STM JOURNALS

International Journal of
Pathogens

Volume 1, Issue 1, 2024
January—June
DOI (Journal): 10.37591/IJPG

https://journals.stmjournals.com/ijpg

Case Study IJPG

Uterine Leiomyosarcoma: A Diagnostic Dilemma

Karthik Dasari[1], Murad Ahmed[2,*], Shagufta Qadri[3], Roobina Khan[4], Veena Maheswari[5], Iqra Usman[6]

Abstract

Tumours that fall under the category of uterine malignancies include carcinosarcomas, leiomyosarcomas, endometrial stromal sarcomas, and undifferentiated sarcomas. Of them, leiomyosarcoma is the most common subtype, while still quite uncommon—it accounts for 1% to 2% of uterine cancers. Since postmenopausal bleeding is typically present in leiomyosarcomas, prompt detection is essential for successful treatment. This case study features a 50-year-old female patient who had postmenopausal bleeding, which is a common sign of uterine cancers. Based on preliminary microscopic analysis, leiomyoma of the symplastic variety—a benign smooth muscle tumour frequently seen in clinical practice—was diagnosed. But a more concerning discovery was made upon closer inspection of the entire hysterectomy specimen: leiomyosarcoma. Considering postmenopausal haemorrhage in particular, this case highlights the diagnostic difficulties in distinguishing benign from malignant uterine tumours. Though up to 40% of women over 40 have leiomyomas, which are incredibly frequent, the possibility of malignant transformation, while rare, makes careful clinical and histological diagnosis necessary. The shift in diagnosis from benign leiomyoma to malignant leiomyosarcoma highlights the significance of thorough tissue specimen evaluation and comprehensive diagnostic methods. This example also emphasises the need of ongoing monitoring and scepticism on the side of the practitioner, especially when patients present with unusual symptoms like postmenopausal haemorrhage. The best possible outcomes for patients depend on early discovery and proper diagnosis, since uterine leiomyosarcoma has a worse prognosis than its benign equivalent. Surgical intervention, adjuvant therapy, and vigilant observation to check for metastasis or recurrence are possible treatment approaches. Considering postmenopausal bleeding, this case report underscores the significance of taking leiomyosarcoma into account when making a differential diagnosis of uterine tumours. To diagnose uterine cancers promptly and treat them appropriately, raising clinical suspicion and doing a comprehensive pathological assessment are crucial for improving patient outcomes.

Keywords: Uterine tumours, postmenopausal bleeding,leiomyosarcoma, symplastic leiomyoma, smooth muscle neoplasm

***Author for Correspondence**
Murad Ahmed
E-mail: muraddd3140@gmail.com

[1]Junior Resident, Department of Pathology, JNMCH, Aligarh, Uttar Pradesh, India
[2,3]Assistant Professor, Department of Pathology, JNMCH, Aligarh, Uttar Pradesh, India
[4,5]Professor, Department of Pathology, JNMCH, Aligarh, Uttar Pradesh, India
[6]Senior Resident, Department of Pathology, JNMCH, Aligarh, Uttar Pradesh, India

Received Date: March 08, 2024
Accepted Date: May 10, 2024
Published Date: May 20, 2024

Citation: Karthik Dasari, Murad Ahmed, Shagufta Qadri, Roobina Khan, Veena Maheswari, Iqra Usman. Uterine Leiomyosarcoma: A Diagnostic Dilemma. International Journal of Pathogens. 2024; 1(1): 38–42p.

INTRODUCTION

Leiomyosarcoma (LMS) is an uncommon and aggressive kind of cancer that develops in smooth muscle tissue. It has a poor prognosis and a high propensity for malignancy. It can arise in other parts of the body when smooth muscle is present, although it usually happens in the uterus, accounting for 2% to 5% of uterine malignancies. LMS is uncommon, and preoperative diagnosis can be challenging. As a result, doctors frequently struggle to identify and manage LMS.

The mainstay of treatment for leiomyosarcoma is still surgery, which attempts to remove the

tumour entirely when practical. However, the mitotic index—a measure of the rate of cell division inside the tumor—and the degree of the disease at the time of diagnosis both have a major impact on the prognosis of patients with LMS. Higher levels of mitotic activity are linked to worse results and more aggressive behaviour.

The histopathological diagnosis of leiomyosarcoma is a difficult one, especially when trying to differentiate it from other benign disorders like symplastic leiomyoma. Symplastic leiomyomas are a subset of benign smooth muscle tumours that mimic leiomyosarcomas histologically due to unusual cellular characteristics. The aforementioned resemblance highlights the significance of meticulous clinicoradiological correlation in the diagnosis procedure to prevent misunderstandings, particularly in situations when limited biopsy samples are accessible.

The distinctive traits of leiomyosarcoma may be weak or nonexistent in small biopsy specimens, which could result in an incorrect diagnosis or an underestimate of the tumor's malignant potential. To accurately diagnose patients and guide treatment decisions, physicians must thus consider data from radiological, histological, and clinical sources. When determining the severity of the disease and directing biopsy operations, radiological imaging modalities like ultrasound, MRI, and CT scans are essential.

The case study illustrates the difficulties in detecting leiomyosarcoma because the initial biopsy revealed symplastic leiomyoma. This misclassification emphasises how crucial it is to exercise caution and conduct a comprehensive assessment when making diagnoses. This emphasises the necessity for physicians to keep a close eye out for leiomyosarcoma, particularly in situations when radiological or clinical indications suggest cancer.

Finally, leiomyosarcoma is an uncommon but clinically relevant cancer with an unfavourable prognosis and aggressive behaviour. A multidisciplinary approach including radiographic, histological, and clinical assessment is necessary for an accurate diagnosis. It is important to use caution, especially when the results of the initial biopsy are unclear or incomplete. Clinicians can enhance care approaches and improve outcomes for patients with leiomyosarcoma by working together and doing thorough evaluations.

CASE REPORT

In addition to recent heavy menstrual bleeding, lower abdomen pain, and weight loss over the previous month, the presentation of a 50-year-old female patient with postmenopausal haemorrhage for a year raises concerns about possible underlying gynaecological disorders, particularly endometrial disease.

Postmenopausal bleeding, which is characterised as vaginal bleeding that happens twelve months or more after the menstrual cycle has stopped, needs to be thoroughly investigated because it has been linked to dangerous disorders such endometrial cancer. In this instance, severe menstrual bleeding combined with postmenopausal bleeding may indicate a more intricate disorder.

The patient's stated lower abdomen pain, while minor and non-radiating, contributes another level of detail to the diagnostic assessment. Even while stomach discomfort is sometimes generic, its persistence is something to take into account, particularly when combined with other symptoms. Notable ultrasonography results include an 8x7cm intramural fibroid with cystic degeneration and an endometrial thickness of 32 mm.

In postmenopausal women, endometrial thickness greater than 5 mm is indicative of endometrial hyperplasia or cancer. Moreover, the patient's unusual bleeding patterns and lower abdomen pain may be attributed to the existence of a sizable fibroid, especially in cases of cystic degeneration. For

additional assessment and treatment, a multidisciplinary approach encompassing radiology, gynaecology, and even oncology is essential given the constellation of symptoms and imaging results.

To directly evaluate the endometrium for any pathological changes, such as hyperplasia or cancer, diagnostic methods such endometrial biopsy or hysteroscopy may be necessary. To help with treatment planning, more imaging tests like magnetic resonance imaging (MRI) may be able to characterise the fibroid and its connection to surrounding structures in more detail. The treatment plan will be determined by the underlying diagnosis.

Treatment options include surgical procedures like hysterectomy or endometrial resection, sometimes in conjunction with adjuvant therapies like radiation or chemotherapy, if endometrial hyperplasia or cancer is diagnosed. If surgery—such as a myomectomy or hysterectomy—is considered essential, management of the fibroid may entail medication to relieve symptoms.

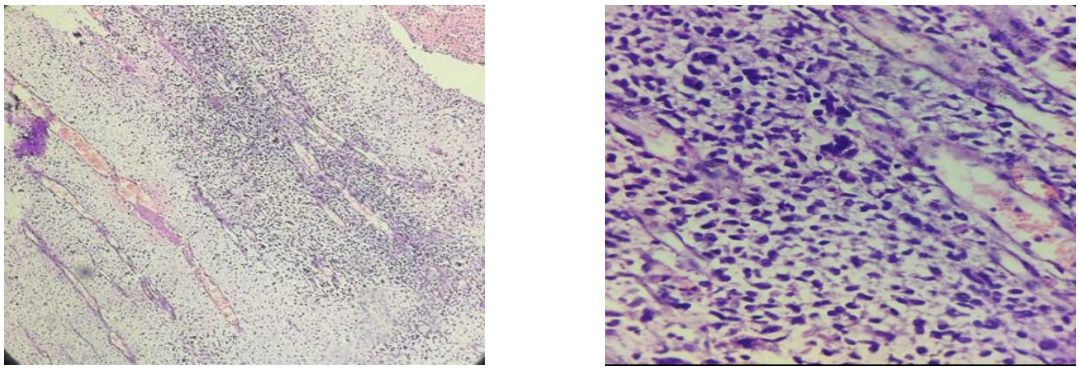
Finally, a timely and thorough examination is necessary to identify the underlying pathology and implement appropriate therapeutic methods when a 50-year-old female presents with symptoms of postmenopausal haemorrhage, heavy menstrual flow, lower abdomen pain, and weight loss. For patients to receive the best care possible, cooperation between different medical specializations is crucial.

A biopsy of size 3.5×3×0.8cm was sent for histopathological examination in department of pathology. Microscopic examination showed fascicles of smooth muscle cells with dense inflammation and haemorrhage along with areas showing bizarre cells, no necrosis or mitotic figures seen in the section examined. Diagnosis of Symplastic leiomyoma was made (Figure 1). Since the biopsy was small in size differential diagnosis of leiomyosarcoma kept in mind and excision was advised. After 10 days total hysterectomy was done and was sent for histopathological examination (Figure 3).

Specimen measures 13×9×5cm, cut section shows solid and cystic areas involving the endometrial cavity along with areas of hemorrhage and necrosis. Few intramural nodules also seen and multiple creamish white soft tissue pieces aggregate measuring 18×13×3.5cm was sent separately (Figure 2).

Under a microscope, hypercellular regions showing signs of aggressive cellular activity were seen. These regions were identified by hyperchromatic pleomorphic nuclei with areas of necrosis and haemorrhage. The frequent appearance of mitotic figures further suggested that cells were dividing quickly. Furthermore, the stroma showed capillary growth, indicating increased vascularization inside the tumour. The diagnosis of leiomyosarcoma, a malignant tumour originating from smooth muscle cells, was made possible by these combined histological characteristics.

The aggressive nature and tendency to metastasize of leiomyosarcomas are well-known. To treat the tumour and stop it from spreading, a combination of radiation therapy, chemotherapy, and surgical resection is usually used. The amount of metastasis, tumour size, grade, and other variables can all affect the prognosis. The possibility of a recurrence makes close observation and follow-up imperative. In order to optimize patient outcomes and provide complete treatment, multidisciplinary management involving surgeons, oncologists, and other healthcare specialists is essential.



10x 40x

Figure 1. H and E section shows fascicles of smooth muscle cells with areas showing nuclear pleomorphism.

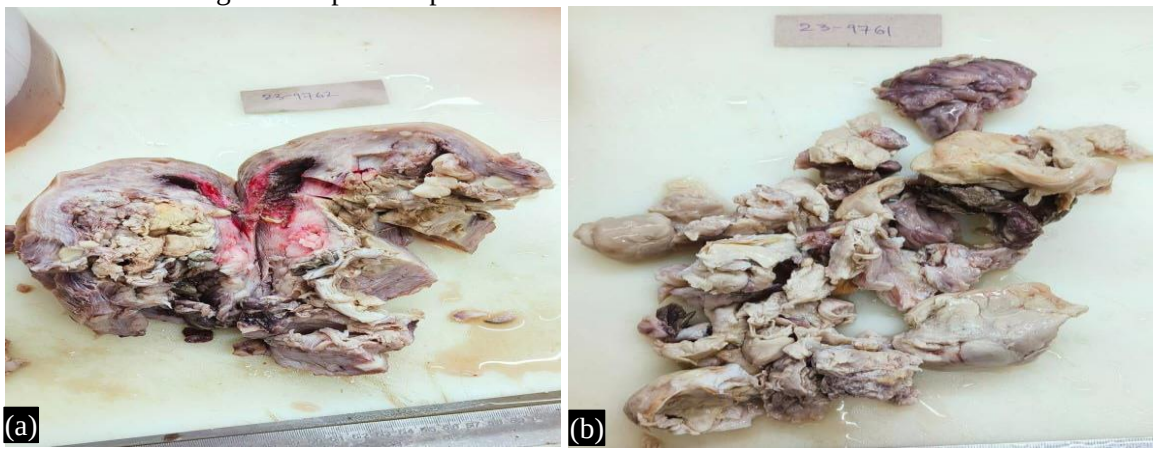
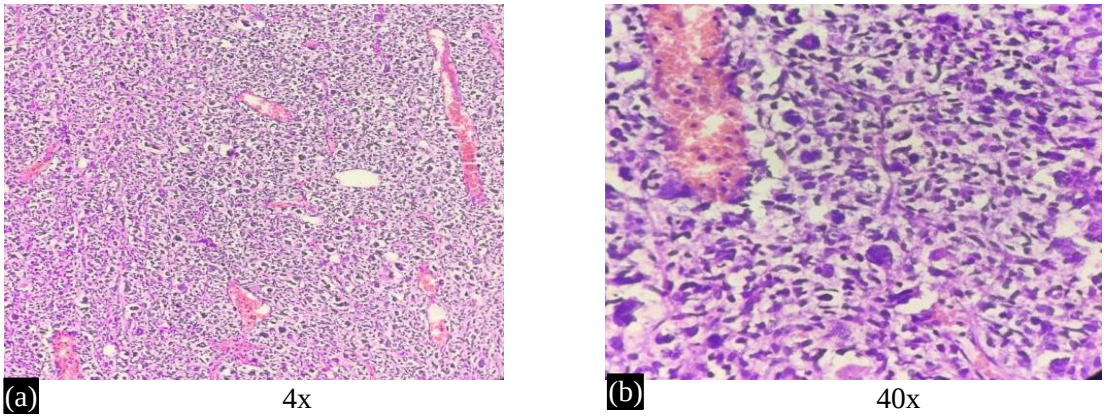
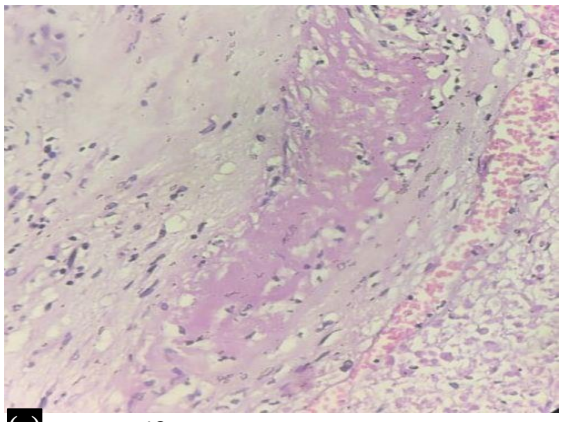


Figure 2. (a) Hysterectomy specimen shows variegated necrotic growth in the endometrial cavity with multiple mural nodules. (b) Multiple soft tissue pieces of similar morphology and consistency as in the uterine cavity.



4x 40x



(c) 40x

Figure 3. (a) H&E stained shows hypercellular area with hyperchromatic pleomorphic nuclei with proliferating capillaries. Scattered mitotic figures also seen (4x). (b) H&E section shows highly pleomorphic cells with tumor giant cell formation (40x). (c) H&E section shows areas of necrosis (40x).

DISCUSSION

Leiomyosarcoma is a malignant tumor with smooth muscle differentiation [1]. Most commonly arise in the extremities, retroperitoneum, abdomen / pelvis and trunk [2, 3]. Leiomyosarcoma can develop in long standing uterine leiomyomas. It can develop within the blood vessels most commonly inferior vena cava [4]. Uterine leiomyosarcoma can appears as multiple fibroids [5]. So on radiology it is difficult to diagnose a case of leiomyosarcoma. Histopathological examination is always a confirmatory method.

CONCLUSION

When it comes to leiomyosarcoma, histopathological examination become challenging when we consider other tumours like symplastic leiomyoma, smooth muscle tumour of uncertain malignant potential (STUMP) and conventional leiomyoma [6]. Symplastic leiomyoma is defined by focal, multifocal or diffuse bizarre cells on a background of typical leiomyoma cells and charecterized by moderate to severe nuclear atypia, low mitotic count (5 mitosis/10hpf) but with karyorrhectic nuclei, and no tumour cell necrosis. Symplastic leiomyoma can be differentiated from leiomyosarcoma by absence of high mitotic rate and tumour necrosis [7]. Differentiation of LMS from symplastic leiomyoma is challenging in frozen examination too [8]. In our case the initial biopsy was small and the sections examined did not show necrosis and mitosis, which lead to the incorrect diagnosis of symplastic leiomyoma. Preoperative evaluation have low sensitivity in differentiating leiomyoma from leiomyosarcoma [9]. Later on total abdominal hysterectomy of patient was performed which showed features of leiomyosarcoma on histopathological examination. So it is very important that we should give diagnosis of symplastic leiomyoma cautiously as the findings of LMS can easily missed on small biopsies. Studies have also shown that leiomyosarcoma can arise from preexisting symplastic leiomyoma [10].

To conclude with the differentiation of leiomyosarcoma and symplastic leiomyoma can easily missed on radiology and histopathology on small biopsies submitted. Differential of leiomyosarcoma should always be included while giving a report of symplastic leiomyoma.

REFERENCES

1. Corcoran S, Hogan AM, Nemeth T, Bennani F, Sullivan FJ, Khan W, Barry K. Isolated cutaneous metastasis of uterine leiomyosarcoma: case report and review of literature. Diagnostic Pathology. 2012 Dec;7: 1-5.
2. Forney JP. Classifying, staging, and treating uterine sarcomas. Contempt. Ob. Gyn.. 1981;18(3):47.
3. Major FJ, Blessing JA, Silverberg SG, Morrow CP, Creasman WT, Currie JL, Yordan E, Brady MF. Prognostic factors in early-stage uterine sarcoma: a Gynecologic Oncology Group Study. Cancer. 1993 Feb 15;71(S4):1702-9.
4. Tsuzaka S, Asahi Y, Kamiyama T, Kakisaka T, Orimo T, Nagatsu A, Aiyama T, Uebayashi T, Kamachi H, Matsuoka M, Wakabayashi K. Laparoscopic liver resection for liver metastasis of leiomyosarcoma of the thigh: a case report. Surgical case reports. 2022 Mar 21;8(1):47.
5. Harry VN, Narayansingh GV, Parkin DE. Uterine leiomyosarcomas: a review of the diagnostic and therapeutic pitfalls. The Obstetrician & Gynaecologist. 2007 Apr;9(2):88-94.
6. Lin Y, Wu RC, Huang YL, Chen K, Tseng SC, Wang CJ, Chao A, Lai CH, Lin G. Uterine fibroid-like tumors: spectrum of MR imaging findings and their differential diagnosis. Abdominal Radiology. 2022 Jun;47(6):2197-208.
7. WHO Classification of Tumours Editorial Board. Female genital tumours. International Agency for Research on Cancer, World Health Organization; 2020.
8. Mira JL, Fenoglio-Preiser CM, Husseinzadeh N. Malignant mixed müllerian tumor of the extraovarian secondary müllerian system. Report of two cases and review of the English literature. Archives of pathology & laboratory medicine. 1995 Nov 1;119(11):1044-9.
9. Skorstad M, Kent A, Lieng M. Preoperative evaluation in women with uterine leiomyosarcoma. A nationwide cohort study. Acta obstetricia et gynecologica Scandinavica. 2016 Nov;95(11):1228-34.
10. Mittal KR, Chen F, Wei JJ, Rijhvani K, Kurvathi R, Streck D, Dermody J, Toruner GA. Molecular and immunohistochemical evidence for the origin of uterine leiomyosarcomas from associated leiomyoma and symplastic leiomyoma-like areas. Modern pathology. 2009 Oct 1;22(10):1303-11.

