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INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI:10.21474/IJAR01/ 20725
DOI URL: http://dx.doi.org/10.21474/IJAR01/20725

RESEARCH ARTICLE

A RARE CASE OF CARDIAC METASTASIS FROM UTERINE LEIOMYOSARCOMA: A CASE REPORT

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Manuscript Info

Manuscript History
Received: 12 February 2025
Final Accepted: 16 March 2025
Published: April 2025

Key words:-
Preeclampsia, HDP Gestosis Score, hypertensive disorders of pregnancy, risk prediction, maternal outcomes

Abstract

Uterine leiomyosarcomas (ULMS) are rare malignant tumors of smooth muscle origin.Cardiac metastases from ULMS are extre mely uncommon and remain underreported. Herein, we present the case of a 57 year old woman with locally advanced uterine le iomyosarcoma who developed an intracardiac metastasis.Followi ng chemotherapy,radio therapy, and subsequent surgery for the p rimary tumor, postoperative imaging unexpectedly revealed a massive right atrial thrombus extending into the inferior vena cava,later confirmed to be metastatic.Despite surgical interventio n, complete resection of the thrombus was not achieved, leading to the patient's demise from progressive heart failure. This case e mphasizes the potential for cardiac involvement in ULMS and hi ghlights the importance of considering metastatic cardiac lesions in the differential diagnosis of intracavitary masses.

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Introduction:

Uterine sarcomas are rare malignant tumors arising from the myometrial smooth muscle (2). Cardiac metastases are among the least known and highly debated issues in oncology. The incidence of cardiac metastases reported in literature is highly variable, ranging from 2.3% and 18.3%. Endocardial metastases are usually the result of the invasion from the bloodstream through the heart's chambers with intracavitary lodging. (3).Given the rarity of uterine sarcomas and intracardiac metastases, intracardiac metastases from uterine sarcomas have been very rarely reported in the literature. We report a case of 57-year-old woman with a locally advanced leiomyosarcoma of the uterus, that underwent radio and chemotherapy, followed by surgery. Post-operative investigation showed an intra cardiac metastasis of the uterine leiomyosarcoma.

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CASE REPORT:

A 57-year-old woman with no significant medical history, G3P3, postmenopausal for 9 years, being treated for a locally advanced uterine leiomyosarcoma, initial FIGO stage IIIC1, initially deemed unresectable. The patient underwent first-line chemotherapy with doxorubicin and dacarbazine, completing 4 cycles. Interim evaluation continued to indicate unresectability, prompting an additional 2 cycles of chemotherapy. In addition, the patient receivedradiotherapy to the pelvis with a boost to the parametrial area.

Radiological Findings:

Initial Pelvic MRI:

- Large uterine tumor causing a thrombotic tumor involvement of the left ovarian vein.
- Partial thrombosis of the left internal iliac vein.

Initial Thoraco-Abdomino-Pelvic CT (TAP):

- Large, locally advanced uterine tumor, FIGO stage IIIC1, associated with a thrombotic involvement of the left ovarian vein.

Post-Treatment Imaging Findings (MRI):

- Significant regression in the size of the large uterine cervico-isthmic tumor, predominantly on the left, still showing extension to the left parametrial region and ipsilateral fallopian tube, consistent with sarcomatous pathology.
- Extensive fibrotic changes in the pelvic region, particularly affecting the bladder and rectal walls, suggestive of post-radiation changes.

Clinical Examination after chemo and radiotherapy:

On Speculum Exam (SPC):

- Cervix appears macroscopically normal with peri-orificial erythema.

On Vaginal Exam (TV):

- Cervix is supple. Fornices appear soft and free. A rounded mass is palpable through the left fornix, possibly indicative of tumor extension into the left ovary.

On Rectal Exam (TR):

- Right parametrium is supple. The left parametrium appears slightly infiltrated.

The patient underwent total hysterectomy with bilateral adnexectomy, resection of all visible tumor was made. Under general anesthesia, with prior spinal anesthesia by intrathecal morphine with 100 gamma of morphine in an analgesicpurpose.

The procedure took place without incident except for a few episodes of hypotension corrected by phenylephrine. The patient was then transferred ventilated intubated to the intensive care unit, then woken up and extubated 2h after warmingand fully waking up.

Postoperative care mainly focuses on the hemodynamic and respiratory aspects and monitoring of drains.

The day after surgery, a transthoracic echocardiogram (TTE) was performed, complemented by a CT angiography, which revealed a massive thrombus in the right atrium extending into the inferior vena cava and reaching the renal veins.

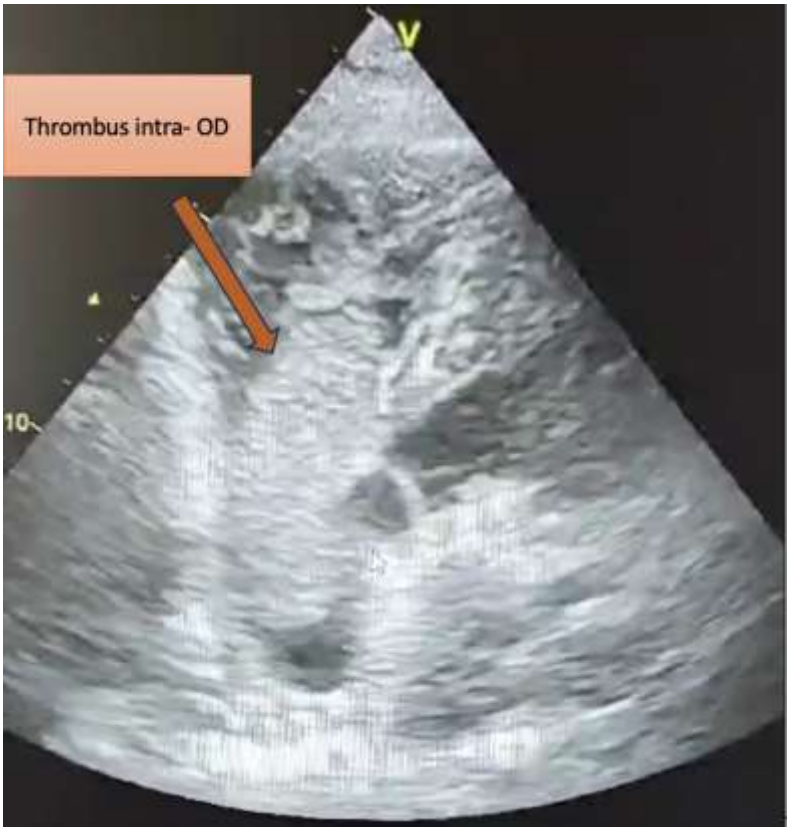

Figure 2: The transthoracic ultrasound revealed the presence of a massive thrombus within the right atrium (RA).

Surgery was undertaken to extract the thrombus, but it was not possible to remove it entirely. Macroscopically, the thrombus had a tissue-like consistency, and the final histopathological analysis confirmed it to be a metastasis from the patient's leiomyosarcoma. The patient passedaway 14 daysafter the surgery.

Figure 1: Macroscopic aspect the intra-cardiac metastasis after surgery

Discussion:

Cardiac metastasis is highly reported in lung cancer, breast cancer, leukemia, malignant lymphoma, and malignant melanoma, only few cases have been reported on metastasis in uterine sarcoma (1, 4 , 5).

Uterine leiomyosarcoma often metastasizes to the lungs, peritoneal cavity and liver,but metastasis to the heart is very rare. Our literature search yielded only 13 cases with cardiac metastasis, since the first report by Rosenblatt et al. in 1960, from 2000 through 2024.

Metastatic cancer cells from uterine leiomyosarcoma can reach the heart via lymphatic or hematogenous pathways; however, the lungs and breasts are more commonly the primary sites of metastasis. [8]

The patient can be totally asymptomatic, or can present signs of heart failure.

Cardiac metastases fromuterine leiomyosarcoma most commonly present as atrial or ventricle masses detected on clinical presentation.[9] In our case, the discovery of the intra-right atrial thrombus was incidental. A transthoracic echocardiography, performed almost systematically in the intensive care unit to assess volemia by measuring filling pressures, revealed the intra-right atrial thrombus.

Cardiac metastasis will generally produce clinical findings only when the heart is involved extensively. Findings are variable and include progressive heart failure , intracavitary obstruction, embolism and arythmia.(11)

Yazan Assaf et al. reviewed 12 patients with pulmonary infarcts caused by cardiac tumors and pulmonary tumor emboli. Approximately 10% of patients with metastatic cardiac tumors develop cardiac dysfunction. The signs include tamponade, atrio-ventricular valve obstruction and pulmonary or systemic emboli. (10 - 11)

Appropriate candidates for cardiovascular surgery are those with low-grade malignancies and no evidence of metastases to other organs. However, urgent surgical intervention should be considered in cases of valvular insufficiency, obstruction of the outflow tract, or pulmonary infarction caused by the tumor.

Our patient underwent surgery due to the size of the thrombus, which caused an obstruction in the outflow tract. But complete extraction of the thrombus was not possible. Therefore, the patient suffered from a progressive heart failure which caused death.

Survival is largely dependent on metastasis, with a 5-year survival rate of 91.2% for nonmetastatic uterine leiomyosarcoma and 41.2% for metastatic uterine leiomyosarcoma. (7)

Given the aggressive nature of uterine leiomyosarcoma and the rarity of cardiac metastases, we present this case to provide additional evidence of the potential for cardiac involvement.

Conclusion:

Cardiac metastasis from uterine leiomyosarcoma is extremely rare and often detected incidentally, but it can cause severe complications, including heart failure and intracavitary obstruction. This case highlights the importance of early detection and multidisciplinary management to improve outcomes in patients with metastatic cardiac involvement.

Declaration of patient consent

The authors certify that they have obtained all appropriate the patient's legal representative consent forms.

There is no financial support and sponsorship.

There are no conflicts of interest.

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