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Original Article

Uterine smooth muscle tumors of uncertain malignant potential (STUMP): pathology, follow-up and recurrence

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Abstract: The term smooth uterine muscle of uncertain malignant potential (STUMPs) indicates a group of uterine smooth muscle tumors (SMTs) that cannot be diagnosed unequivocally as benign or malignant. Diagnosis, surgical management, and follow-up of this neoplasm remain controversial, especially in pre-menopausal women with fertility desire, due to the non aggressive behaviour and prolonged survival rate when compared to leiomyosarcomas. However, recurrence is estimated between 8.7% and 11% and may include delayed-recurrences. We reported five cases of uterine masses treated by surgical procedure diagnosed as STUMP on final pathology. Four patients underwent a total abdominal hysterectomy with or without salpingo-oophorectomy. One patient underwent excision of uterine mass and subsequent total abdominal hysterectomy plus bilateral salpingo-oophorectomy after the diagnosis of STUMP. All patients in our study remained recurrence-free to date (with a follow up period ranging from 6 to 81 months). Based on our experience and in consideration of the lack of consensus regarding the malignant potential, diagnostic criteria, gold-standard treatment and follow-up, we believe that close multidisciplinary management is mandatory in the event of STUMP. We suggest that gynaecologist, dedicated pathologist (with high level of expertize in gynaecological pathology) and oncologist should work as a team in the counselling and management of this neoplasm from detection till completion of follow up. Furthermore, we recommend immunohistochemistry to investigate the overexpression of p16 and p53 in order to identify the cohort of patients at increased risk of recurrence who may benefit from more aggressive surgical-oncological strategies.

Keywords: Uncertain malignant potential, uterine smooth muscle neoplasm, surgical treatment, follow up, fertility sparing surgery

Introduction

Uterine smooth muscle tumors (SMTs) have historically been distinct in benign leiomyomas and malignant leiomyosarcomas on the basis of cytological atypia, mitotic rate and presence or absence of tumor cell necrosis [1]. The Stanford criteria for the histologic diagnosis of malignant SMT (leiomyosarcoma) reported by Bell et al. include at least two of the following criteria: diffuse moderate-to severe atypia, a mitotic count of at least 10 mitotic figures (MF)/10 high power fields (HPFs) and tumor cell necrosis [2].

Cellularity, which is a subjective diagnosis, tumor borders and their relations with the surrounding myometrium represent additional but less weighted morphologic criteria in the diagnosis of "smooth uterine muscle of uncertain malignant potential" (STUMP) [2].

The term STUMP was firstly used in the literature by Kempson in 1973 [3] and the current World Health Organization classification indicates that a uterine SMT not diagnosed unequivocally as benign or malignant should be defined as STUMP [4].

The lack of uniform diagnostic criteria and the diagnostic uncertainties of STUMP have resulted, over the years, in an overdiagnosis of this neoplasia [5]. In actuality, as reported by Ip et al, the diagnosis of STUMP is appropriate when a tumor shows any unusual combination of the 3 above mentioned features but does not sat-

isfy the Stanford criteria for leiomyosarcoma [6].

In the literature we find a variety of terms defining uterine smooth muscle cell tumors. The diagnostic terms derived from the Stanford study by Bell et al include the following subtypes: "atypical leiomyoma with limited experience" (AL-LE), "atypical leiomyoma, low risk of recurrence" (AL-LRR), "smooth muscle tumor of low malignant potential" (SMT-LMP), and "mitotically active leiomyoma, limited experience" (MAL-LE) [2]. The histological diagnosis of STUMP subsequently evolved over the past 38 years [7] and currently the main diagnostic features are based on criteria delineated by Kempson et al who identified 3 variants of smooth muscle cell tumors: [3, 8].

Presence of coagulative necrosis, mitotic count per 10 HPF equal or less than 10, none-to-mild atypia. Bell et al. recognised that an otherwise benign-appearing SMT containing only tumour-cell necrosis can occasionally be clinically malignant, and thus such tumours are now appropriately considered STUMPs [2, 7]; Absence of coagulative necrosis, mitotic count per 10 HPF greater than 10, moderate-to-severe focal atypia. In Kempson's scheme, this is designated as STUMP if the mitotic activity is higher than 15; Absence of coagulative necrosis, mitotic count per 10 HPF equal or less than 10, moderate-to-severe focal atypia. This is referred to AL-LRR in Kempson's scheme (AL-LRR) [8].

Mitotically active leiomyoma, which is defined as a tumor with a high mitotic index (>5 and <19 mitoses per high-power field) is now considered a benign variant of leiomyoma and differs from STUMP because of the lack of recurrences and metastases outside the pelvis [9].

The use of the term "atypical leiomyoma" is not universally accepted among pathologists, and the natural history of such tumors remains controversial. Currently, "leiomyomas with bizarre nuclei" (LBN) or "bizarre leiomyoma" or "symplastic leiomyoma" are recognized as clinically benign tumors [6].

The reported STUMP recurrence rate ranges between 8.7% and 11%, but poor data is available in the Literature. It is plausible that SMTs defined as STUMPs may be variants of leiomyomas with unusual pathologic features. On the other hand, some tumors regarded as STUMPs may in reality be underdiagnosed leiomyosarcomas. In fact various evidence has shown that recurred STUMPs may represent a form of "borderline" tumor or a low-grade leiomyosarcoma [5].

The importance of a correct differential diagnosis between STUMP and leiomyosarcoma is related to the often aggressive clinical course of high-grade leiomyosarcoma with early recurrence and metastases; in contrast STUMPs showed a lower tumor growth and the possible recurrence is often delayed some years after the initial event [1, 2, 5, 10-12].

We previously published a cases series of three patients with a diagnosis of STUMP on final pathology. The aim of this paper is to update our experience regarding the clinical management, surgical treatment and follow-up of this rare and little known uterine neoplasia. We report five new cases.

Cases presentation

We recorded an additional 5 patients with a final diagnosis of STUMP, other than those previously described by Berretta et al, [1] referred to the Gynecological and Obstetrics Clinical Unit, Department of Surgical Sciences, University of Parma in the period from 2007 to 2013. All patients were properly informed about the procedure and consented to the use of their data for this study by written consent, respecting their privacy (Italian Law 675/96).

In all cases the diagnosis of STUMP was performed by an expert pathologist with high level of experience in gynecological oncology.

The first case occurred in a 44-years-old woman (PARA 0) with a past medical history of chronic pelvic pain, hypermenorrea and secondary anemia due to chronic abnormal uterine bleeding (AUB). On May 2007 she underwent laparotomic hysterectomy with preservation of the adnexa. The macroscopic examination, performed by an expert gynaecological pathologist, showed a large myoma with a maximum diameter of 12 cm, which on final pathology revealed the presence of moderate-to-severe focal atypia with high-grade nuclear polymorphism and was therefore classified as STUMP

(AL-LRR). The patient underwent close clinical-instrumental follow-up, in accordance to that described in our previous paper [1]. Adjuvant chemotherapy and/or irradiation therapy was not performed and the patient remained disease-free at 81 months.

The second case occurred in a 51- years old patient (PARA 2) with a past history of two caesarean sections. Preoperative imaging identified a 12 cm pelvic mass of suspected adnexal origin. The preoperative serum tumor markers were negative. In August 2007 the patient underwent laparotomic hysterectomy and bilateral salpingo-oophorectomy. The final histological examination showed moderate-to-severe nuclear atypia and focal necrotic areas compatible with STUMP. No adjuvant therapy was performed and the patient remains recurrence-free at 78 months after initial diagnosis.

The third case took place in a 49 years old patient (PARA 1), with no relevant previous medical history, admitted at our Unit for chronic AUB secondary to uterine fibroids. In March 2011 she underwent a laparotomic hysterectomy with bilateral salpingo-oophorectomy. STUMP was diagnosed on a 2.5 cm sized myoma which revealed areas of focal moderate-to-severe atypia without necrosis and increased mitotic index. The final diagnosis was compatible with AL-LRR. No adjuvant therapy was undertaken and after a follow-up period of 33 months the patient remains disease-free.

The fourth case occurred in a 45 years old patient (PARA 0) who periodically performed a transvaginal ultrasound evaluation due to the presence of a large asymptomatic myoma 14 cm in diameter. Following a 24-months follow-up period, on May 2012, the patient opted for a laparotomic myomectomy. The final pathologic report revealed focal moderate-to-severe atypia without increased mitotic index or coagulative necrosis consistent with a final diagnosis of AL-LRR. The postoperative staging by computed tomography (CT) did not show metastasis. No adjuvant therapy was necessary and after a 19-months follow-up period the patient is currently disease-free.

The last case presented in a 48-years old patient (PARA 2) with no relevant medical or surgical history with the exception of a diagnosis of multiple uterine fibroids complicated by chronic AUB. On August 2013 the patient underwent laparoscopic myomectomy with a subsequent diagnosis of STUMP on final pathology. The postoperative staging performed by total-body computed tomography (CT) scan did not reveal metastasis. We therefore opted for surgical re-intervention and in October 2013 performed laparoscopically-assisted vaginal hysterectomy and bilateral oophorectomy. Macroscopic examination revealed the presence of intravascular finger-like projections with enlarged intramural and subserosal blood vessels. The final pathology report revealed mild atypia, no increased mitotic index nor coagulative necrosis and a pattern consistent with epithelioid intravascular leiomyomatosis. No adjuvant therapy was undertaken. The first follow-up exam was performed 3 months after hysterectomy and was negative for recurrence. Our experience is summarized in **Table 1**.

Discussion

STUMPs represent a group of rare and heterogeneous neoplasms from both a histological and a clinical point of view. Due to the rarity of these tumors, existing literature on the topic remains scarse and therefore consensus regarding diagnosis, malignant potential, treatment of choice and follow-up has not yet been reached [1, 2, 9, 10, 13].

The clinical presentation of STUMPs resembles that of uterine leiomyomas. Typical clinical features include abnormal vaginal bleeding, symptoms of anemia, rapidly growing pelvic mass, pressure symptoms and pelvic pain [6]. The risk factors and biological events that lead to STUMP remain poorly understood and thus subsequent clinical behaviour difficult to predict [9]. Median age at presentation is similar in patients diagnosed with leiomyosarcomas as well as in those affected with benign leiomyomas. An interesting observation is that patients affected by STUMP complicated by subsequent disease recurrence were younger than those with an uneventful follow-up [6, 7].

Typically the pathological analysis performed on the uterine specimen in the event of a diagnosis of STUMP demonstrates no concurrent pathology other than the presence of leiomyomas, as reported by Ip et al. [5].

Clinically it seems mandatory to classify uterine SMTs as tumors with or without (or scarce)

Table 1. Clinical features of patients included in our case series

Month & Year	Age	Histology	Treatment	Adjuvant therapy	Follow-up up to February 28th, 2014	Recurrence
November 2003*	44	Central necrosis, focal mild displasia	Laparotomic total hysterectomy	No	123 months, disease free	No
January 2006*	35	High mitotic index, bizarre nuclei	Laparotomic myomectomy	No	97 months, disease free	No
1995*	47	Moderate-to-severe atypia	Laparotomic total hysterectomy	No	clinically stable	Lung metastases 9 years after hysterectomy
May 2007	44	Moderate-to-severe focal atypia	Laparotomic total hysterectomy	No	81 months, disease free	No
August 2007	51	Moderate-to-severe nuclear atypia and focal necrotic areas	Laparotomic total hysterectomy with bilateral adnexectomy	No	78 months, disease free	No
March 2011	49	Focal moderate-to-severe atypia without necrosis	Laparotomic total hysterectomy with bilateral adnexectomy	No	35 months, disease free	No
May 2012	45	Focal moderate-to-severe atypia	Laparotomic myomectomy	No	22 months, disease free	No
August 2013	48	STUMP	Laparoscopic myomectomy followed by laparoscopic hysterectomy with bilateral adnexectomy	No	6 months, disease free	No

*Cases reported in our previous paper. (Berretta R, Rolla M, Merisio C, Giordano G, Nardelli GB. Uterine smooth muscle tumor of uncertain malignant potential: a three-case report. Int J Gynecol Cancer 2008; 18: 1121-6.)

recurrence and/or metastatic potential [6]. The three major criteria for the assessment of biological potential of uterine tumors are cytological atypia, mitotic index and coagulative tumor cell necrosis (CTCN). Among these, the–factor most strongly associated with malignant behaviour seems to be CTCN, which is characterized by an abrupt transition between viable cells and necrotic areas. The prognostic importance of CTCN is such that it should be differentiated from other types of innocuous morphologic changes (namely hyalinising necrosis), necrosis associated with superficial ulceration of submucous leiomyomas and hemorrhage within leiomyomas [2].

No standard protocols for the management of patients with suspected STUMP have as of yet been approved. In the event of STUMP diagnosis in myomectomy specimens, considering the proved possibility of recurrence, hysterectomy represents the gold standard for those women who have completed their childbearing. Successful pregnancies following fertility sparing surgery have been reported however these patients should be adequately informed of the risk of recurrence and a strict follow-up program through clinical and imaging techniques is mandatory [11]. Four of the five cases reported in our study underwent surgical treatment by total hysterectomy as first approach or as complete surgical staging (second look). In two cases we performed peritoneal washing, which was negative in both cases.

As reported by Ip et al. STUMPs are characterized by the possibility of delayed reccurences. However they present a highest median survival following recurrence as opposed to aggressive malignant uterine neoplasia [6, 14-17]. Recurred STUMPs are biologically low-grade LMS; However, using current analysis methods this diagnosis is not attainable until a recurrence develops [7].

There seems to be no consensus regarding the histological features able to predict the likelihood and the clinical characteristics of a recurrence, such as anatomical site (pelvis, abdomen, liver, lungs, lymph nodes, humerus, retroperitoneum and uterus-if hysterectomy was not previously performed), timing (ranging from 15 months to 9 years) and the histological type (STUMP or leiomyosarcoma) [2, 6, 9, 11, 12, 18]. Moreover neither demographic features (age, ethnicity, tobacco use) nor routine oncological serum markers (CA125 and He4) are predictive of recurrence of disease [9, 19, 20].

STUMPs may recur either as STUMPs [21, 22] or as leiomyosarcomas [2, 5, 21]. The treatment of choice in the event of a recurrence is surgical excision followed by adjuvant therapy, such as pelvic irradiation, chemotherapy (doxorubicin and cisplatin), medroxyprogesterone and gonadotropin-releasing hormone analogue [2, 5, 21-24]. While the efficacy of adjuvant therapy is generally accepted, an uneventful clinical course was noted even in the absence of such treatment [7].

The case presented by Shapiro et al. [11] further emphasizes the uncertain prognosis that a diagnosis of STUMP carries, even in the event of a histological absence of CTCN. Clinical management and follow-up of this disease remain a matter of debate [10].

The patients in our study were Caucasian; age ranged between 44 and 51 years. Adjuvant therapy was not performed in any of the patients of our case series and no recurrences were observed during the follow-up period. In our previously published case series we reported [1] 3 cases, only one of which case developed-recurrence with evidence of diffuse lung metastases 9 years following initial diagnosis: at present the clinical features of the three patients appear unchanged.

Ip et al. [5] reported a case-series of 16 patients diagnosed with STUMP. Adjuvant therapy was not administered to any of the patients in the study group. Recurrence of disease was observed in only 2 cases both of which presented with an immunhistological diagnosis of AL-LE and positive-staining for p16 and p53. The Authors suggest the potential role of immunohistochemistry of p16 and p53 in identifying the more aggressive form of STUMPs. Atkins et al [10] reported three cases (out of a total of 8 patients) of metastatic disease following STUMP diagnosis: the first patient developed peritoneal and lymph node metastases and was successively treated with progesterone after tumor debulking and remained disease-free for three years; the other patients developed liver metastases, which were treated surgically. In accordance with Ip et al, immunohistochemical analysis exhibited strong posi-

tive staining for p16 with a diffuse and focal distribution in respectively 2 and 1 of the recurrences observed.

Currently progesterone, GnRH analogue or chemotherapic agents have been proposed as adjuvant therapy, but none, as of yet, are proven to be effective in preventing recurrent disease [5, 6, 9]. If the efficacy of progesterone is confirmed, progesterone-releasing intrauterine device (LNS-IUS) may be a valid option in the event of fertility sparing surgery [25]. Furthermore there is lack of consensus regarding implementation of follow-up protocols [6, 7]. Ip et al suggest an intense follow-up program with an evaluation performed every 6 months in the first 5 years followed by annual surveillance for the next 5 years [6, 7]. At our Institute in patients treated by hysterectomy we usually perform a clinical evaluation every six months followed by a yearly total-body computed tomography scan (CT), whereas in those patients treated by uterus-sparing-surgery we perform a clinical and sonographical evaluation every 6 months and a yearly pelvic magnetic resonance imaging (MRI) coupled with chest X-ray.

Conclusions

The classification of smooth muscle cell neoplasms of the uterus with unknown malignant potential remains controversial. Some Authors suggest that perhaps even certain types of "benign leiomyomas", due to the aggressive clinical behaviour which characterizes them, should be included in the present classification [26].

Patients with STUMPs must be counselled regarding the potential risk of recurrence as leiomyosarcoma. A multidisciplinary management carried out by a team composed of gynaecologist, dedicated pathologist (with expertise in gynaecological pathology) and oncologist is mandatory for early detection of this disease and to establish the treatment of choice and follow up program. Even though STUMPs demonstrate a low-grade malignancy, a prolonged survival rate and delayed recurrence, patients with STUMPs require closer surveillance than a yearly examination because of the non neglible risk of metastases even many years after initial diagnosis. On this basis, we believe that patients affected by STUMP should receive a long-term surveillance through clinical evaluation and imaging techniques [5].

Finally, in accordance with Atkins et al. and Ip et al, the possibility to test by immunohistochemical assay the overespression of p16 and p53 on histological samples, may be useful, in the next future, to identify the cohort of patients at increased risk of recurrence which may benefit from "personalized" surgical-oncological strategies.

Disclosure of conflict of interest

None.

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References

[1] Berretta R, Rolla M, Merisio C, Giordano G, Nardelli GB. Uterine smooth muscle tumor of uncertain malignant potential: a three-case report. Int J Gynecol Cancer 2008; 18: 1121-6.

[2] Bell SW, Kempson RL, Hendrickson MR. Problematic uterine smooth muscle neoplasms. A clinicopathologic study of 213 cases. Am J Surg Pathol 1994; 18: 535-58.

[3] Kempson RL. Sarcomas and related neoplasms. In: Norris HJ, Hertig AT, Abell MR, editors. The Uterus. Baltimore: Williams & Wilkins; 1973.

[4] Tavassoli FA, Devilee P. World Health Organization Classification of Tumours: Tumours of the Breast and Female Genital Organs. Lyon: International Agency for Research on Cancer Press; 2003. pp. 236-239.

[5] Ip PP, Cheung AN, Clement PB. Uterine smooth muscle tumors of uncertain malignant potential (STUMP): a clinicopathologic analysis of 16 cases. Am J Surg Pathol 2009; 33: 992-1005.

[6] Ip PP, Tse KY, Tam KF. Uterine smooth muscle tumors other than the ordinary leiomyomas and leiomyosarcomas: a review of selected variants with emphasis on recent advances and unusual morphology that may cause concern for malignancy. Adv Anat Pathol 2010; 17: 91-112.

[7] Ip PP, Cheung AN. Pathology of uterine leiomyosarcomas and smooth muscle tumours of uncertain malignant potential. Best Pract Res Clin Obstet Gynaecol 2011; 25: 691-704.

[8] Rosai J. Rosai and Ackerman's Surgical Pathology. 2nd Volume Set; 10th edition: Chapter 19. Elsevier Release Date 20 Jun 2011.
[9] Guntupalli SR, Ramirez PT, Anderson ML, Milam MR, Bodurka DC, Malpica A. Uterine smooth muscle tumor of uncertain malignant potential: a retrospective analysis. Gynecol Oncol 2009; 113: 324-6.
[10] Atkins KA, Arronte N, Darus CJ, Rice LW. The Use of p16 in enhancing the histologic classification of uterine smooth muscle tumors. Am J Surg Pathol 2008; 32: 98-102.
[11] Shapiro A, Ferenczy A, Turcotte R, Bruchim I, Gotlieb WH. Uterine smooth-muscle tumor of uncertain malignant potential metastasizing to the humerus as a high-grade leiomyosarcoma. Gynecol Oncol 2004; 94: 818-20.
[12] Amant F, Moerman P, Vergote I. Report of an unusual problematic uterine smooth muscle neoplasm, emphasizing the prognostic importance of coagulative tumor cell necrosis. Int J Gynecol Cancer 2005; 15: 1210-2.
[13] D'Angelo E, Prat J. Uterine sarcomas: a review. Gynecol Oncol 2010; 116: 131-9.
[14] Berretta R, Patrelli TS, Faioli R, Mautone D, Gizzo S, Mezzogiorno A, Giordano G, Modena AB. Dedifferentiated endometrial cancer: an atypical case diagnosed from cerebellar and adrenal metastasis: case presentation and review of literature. Int J Clin Exp Pathol 2013; 6: 1652-7.
[15] Gizzo S, Ancona E, Patrelli TS, Saccardi C, Anis O, Donato D, Nardelli GB. Fertility preservation in young women with cervical cancer: an oncologic dilemma or a new conception of fertility sparing surgery? Cancer Invest 2013; 31: 189.
[16] Patrelli TS, Gizzo S, Di Gangi S, Guidi G, Rondinelli M, Nardelli GB. Cervical Mullerian adenosarcoma with heterologous sarcomatous overgrowth: a fourth case and review of literature. BMC Cancer 2011; 11: 236.
[17] Patrelli TS, Silini EM, Gizzo S, Berretta R, Franchi L, Thai E, Lukanovic A, Nardelli GB, Modena AB. Extragenital Müllerian adenosarcoma with pouch of Douglas location. BMC Cancer 2011; 11: 171.
[18] Ng JS, Han A, Chew SH, Low J. A clinicopathologic study of uterine smooth muscle tumours of uncertain malignant potential (STUMP). Ann Acad Med Singapore 2010; 39: 625-8.
[19] Gizzo S, Ancona E, Saccardi C, D'Antona D, Nardelli GB, Plebani M. Could kidney glomerular filtration impairment represent the "Achilles heel" of HE4 serum marker? A possible further implication. Clin Chem Lab Med 2014; 52: e45-6.
[20] Patrelli TS, Berretta R, Gizzo S, Pezzuto A, Franchi L, Lukanovic A, Nardelli GB, Modena AB. CA 125 serum values in surgically treated endometriosis patients and its relationships with anatomic sites of endometriosis and pregnancy rate. Fertil Steril 2011; 95: 393-6.
[21] Clement PB. The pathology of uterine smooth muscle tumors and mixed endometrial stromal-smooth muscle tumors: a selective review with emphasis on recent advances. Int J Gynecol Pathol 2000; 19: 39-55.
[22] Gao HG, LiVolsi VA, Zhang PJ. Utility of trichrome and reticulin stains in characterizing necroses in uterine smooth muscle tumors. Mod Pathol 2007; 20: 198A.
[23] Mittal K, Popiolek D, Demopoulos RI. Uterine myxoid leiomyosarcoma within a leiomyoma. Hum Pathol 2000; 31: 398-400.
[24] Clement PB, Young RH. Mesenchymal and mixed epithelial-mesenchymal tumors of the uterine corpus and cervix. In: Atlas of gynecologic surgical pathology. 2nd edition. Philadelphia: WB Saunders; 2007. pp. 194-235.
[25] Gizzo S, Di Gangi S, Bertocco A, Noventa M, Fagherazzi S, Ancona E, Saccardi C, Patrelli TS, D'Antona D, Nardelli GB. Levonorgestrel intrauterine system in adjuvant tamoxifen treatment: balance of breast risks and endometrial benefits--systematic review of literature. Reprod Sci 2014; 21: 423-31.
[26] Canciani GN, Burbos N, Duncan TJ, Lonsdale R, Nieto JJ. Late presentation of metastatic smooth muscle neoplasm of the uterus with low malignant potential. J Gynecol Oncol 2012; 23: 69-71.