

**IS PREOPERATIVE DIAGNOSIS OF UTERINE SARCOMA POSSIBLE ?
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ABSTRACT

Uterine sarcomas form an heterogeneous group of mesenchymal tumors. This group includes leiomyosarcomas, atypical smooth muscle tumors, endometrial stromal sarcomas, adenosarcoma and carcinosarcoma. All these tumors have a worse prognosis when compared to that of endometrial carcinoma. In most cases the clinical features are not specific. Imaging, and MRI in particular plays a great, and developing role in diagnosing these malignancies. The final diagnosis is reached through pathological examination. In this work, we report a series of 8 cases of patients presenting to the department of gynecology and obstetrics, Mohammed VI university hospital, Oujda, for management of uterine sarcomas. We also discuss, through a review of literature, different clinical, imaging, pathological, of different entities.

INTRODUCTION

Uterine sarcomas represent 1% of malignancies of the female genital tract, and 3-7% of all uterine cancers are of sarcomatous nature.^[1]

The incidence of these malignancies is increasing, which could be explained by improved diagnosis and ageing of population.^[2]

Uterine sarcomas assemble many histopathological entities. These can be classified into carcinosarcomas, leiomyosarcomas, endometrial stromal sarcomas and undifferentiated sarcomas.^[3]

Among well-known risk factors of uterine sarcomas, Tamoxifen intake is associated to a 3 times risk of uterine sarcoma. Long term radiation therapy is also associated to such a risk.^[3]

The clinical features of the different entities are not specific. They classically present as a pelvic mass with a rapid growth. Vaginal bleeding and pelvic/abdominal pain could be also associated.^[2,3]

Distinction between these different entities cannot be reached through clinical features. Therefore, imaging and pathology play the most crucial role in the diagnosis.

Imaging plays a great role in the diagnosis of uterine sarcoma (Especially for studying the tumor location and its characterization).^[2] However, a differentiation between malignant and benign smooth muscle tumors needs a histological approach.

The most important prognostic factor remains staging. Although many staging systems have been proposed to reflect the prognosis of uterine sarcomas, the actual mostly used system divides uterine sarcomas onto two categories: Leiomyosarcomas and endometrial stromal sarcoma as one category and adenosarcoma as a second.

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Patients

In our work we report a series of 8 cases of uterine sarcomas, the 8 patients ages ranging from 38 to 65 years old with an average age of 52,2 years ,6 patients were post-menopausal (75% of the cases) one patient had a history of pelvic irradiation , 6 cases (75%) presented for vaginal bleeding, 1 patient presented for chronic pelvic pain.

At physical examination a pelvic mass was present in 5 patients (62,5%) 2 patients (25%) presented a visible polypoid mass protruding through the cervical os with no pelvic mass at palpation.

A pelvic ultrasound was performed in all cases. In all cases, it demonstrated the parietal uterine location of the lesions. The lesion appeared as a heterogeneous lesion

in all cases, with hypervascular doppler activity in two cases.

MRI was performed in 7 cases (87,5%), it showed voluminous lesions in all cases with great dimensions ranging from 35 to 90cm. Enhancement was observed in all 7 lesions after contrast injection.

CT scan was performed in all 8 patient the assess the extension of tumor, it showed no metastases in all cases of our series.

In 2 cases a bulging mass was found in the cervical canal reachable for biopsies that confirmed the histological diagnosis made before the surgery On the therapeutic level, the patients underwent a surgical resection: Total hysterectomy with bilateral salpingectomy. The surgical procedure enabled having a certain histological diagnostic through pathological assessment, revealing three cases of low-grade endometrial stromal sarcomas, two case of high-grade endometrial stromal sarcoma and three case of leiomyosarcoma.

Follow-up of our patients revealed death of three of the patients (high-grade endometrial stromal sarcoma (1 case), low-grade endometrial stromal sarcoma (1 case) and leiomyosarcoma (1case) after lung metastases, detected on CT-Scan. Follow-up of the two other cases shows no particular events.

DISCUSSION

Uterine sarcoma assemble many different histopathological entities, the epidemiological, clinical and radiological features depend on the type of uterine sarcoma.^[2]

1. Leiomyosarcoma

Uterine leiomyosarcomas are the second most frequent uterine sarcoma (After carcinosarcomas).

This sarcoma occurs at an age older than 40 years. The patients present clinically for vaginal hemorrhage, pelvic pain and/or a pelvic mass.^[2]

Distinction between leiomyomas and leiomyosarcomas at the clinical level can be impossible.^[6]

On MRI, leiomyosarcoma manifests as a large mass infiltrating the myometrium. It is classically heterogeneous, since it frequently contains necrotic and hemorrhagic foci. The lesion is hypo-intense on T1-weighted images and show intermediate-to-high intensity of signal on T2-weighted images. An early heterogeneous enhancement is observed after Gadolinium administration.^[7,8,9,5]

According to the literature, a diagnosis algorithm has been proposed thanks to MRI diffusion and the study of the ADC (apparent diffusion coefficient.) which seems

very useful to differentiate between a degenerative benign lesion (myoma) and a malignant lesion (sarcoma) with a diagnosis performance of 92%; the analysis of the ADC diffusion is done to lesions presenting an hypersignal or intermediate signal T2 (uterine sarcoma does not appear in T2 hyposignal) usually a suspicious tumor on MRI presents the following characteristics: hypersignal in diffusion, an intermediate T2 signal, an ADC value $<1.23^{[2,8]}$ figure II

On the pathological level, leiomyosarcoma present in form of a single lesion. The mean diameter is 10cm. On cut surface, the mass appears to be soft, fleshy with frequent necrosis and hemorrhage. The whorled appearance seen in leiomyomas is typically not seen.

Microscopic examination reveals hypercellularity, severe nuclear atypia and a high number of mitotic figures that can be atypical. In addition to these elements, infiltrating borders, necrosis and hemorrhagic foci are frequent.^[3]

Leiomyosarcomas have a poor prognosis. With recurrence reaching 71%.^[10]

The overall 5-year survival rate is between 15 and 25%.^[10]

The treatment is based on total hysterectomy and debulking of the tumor.

In premenopausal patients with early-stage disease, a preservation of ovaries can be indicated.^[11]

2. Atypical smooth muscle tumors (STUMP)

This category of smooth muscle tumors represents smooth muscle proliferations with worrisome features without meeting the criteria enabling a diagnosis of leiomyosarcoma.

The majority of cases of this category has a favorable prognosis. Only follow-up is recommended.^[12]

3. Endometrial stromal tumors

These tumors represent less than 1% of uterine tumors. Most of the tumors are intramural.^[13]

Endometrial stromal tumors are either benign or malignant, based on many imaging and histopathological criteria. Benign endometrial stromal tumors are called benign stromal nodules; these tumors are well-circumscribed and show no vascular or lymphatic invasions.^[14]

The malignant counterpart represents tumors called endometrial stromal sarcomas and are divided into 3 categories: Low-grade endometrial stromal sarcoma, high-grade endometrial stromal sarcoma and undifferentiated endometrial sarcoma.

MRI as an imaging tool, has a great role in the management of these tumors. It enables characterizing of the lesion and helps in the differential diagnosis with endometrial carcinoma.^[14]

→ Low-grade endometrial stromal sarcoma

This low-grade neoplasm frequently occurs in women between 40 and 55 years old.^[15]

Some risk factors include ovarian polycystic disease and after treatment with estrogen or tamoxifen.^[15]

Most encountered clinical symptoms are uterine bleeding, dysmenorrhea and pelvic pain, although 25% of cases show no symptoms.^[16]

On the pathological level, the proliferation is well-circumscribed. The neoplastic cells show mild nuclear atypia and rare foci of necrosis. The diagnosis of malignancy is possible by identifying myometrial invasion and lympho-vascular invasions.

On the prognostic level, low-grade endometrial sarcoma is an indolent tumor.^[17]

The five-year survival depends on the tumor stage: 90% for stages I and II and 50% for stages III and IV.^[18,17]

Treatment is based on hysterectomy with bilateral salpingo-oophorectomy since the tumor is highly sensitive to sexual steroids.^[19] An adjuvant radiation or hormonal therapy is also indicated.

→ High-grade endometrial stromal sarcoma

For this variant of endometrial stromal sarcoma, the age of affected patients ranges between 28 and 67 with a mean age of 50 years old.^[20]

The most frequently encountered symptoms are the same as for the low-grade type.^[20]

The gross examination shows an intramural mass or a polypoid formation protruding into the uterine lumen.

Microscopic examination shows a sarcomatous proliferation made of round cells. Mitotic figures are numerous and necrosis is usually present.^[20]

The prognosis of high-grade endometrial stromal sarcoma is intermediate between that of low-grade endometrial stromal sarcoma and undifferentiated endometrial sarcoma. Patients have earlier and higher risk of recurrences and are more likely to die of disease.

The treatment of high-grade endometrial stromal sarcoma is based on a combination of radiation and chemotherapy.^[20]

On MRI, endometrial stromal sarcoma appears as a low signal lesion on T1-weighted images and as a

heterogeneous high signal lesion on T2 weighted images.^[2,5,6,8]

MRI also enables to evaluate the relation between the lesion and normal parietal structures, showing most often a well demarcated lesion, in contrast to the invading lesion in cases of undifferentiated endometrial sarcoma.^[2]

→ Undifferentiated endometrial sarcoma

Undifferentiated endometrial sarcoma is a rare tumor that typically affects postmenopausal patients. The most frequently encountered symptom is postmenopausal bleeding.^[21]

On MRI, this lesion manifests as a large polypoid, heterogeneous mass. It has a heterogeneous signal on both T1 and T2 weighted images. The heterogeneous nature of the lesion is due to the frequent presence of necrosis and hemorrhage. Destruction and invasion of myometrium is seen in a more extensive manner when compared to cases of low and high-grade endometrial stromal sarcomas.^[2,6,8]

On pathological level, a sarcomatous proliferation is observed with myometrial invasion, nuclear pleomorphism, a high mitotic activity and frequent diffuse necrosis.^[14]

Undifferentiated endometrial sarcoma is a highly aggressive neoplasm with a very poor prognosis.^[21]

The treatment of undifferentiated endometrial sarcoma is based on hysterectomy and bilateral salpingo-oophorectomy and adjuvant radiation and/or Chemotherapy.

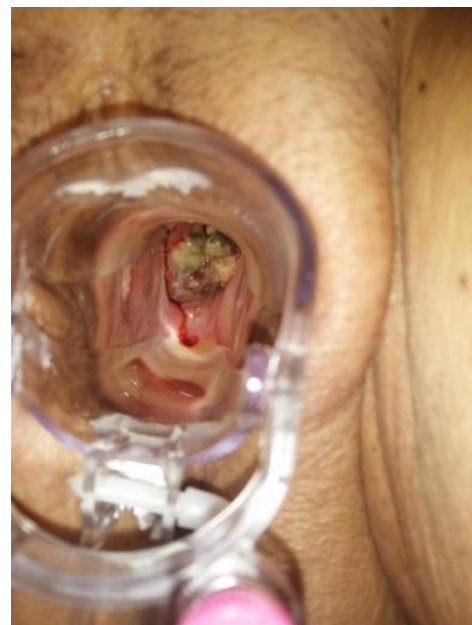


Figure 1: Speculum examination shows a polypoid mass protruding through the cervical os.

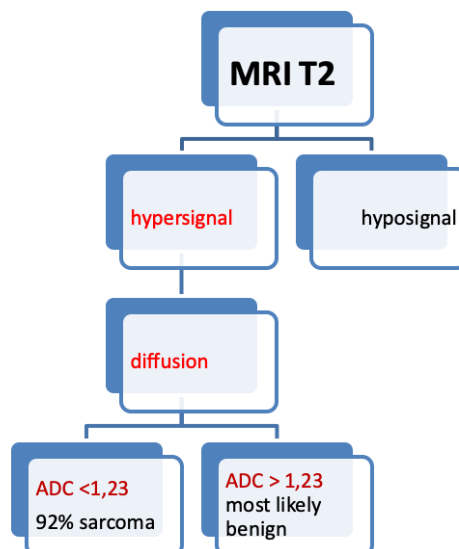


Figure 2: The interest of MRI diffusion.

4. Adenosarcoma

Uterine adenosarcoma, also called Mullerian adenosarcoma, represents between 5 and 10% of uterine sarcomas. It is a low malignancy potential containing two components: a benign glandular component and low grade sarcomatous part. In most cases, these tumors develop from the endometrium.^[22]

On MRI, the lesion manifests as a large well circumscribed lesion, often protruding in the uterine cavity or even through the cervical os.^[20]

The glandular component could be seen in form of small hyperintense foci on T2 weighted images.^[23]

On the pathological level, the stromal component is found to be concentrated around benign glands, and show only mild atypia in well-differentiated examples. A heterologous component is described in 15% of cases. The prognosis is generally better than that in cases of carcinosarcoma.^[30] The treatment is based on total abdominal hysterectomy with bilateral salpingo-oophorectomy.

5. Carcinosarcoma

Also called malignant Mullerian mixed tumor, carcinoma is made of two components: a malignant epithelial component and sarcomatous component.

Clinical features include an age between 40 and 90 years,^[24] for patients at diagnosis, with vaginal bleeding being the most frequently encountered symptoms. Some patients could present with a polypoid mass protruding through the cervical os.

On the pathological level, the proliferation is made of 2 components: an epithelial malignant component, serous in most cases or endometrioid in the rest of cases. The second component is sarcomatous, and presents usually in form of a high-grade spindle cell proliferation.^[24]

A heterologous component could be observed in form of malignant cartilage or skeletal muscle.

Carcinosarcomas are highly aggressive neoplasms. The 5-years survival is of 30%.^[25]

The treatment of carcinosarcoma is based on hysterectomy and bilateral salpingo-oophorectomy and pelvic lymph nodes dissection. Chemotherapy has been implicated in reducing recurrence rates.

CONCLUSION

Uterine sarcomas are represented by many histologically distinct entities. All these have a worse prognosis when compared to uterine endometrial carcinoma.

Clinical features are generally non specific and cannot be used for a precise diagnosis. Imaging and particularly through MRI helps characterization of the uterine lesion the diagnosis can be suspected when a large hard tumor is found during the surgery, a precise diagnosis usually needs pathological assessment

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