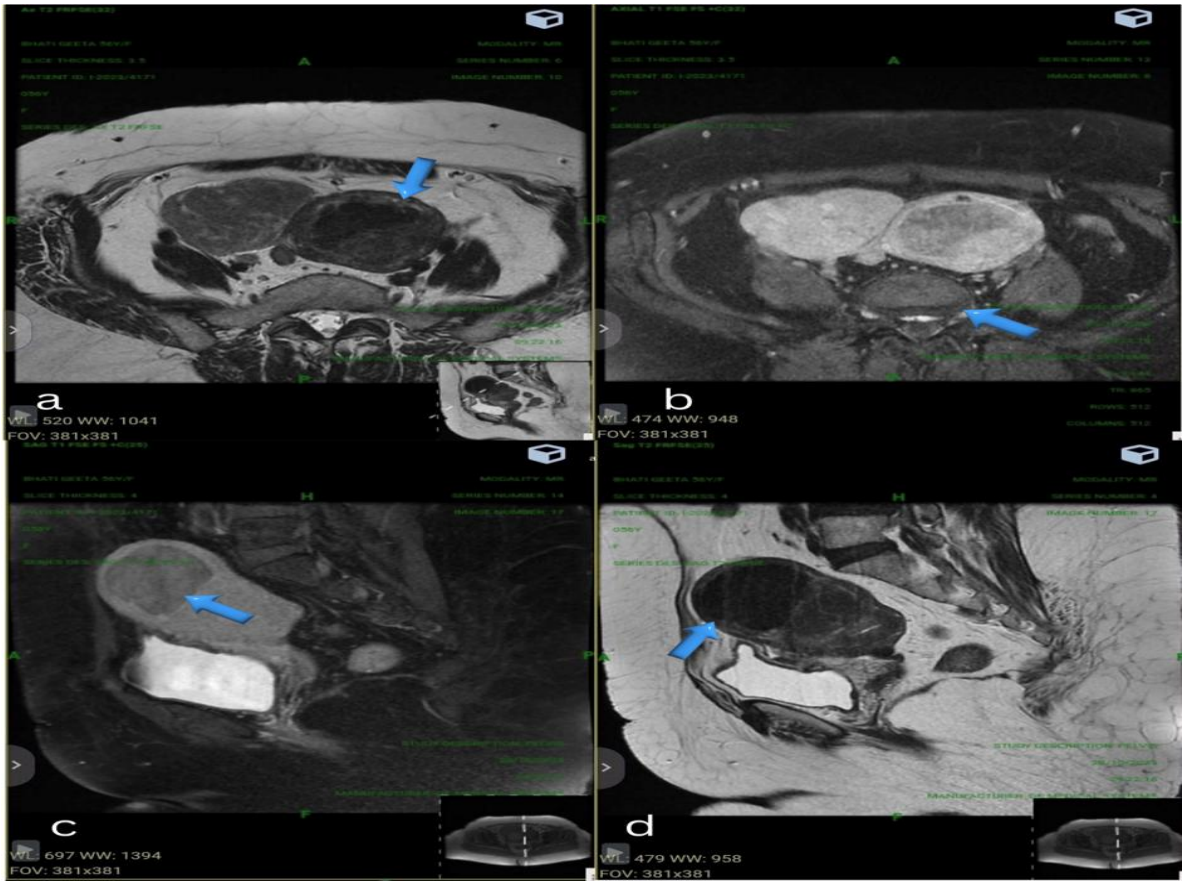

Figure 3 (A-D): Magnetic resonance imaging of uterine leiomyosarcoma of a post-menopausal woman (arrow).
*MRI images showing growth of lesion a) axial post contrast b) axial T2 c) sagittal T2 d) sagittal post contrast.

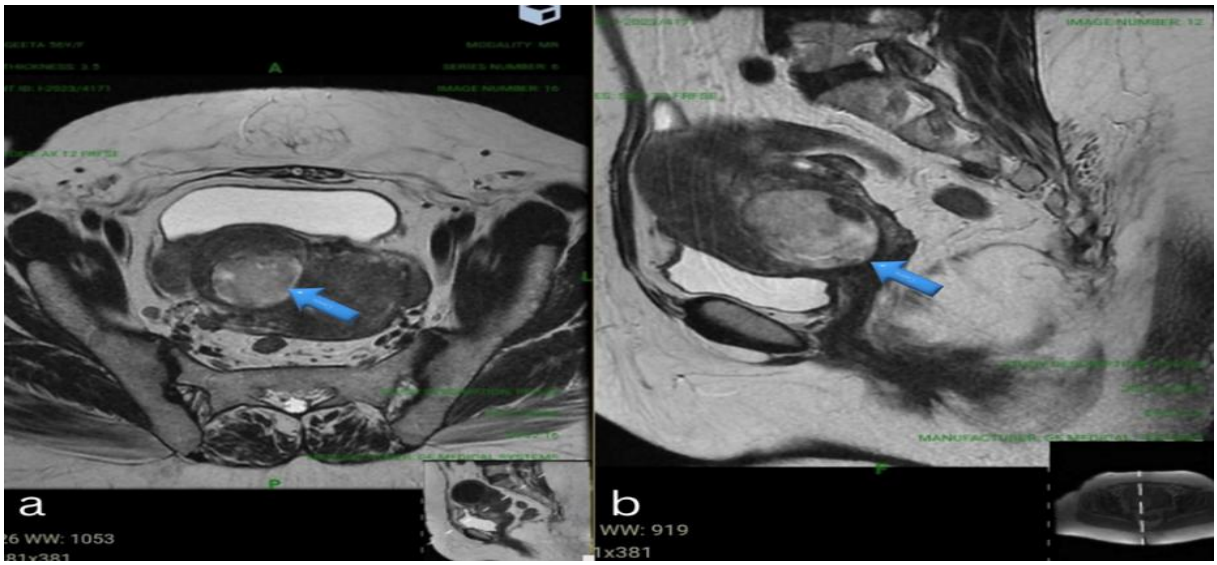

Figure 4 (A and B): Magnetic resonance imaging showing ULMS of a post-menopausal woman (arrow).
*MRI images representative of cystic degeneration a) Axial T2 weighted image showing well defined T2 hyperintense and T1 hypointense lesions arising from anterior wall of uterus b) sagittal T2 weighted image showing well defined T2 hyperintense and T1 hypointense lesion arising from anterior wall of uterus.

Due to histopathology report, further evaluation done by MRI pelvis. MR) pelvis: A plain MRI pelvis was performed, revealing: Bulky uterus with two well-defined, lobulated, solid mass arising from the anterior uterine wall, moderate endometrial collection with a solid component suggestive of blood products, mild free fluid in the pelvis, pelvic lymphadenopathy suggestive of early metastatic spread (Figure 3 and 4).

Following a multidisciplinary tumor board discussion, the patient underwent total abdominal hysterectomy with bilateral salpingo-oophorectomy and bilateral pelvic lymph node dissection. Gross examination of the surgical specimen showed irregular, fleshy, hemorrhagic tumor masses with necrotic areas. Final histopathology confirmed ULMS with extension into the endometrial cavity and early lymphovascular invasion. Pelvic lymph nodes showed no metastatic involvement. The postoperative period was uneventful. The patient is currently under regular follow-up with chemotherapy and radiotherapy. Chemotherapy included: Doxorubicin plus ifosfamide, doxorubicin: 75 mg/m² IV on day 1, ifosfamide: 2.5 g/m²/day IV on days 1-3, supportive care: Mesna for uroprotection, cycle Frequency: Every 3 weeks, total cycles: 4 cycles. Radiotherapy Included modality: External beam radiotherapy (EBRT), dose: 50-60 Gy in 25-30 fractions, fractionation: 2 Gy per fraction, 5 days/week, duration: Over approximately 5 weeks. Patient is on regular follow up and no evidence of recurrence of disease.

DISCUSSION

ULMS is a rare but highly aggressive form of uterine cancer, representing less than 1% of all uterine malignancies and approximately a quarter of uterine sarcomas. Despite its low incidence, it carries significant risk due to rapid growth, early dissemination, and limited treatment responsiveness. The present case is a compelling reminder of how subtly this malignancy can present, particularly in postmenopausal women, where symptoms may mimic benign gynecological conditions.

The patient, a 56-year-old postmenopausal woman, initially presented with dysuria and abnormal vaginal bleeding-complaints that, while concerning, are more commonly linked to benign conditions such as endometrial atrophy, polyps, or infections.[4] Given her postmenopausal status and the absence of classical symptoms such as abdominal pain or weight loss, a malignant process was not initially suspected. In clinical practice, only 1-2% of postmenopausal bleeding cases are attributed to ULMS.[5] This contributes to delayed or missed diagnoses.

Transvaginal ultrasonography revealed uterine fibroids and a thickened endometrium, both commonly encountered in benign conditions like leiomyomas.[6] However, when postmenopausal bleeding coexists with fibroid-like masses, further evaluation is warranted, as these may obscure a malignancy like ULMS. In this case, the subtle clinical presentation and benign-appearing ultrasound findings illustrate how ULMS can mimic non-malignant uterine conditions. Ultrasound is frequently used as an initial imaging modality, but its ability to distinguish benign leiomyomas from ULMS is limited.[6,7] MRI offers superior soft tissue resolution and provides more detailed assessment of uterine masses.[8,9] MRI findings that raise concern for malignancy include irregular borders, areas of necrosis, and heterogeneous signal intensities. Our patient's MRI demonstrated lobulated masses arising from the uterine wall with associated lymphadenopathy, raising suspicion of a sarcomatous lesion and supporting the decision for surgical intervention.

Despite imaging advances, histopathological analysis remains the definitive diagnostic modality for ULMS.[10,11] Key diagnostic criteria include pronounced nuclear atypia, high mitotic rate, and coagulative tumor cell necrosis.[11] In our case, biopsy findings confirmed the diagnosis, demonstrating spindle-shaped tumor cells with significant atypia and necrosis.

The gold standard treatment for localized ULMS is total abdominal hysterectomy with bilateral salpingo-oophorectomy.[12] Lymphadenectomy is not routinely performed unless clinical or radiological evidence of lymph node involvement exists, as lymphatic spread is relatively uncommon in early-stage ULMS.[12] In this case, lymphadenectomy was pursued due to MRI findings of enlarged pelvic nodes, which were ultimately negative for metastasis.

It is important to highlight the historical risk associated with morcellation, previously used to remove presumed fibroids laparoscopically. When used in undiagnosed sarcomas, morcellation can lead to dissemination of malignant cells throughout the peritoneal cavity, worsening prognosis.[3] Consequently, current guidelines strongly advise against morcellation in patients with suspected malignancy.

Recent genomic studies have shed light on the molecular landscape of ULMS, revealing recurrent mutations in TP53, RB1, PTEN, and ATRX, along with frequent alterations affecting DNA repair mechanisms such as homologous recombination deficiency, including BRCA2 mutations.[13] These findings have introduced new therapeutic opportunities, including the use of PARP inhibitors and ATR inhibitors, particularly in HRD-positive or ATRX-deficient tumors.[13,14]

The integration of molecular profiling into standard care is gaining traction, especially for patients with advanced or recurrent disease.[14,15] Although our patient did not undergo genetic analysis, such evaluations may guide personalized therapies in future cases. The benefit of adjuvant therapy in early-stage ULMS remains controversial. Studies and meta-analyses have generally shown no significant improvement in overall survival or disease-free survival with adjuvant chemotherapy or radiation in stage I disease.[12,14] Radiation may offer some degree of local control but does not significantly reduce distant recurrence. Chemotherapy is typically reserved for advanced-stage or recurrent disease and often includes agents such as doxorubicin, gemcitabine, or docetaxel.[12,14]

Our patient, having undergone complete surgical resection with no nodal involvement and no residual disease, was

managed conservatively with active surveillance. This aligns with current recommendations for early-stage ULMS, where potential risks and toxicity of adjuvant therapy may outweigh benefits in the absence of high-risk features.[12,14]

The prognosis of ULMS remains poor, particularly in metastatic or recurrent disease, prompting exploration of novel treatments.[14,15] Immunotherapy has shown limited success when used alone, likely due to the immunologically "cold" tumor microenvironment typical of ULMS.[14] However, combination approaches-such as checkpoint inhibitors with VEGF or PARP inhibitors-are under investigation and have demonstrated encouraging early-phase results.[13,14] Targeting epigenetic regulators like HDACs, FTO, and BRD9 has also emerged as a promising strategy.[15] Additionally, AI-assisted imaging and radiomic analysis are being studied to improve preoperative differentiation of ULMS from benign fibroids.[15]

Given the high recurrence rates, often within the first two years after surgery, close postoperative surveillance is essential. Standard follow-up includes imaging every 3-6 months for the first two years and annually thereafter.[12] The involvement of a multidisciplinary team is crucial in managing ULMS, particularly when considering adjuvant therapy or clinical trial eligibility.[12,14]

CONCLUSION

This case demonstrates how a silent malignancy like ULMS can hide behind the veil of common gynecological complaints. It underscores the necessity of maintaining a high index of suspicion for malignancy in postmenopausal bleeding, especially when accompanied by fibroid-like masses. Early detection and prompt surgical intervention remain our best defense against this aggressive uterine neoplasm.

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