

Case report

Uterine lipoleiomyosarcoma: Complete medullary compression as presentation of a solitary metastasis



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1. Introduction

Leiomyosarcoma is a rare malignant neoplasm of smooth muscle cells representing 7% of all soft-tissue sarcomas (Elhammady et al., 2007). Distant metastases arrive late in the disease and the predilection sites are lungs, liver, kidneys and skin through hematogenous dissemination. Although rare, cases of uterine leiomyosarcoma with skeletal metastasis have been reported in the literature (Rose et al., 1989; Ziewacz et al., 2012). Lipoleiomyosarcoma is a rare subtype containing both leiomyosarcomatous and lipomatous components. These neoplasms contain adipocytes with progressive or steep transition to smooth muscle constituents. Only a few cases of uterine lipoleiomyosarcoma are described in the literature and only one presented a spinal metastasis (Lee et al., 2012).

This case report describes a patient who underwent a hysterectomy for recurrent menorrhagia in a secondary referral center and who presented 3 years later in our multidisciplinary center with complete paraplegia secondary to a solitary vertebral metastasis of a uterine leiomyosarcoma. Tumor pathological characteristics and undergoing treatments are described below.

2. Case

A 59-year-old post-menopausal woman, para 3, gravida 3, avorta 0, with no significant past medical history, underwent a total abdominal hysterectomy and bilateral salpingo-oophorectomy for recurrent menorrhagia. A 12 × 9 cm uterine tumor made of hypercellular soft muscle cells was removed. A diagnosis of smooth muscle tumor with uncertain malignant potential (STUMP) was initially made at another hospital based on diffuse severe nuclear atypia and areas of necrosis judged to be ischemic rather than coagulative tumor cell necrosis. The interpretation of mitotic figures was ambiguous because of the difficulty distinguishing them from apoptotic bodies. The hormonal receptors were positive (3 + /4) for estrogen, but negative for progesterone.

Three years later, the patient experienced progressive back pain with gradual paresis of her lower limbs but did not seek medical

attention at the time. She was admitted in the ER three months later with sudden paraplegia secondary to a fall from her height (ASIA A – complete lack of motor and sensory function below the level of injury). A thoracoabdominal CT scan and cervicothoracic MRI showed an infiltrative lytic lesion centered on the posterior elements of T10 measuring 4.4 × 3.2 × 5.1 cm. The lesion almost entirely disrupted the spinous process, extended through the pedicles as well as into the spinal canal and foramina to invade the surrounding paravertebral soft tissues. This caused severe spinal stenosis, resulting in a 3 mm residual canal and mild oedema of the medulla at this level (Fig. 1).

The patient underwent an urgent T9–T11 decompression consisting of an extensive posterior laminectomy with massive debulking and a T8–T12 fusion. Microscopy of the resected mass revealed two distinct components (Fig. 2). The first included spindle-shaped and pleomorphic cells with a high mitotic activity (4 to 12 mitotic figures/10 hpf). The spindle-shaped cells stained positively with smooth muscle actin, desmin, caldesmon and vimentin. The second component consisted of atypical adipose cells with bulky and hyperchromatic nuclei, compatible with a liposarcoma positive for s100 protein. A high proliferation index of 70% was shown by Ki-67 immunostain in both components. The majority of the tumor cells (75%) positively stained for estrogen receptor but were all negative for progesterone. The resected spinal mass was therefore diagnosed as a lipoleiomyosarcoma.

The initial uterine tumor pathology was reviewed at our center and led to a retrospective diagnosis of leiomyosarcoma based on diffuse severe nuclear atypia, high mitotic activity with atypical mitoses and foci of coagulative tumor cell necrosis. Of note, a few lipoblasts were seen in the tumor. The majority of the tumor cells stained positively for estrogen receptor and about a third of the cells for progesterone as opposed to the spinal metastasis.

The patient's neurological recovery was incomplete (ASIA C – incomplete motor function below the level of injury) with patchy sensory deficits and difficult ambulation with walker. Immediate post-operative MRI showed a persisting parasagittal tumor around the lower left pedicular and transverse components.

The patient thus underwent an en bloc resection to remove residual

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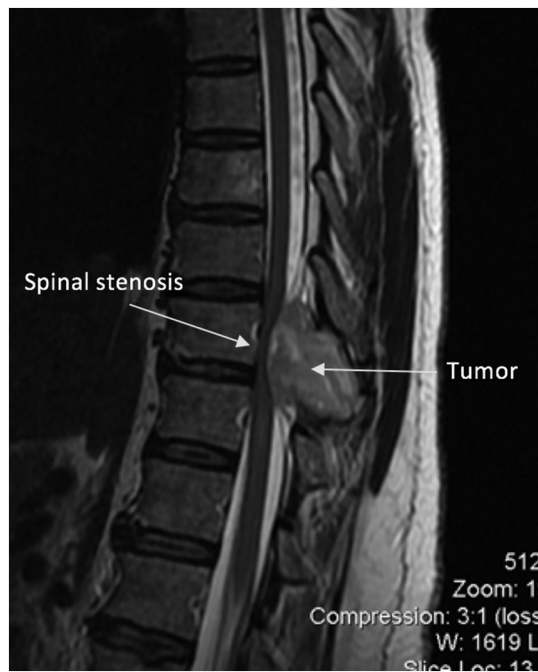


Fig. 1. MRI sagittal view showing medullary compression by tumor.

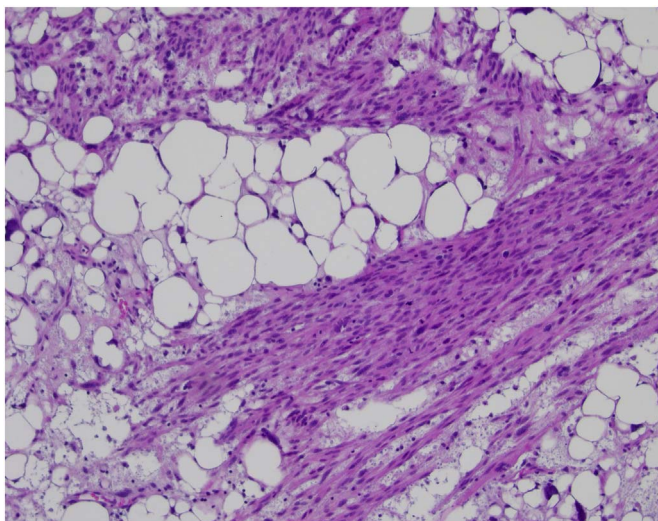


Fig. 2. Leiomyosarcomatous and liposarcomatous components in the spinal metastasis (H & E stain, magnification 100 ×).

tumor. The 11,2 g tumor removed during this second surgery displayed the same microscopic characteristics as the tumor resected during the initial spinal surgery. A postoperative PET scan was negative for residual signs of malignancy.

Adjuvant radiotherapy was performed for a total dose of 33 Gy fragmented in 11 sessions. Hormonal chemotherapy with anastrozole was also started and is still ongoing 4 years post-operatively. The functional status of the patient kept improving and she can now walk without technical aids. Two years after spinal decompression, a control thoracic CT scan showed an important progression of a nodule in the right middle lobe. The nodule expanded from 3 to 11 mm in a one year period and was located next to the hilar vessels. After a PET scan confirmed the solitary nature of the lesion, a lobectomy was performed.

3. Discussion

Leiomyosarcoma is differentiated from benign tumors on the basis

of diffuse cytologic atypia, mitotic index and tumor cell necrosis (Mills et al., 2013). When leiomyosarcoma is combined with an atypical lipomatous component, the term lipoleiomyosarcoma can be used (Lee et al., 2012). Differentiating leiomyoma from leiomyosarcoma remains difficult in some cases. Recently, the role of cell markers in differentiating leiomyosarcoma from atypical leiomyoma and other leiomyoma variants has been studied. Compared to atypical leiomyoma, cell proteins p16, p53, p27, Ki-67 and PHH3 are generally upregulated in leiomyosarcoma although the most significant differences are seen with the proliferative markers Ki-67 and PHH3. Therefore, high PHH3 index may provide support for diagnosing leiomyosarcoma in cases where mitotic figure count is difficult (Mills et al., 2013). Akhan and colleagues found that increased Ki-67 expression was associated with rapid growth of the malignant tumor and worse prognosis. Estrogen and progesterone positivity of more than 10% seemed to positively affect survival. Despite those findings, stage and tumor grade remain the two most important parameters affecting survival in patients with leiomyosarcoma (Akhan et al., 2005).

Lee and colleagues reported 8 cases of uterine lipoleiomyosarcoma. A high recurrence rate was observed with 4 patients showing metastatic lesions in the pelvis, spine, lungs and another patient dying of multiple metastasis. All of the metastatic lesions were found between 5 months and 4.5 years following the initial uterine surgery. The metastasis presented as a leiomyosarcoma (1) or as a liposarcoma (1) although the primary tumor consisted of both components (Lee et al., 2012). None of the metastatic lesions showed both components although pathology wasn't available for 2 patients.

A study from Ziewack and colleagues analysed the outcomes following surgery in 8 patients with spinal metastatic leiomyosarcoma. Intralesional tumor resection was performed in all patients and 6 also received chemotherapy and radiotherapy. Surgery relieved pain and improved neurological function. Recurrence was observed in 5 patients (63%) of whom 4 underwent a second surgery at a mean of 10.2 months. This second surgery was beneficial in terms of pain and myelopathy for most patients. Mean survival following initial spinal surgery was 11.7 months (3.3–23 months). The authors advocated for an aggressive resection and stabilisation in well-selected patients with metastatic leiomyosarcoma of the spine. Criteria for surgery included life expectancy of at least 3 months, neurological deficit, refractory pain, radiographic instability, and/or tumor progression despite chemotherapy and radiation (Ziewacz et al., 2012).

4. Conclusion

This is the second reported case of spinal metastatic lipoleiomyosarcoma and the first presenting as paraplegia. More literature is available for metastatic leiomyosarcoma and intensive treatment has been advocated. Our patient underwent aggressive resection surgery and adjuvant treatment consisting of radiotherapy and hormonal chemotherapy. She is now 19 months post-lobectomy for a solitary lipoleiomyosarcoma metastasis in the right middle lobe and currently disease-free.

Conflict of interest statement

The authors certify that they have no conflict of interest.

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