Leiomyosarcoma after hysteroscopic myomectomy: a case report

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Summary

Objectives: The aim of this study was to illustrate the importance of hysteroscopy in the evolution of mitotically active leiomyoma to leiomyosarcoma (LMS). Uterine sarcomas are rare tumors. The three microscopic criteria are: 1) the presence of coagulative tumor necrosis, 2) high mitotic index (exceeding 15 × 10 catabolite gene activator (CGA) and 3) occurrence of moderate to severe cytologic atypia. The authors report a case of a 52-year-old nulliparous woman with a LMS detected two months after a hysteroscopic resection of a mitotically active leiomyoma. After the first hysteroscopic resection the diagnosis was atypical leiomyoma with a mitotic index of two per ten high-power field (hpf) in the absence of coagulation necrosis. After two months, a new myoma was detected and another hysteroscopic resection was performed: the microscopic diagnosis was LMS and a total abdominal hysterectomy with bilateral salpingo-oophorectomy (BSO) was performed. *Conclusion:* The patient must undergo close clinical and instrumental follow-up procedures. Hysteroscopy plays an important role in the evaluation and evolution of both recurrent and de novo disease.

Key words: Leiomyosarcoma; Hysteroscopy.

Introduction

Uterine sarcomas are rare tumors that originate from mesenchymal cells of the uterine body. They represent only 8.4% of uterine cancers [1], but are aggressive; the five-year survival rate is 15% to 25% [2]. Leiomyosarcomas (LMS) are a sub-group of uterine sarcomas that arise from the smooth muscle of the uterus and are composed of spindle cells. LMS accounts for 1% to 2% of uterine sarcomas. The three microscopic criteria to diagnose leiomyosarcoma are:

1) presence of coagulative tumor necrosis

2) high mitotic index (exceeding 15 × 10) catabolite gene activator (CGA)

3) occurrence of moderate to severe cytologic atypia [3, 4].

Generally, this tumor occurs in women during the post-menopausal phase with a peak incidence between 50 and 65 years of age. The most frequent symptom of LMS is abnormal uterine bleeding that can also be associated with pelvic pain. Often, the disease is diagnosed after surgery. There are no screening techniques for LMS, nor can a clear preoperative diagnosis be made. Recently, a study reported a significant usefulness of an endometrial biopsy: the biopsy was positive in 12 of 21 cases [5]. The LMS staging was published by the International Federation of Gynecology and Obstetrics (FIGO) in 2009 (Table 1) [6]. Optimal treatment is the surgical removal of the LMS through total abdominal hysterectomy with bilateral salpingo-oophorectomy (BSO) [7].

Case Report

A 52-year-old nulliparous woman with a LMS detected two months after a hysteroscopic resection of a submucous uterine myoma is the subject of this report. The patient arrived at the Department of Obstetrics and Gynecology of the University of L'Aquila in May 2011 with the diagnosis of recurrent abnormal uterine bleeding (AUB) during post-menopause. During a bimanual examination the uterus was found enlarged and annexes were not palpable. Transvaginal ultrasound (TVUS) identified a submucosal myoma measuring 3.7 × 2.5 × 1.4 cm and the diagnostic hysteroscopy confirmed it. There was a type 0 myoma (completely within the endometrial cavity), of hard consistency and which was located in the medial third part of the uterine cavity. An endometrial biopsy was performed with negative result. During the same month, the patient underwent hysteroscopic myomectomy using a Hamou 26Fr resectoscope (Storz, Tuttlimgen, Germany) and sorbitol-Manitol for distension media with Hysteromat Hamou (Storz). There were no intraoperative complications. The tissue fragments were examined and the diagnosis was atypical leiomyoma with mitotic index of 2/10 high-power field (hpf) in the absence of coagulation necrosis.

After two months the patient underwent a diagnostic hysteroscopy as a follow-up procedure. Subsequently, another myoma approximately 3.5 cm, with a soft consistency was found within the uterine cavity, occupying the medial third part of the cavity. Following this diagnosis a second operative hysteroscopy was performed in August 2009. The microscopic diagnosis of the fragments of the second surgical procedure was: "fragments of new formation consisting of intersecting bundles of fusiform elements with moderate eosinophilic cytoplasm characterized by hyperchromatic nuclei, some of which are markedly pleomorphic and with a karyokinetic index equal to 3/10 hpf mitoses; there are also multifocal areas of coagulative tumor necrosis. Final diagnosis: leiomyosarcoma".

After the appropriate and comprehensive patient counseling, a total abdominal hysterectomy was performed with BSO. The instrumental clinical assessment for the preoperative staging showed a LMS Stage I according to FIGO classification (2009).

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Table 1. — *FIGO 2009 staging system for LMS and endometrial stromal sarcoma.*

Stage	Definition
I	Tumor limited to the uterus
IA	≤ 5 cm
IB	> 5 cm
II	Tumor extends beyond the uterus, within the pelvis
IIA	Adnexal involvement
IIB	Involvement of other pelvic tissues
III	Tumor invades abdominal tissues (not just protruding into the abdomen)
IIIA	1 site
IIIB	> 1 site
IIIC	Metastasis to pelvis and/or para-aortic lymphnodes
IV	
IVA	Tumor invades bladder and/or rectum
IVB	Distant metastasis

A macroscopic examination of the uterus showed a fundic subserous neoformation (2.4 × 2 × 1.5 cm), right broad ligament neoformation (2.7 × 1.5 × 1.2 cm) and submucosal neoformation (2.8 × 2 × 1 cm). The adnexes were in standard type and size. There were no obvious signs of pelvic leakage or abdominal metastases. Microscopic examination showed usual leiomyomas (fundic subserous and right broad ligament fibroid). The submucosal neoformation consisted of mainly fusiform cell elements arranged in intersecting bundles with some areas of epithelioid-type with trabecular or insular pattern

The cellular elements showed widespread atypia of moderate/severe degree with markedly pleomorphic cells, high mitotic index of 12 mitoses per 10 hpf in the presence of atypical mitoses and high Ki-67/MIB-1 equal to 42% of the neoplastic population; micro-foci of coagulative necrosis and areas of hyaline necrosis (the latter in the submucosa) were also evident, with aspects of vascular invasion and immunophenotypic profile of smooth muscle derivation: alpha-smooth actin (+), HHF-35 (+), caldesmon (+), desmin (±), CD10 (-), AE1/AE3, and EMA (±) (±).

Final diagnosis: LMS of low-grade and well-differentiated. Subsequent clinical and instrumental examinations showed that the patient is still disease-free.

Discussion

The mitotically active leiomyoma is generally characterized by an increased mitotic count of 5-20 mitotic figures per 10 hpf, the absence of tumoral coagulation necrosis or mitosis, and atypical benign course. However, these tumors have a malignant potential and can recur locally [8]. Forty-seven percent of women with recurrent disease manifests LMS with an average of 1.3 years. Fourteen percent of LMS remain at the site of presentation [9]. Many factors have been shown predictive of aggressiveness and low survival rates: advanced stage, high-grade, and mitotic index, invasion of vascular spaces, lack of primary surgery, older age, and Afro-American race [10, 11]. The surgical treatment recommended for the LMS is a total hysterectomy with BSO. However, it has not demonstrated a significant reduction in the incidence of recurrence after BSO [10].

Conclusion

Concluding, the mitotically-active leiomyoma is a uterine neofomation at risk of malignancy with a short interval between diagnosis and the development of a LMS. Given this behaviour, it is necessary that the patient undergoes a close clinical instrumental follow-up care. Diagnostic hysteroscopy plays an important role in the evaluation of both recurrent and de novo disease while the operative hysteroscopy allows the microscopic confirmation and the possible evolution of the pathology.

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