Vol 5 | Issue 1 | 2015 | 44-47.

e-ISSN 2248 – 9142
print-ISSN 2248 – 9134

International Journal of
Current Pharmaceutical & Clinical Research

www.ijcpcr.com

A CASE REPORT: UTERINE SMOOTH MUSCLE TUMOURS OF UNCERTAIN MALIGNANT POTENTIAL (STUMP)

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ABSTRACT

Based on the degree of cytologic atypia, mitotic activity, and other features, uterine smooth muscle tumors have historically been grouped into two classes: benign leiomyomas and malignant leiomyosarcomas. However, this separation holds true more in principle than in practice because the tumor's biological potential may not always be determined with certainty, complicating diagnosis, and therapy. The clinical management of Smooth Muscle Tumours of Uncertain Malignant Potential (STUMPs) remains controversial because little is known about the natural history of these tumours and pathological classifications do not correlate well with clinical outcomes and therefore cannot direct management. The objective of this case report was to share experience with STUMP. We present a case of 38 year old premenopausal woman presented with complaint of abdominal pain and subsequently diagnosed STUMP.

Key words: Smooth Muscle Tumours, Uncertain Malignant Potential, Leiomyoma.

INTRODUCTION

Smooth Muscle Tumours of Undetermined Malignant Potential or STUMPs are interesting tumours from both the standpoint of histological diagnosis and classification as well as clinical management mainly because, as a group, its natural history is poorly understood. Uterine smooth muscle tumors have historically been grouped into two classes based on the degree of cytologic atypia, mitotic activity, and other cytologic and molecular features: benign leiomyomas and malignant leiomyosarcomas.

However, this separation holds true more in principle than in practice because the tumor's biological potential may not always be determined with certainty, complicating diagnosis and therapy. The three major criteria for assessing the biological potential of uterine tumors are cytologic atypia, mitotic index, and coagulative tumor cell necrosis [1]. The new and widely used designation ''smooth muscle tumor of uncertain malignant potential'' (STUMP) does not indicate a category of tumors between leiomyoma and leiomyosarcoma but is rather a reflection of the limitation of available criteria to precisely diagnose tumors with borderline atypical features. We present a case of STUMP tumour and how this experience has resulted in the rationale of expectant management for STUMP tumours and finally explains why this represents both a rational and reasonable approach to clinical management.

Case report

A 38 years old premenopausal woman presented with complaint of right sided lower abdominal pain. She was found to have rapidly enlarging uterine mass with pressure symptoms but no associated metrorrhagia. Her obstetric history suggested two uneventful pregnancies-both healthy live births with history of abdominal tubal ligation done. On per abdomen examination, uterus was 18-20 weeks size with restricted mobility. On per vaginaum examination, a pelvic mass arising from uterus was appreciated with dimensions similar to ones found on per abdomen examination.

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On investigation, all routine investigations, i.e. complete blood count, renal & liver function tests were normal. Her chest x-ray was normal. On ultrasound examination, Approx. 11*7 cm sized heterogeneously altered echotexture lesion was noted in right adnexa with cystic areas within showing internal vascularity, p/o tubo-ovarian mass. Approx. 5*5 cm sized fibroid was noted in anterior wall of uterus displacing ET posteriorly. Left adnexa was not visualized. Minimal free fluid was noted in peritoneal cavity. On doing CECT abdomen, uterus was studded & deformed with multiple varying sized heterogeneously enhacing lesions in intramural and subserosal location largest measuring approx. 12*10*11 mm arising from body of uterus in subserosal location and approx. 5*5 cm sized lesion in anterior wall of uterus. The lesion was seen compressing right iliac vein and distal right ureter causing back pressure changes in the form of mild hydronephrosis and hydroureter on right side. Both ovaries appeared stretched around by the mass and appear normal. No evidence of ascites was noted. Multiple venous collaterals were noted in pelvis. The patient was taken up for laparotomy with a probable diagnosis of leiomyoma uterus. At laparotomy, multiple fibroids were found in anterior and posterior wall of uterus of almost similar dimensions found on CECT abdomen. There were no other findings of note in the pelvis. Decision for total abdominal hysterectomy and bilateral salpingo-oophorectomy was taken. The operative and post-operative periods remained uneventful and patient was discharged on 8th postoperative day. The patient was subsequently advised for follow up after 3 months.

Figure 1. Leiomyosarcomas in patients with rapidly enlarging uteri

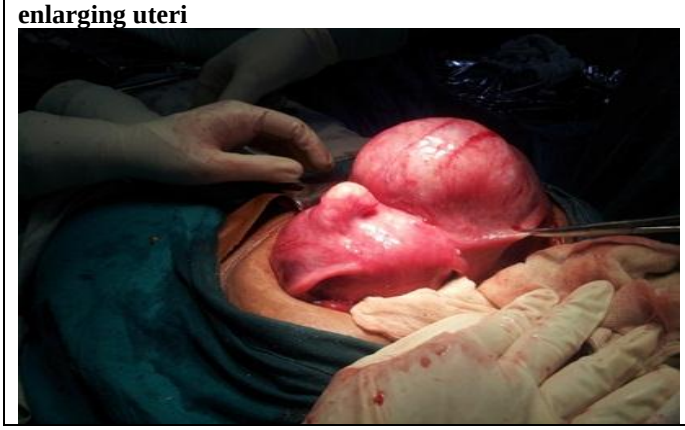

Figure 2. Histological study of Leiomyosarcomas

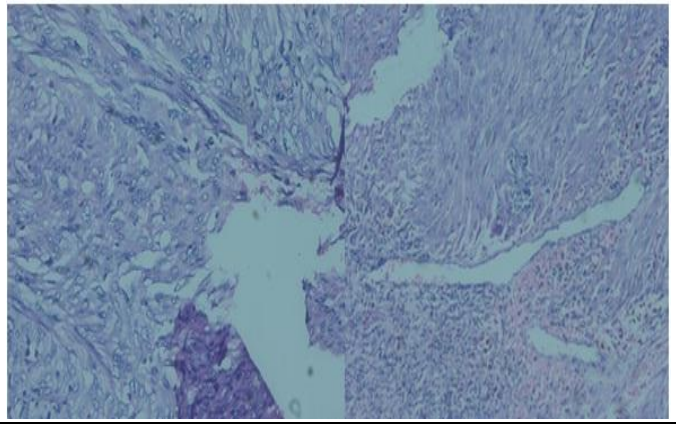

Table 1. Histologic criteria for diagnosis of smooth muscles tumours modified according to bell:

Mitotic index (MF/10 HPF)	Cytologic atypia	Coagulative tumour cell necrosis	Diagnosis
< 20	None	No	Leiomyoma
< 5	No more than mild		
< 20	None	No	Leiomyoma with increased mitotic index
>= 5	No more than mild		
>= 10	Diffuse moderate to severe	No	Leiomyosarcoma
>=10	Absent to mild	Yes	Leiomyosarcoma
Any mitotic index	Diffuse moderate to severe	Yes	Leiomyosarcoma
>= 20	None	No	Leiomyoma with increased mitotic index but experience limited
	No more than mild		
< 10	Diffuse moderate to severe	No	Atypical leiomyoma with low risk of recurrence
< 20	Focal moderate to severe	No	Atypical leiomyoma but experience limited
< 10	No to mild	Yes	STUMP
< 5	Focal moderate to severe	No	STUMP

Pathological findings

On gross examination, 11*10*10 cm fibroid tumour identified which on cut section had a whitish whorl pattern with haemorrhagic areas. Microscopy showed histology of leiomyomatous tumour with evidence of increased mitosis (mitotic index of <5/10 HPF) and moderate degree of nuclear atypia with no evidence of coagulative necrosis s/o smooth muscle tumour of

uncertain malignant potential. Sections from cervix and endometrium were unremarkable except changes of papillary endocervicitis. Bilateral ovaries were found normal histology on microscopic examination. Impression –Smooth Muscle Tumour of Uncertain Malignant Potential (STUMP).

DISCUSSION

Smooth muscle tumours of the uterus remain a relatively uncommon diagnosis. This encompasses a large group of neoplasms representing the entire spectrum from benign to malignant [2]. Statistically, a patient presenting with a uterus enlarged by globular corporeal tumours is likely to have a final diagnosis of benign uterine leiomyoma. There are no firm guidelines on the clinical management of a patient with a globular or rapidly enlarging uterus largely due to the rarity of frankly malignant smooth muscle tumours such as leiomyosarcomas in patients presenting with rapidly enlarging uteri [3]. Furthermore, the majority of leiomyosarcomas arise *de novo* and not from the malignant transformation of benign leiomyomata. In addition to the unambiguous usual uterine leiomyomas and uterine leiomyosarcomas, there is a spectrum of intermediate or borderline uterine smooth muscle tumors with overlapping features that can be challenging even for the most experienced pathologist to diagnose. It is not clear whether these intermediate tumors reflect a transition from the one extreme end of common benign leiomyoma to the other extreme end of uterine leiomyosarcoma at the pathogenetic level [4].

Bell et al [1] provided one of the largest series of problematic uterine smooth muscle tumours. Three criteria were examined: coagulative tumour cell necrosis (CTCN), degree and extent of atypia and mitotic index (MI). Of these, CTCN and extensive severe atypia seemed to correlate with malignant behaviour. These authors subdivided STUMPs into three histologically distinct groups.

1) **''Smooth muscle tumor of low malignant potential,''** are characterized by a mitotic index of, 10 MF/10 HPF, absent to mild cytologic atypia, and presence of coagulative tumor cell necrosis.

2) **''Atypical leiomyoma with low risk of recurrence,''** have a mitotic index of, 10 MF/10 HPF, diffuse moderate to severe cytologic atypia, and absence of coagulative tumor cell necrosis.

''Atypical leiomyoma but experience limited,'' have a mitotic index of, 20 MF/10 HPF, focal moderate to severe cytologic atypia, and absence of coagulative tumor cell necrosis (Table).

Burns et al [5] stressed the importance of coagulative tumor cell necrosis as the best single predictor among morphologic features.

In a recent article, Mulayim and Gucer [6] defined STUMPs as those neoplasms that are histologically characterized by i) nonsignificant atypia, presence of coagulative tumor cell necrosis, and a mitotic index of ,10 MF/10 HPF and ii) significant atypia, absence of coagulative tumor cell necrosis, and a mitotic index of ,5 MF/10 HPF.

Shapiro et al [7] reported one case of atypical leiomyoma but experience limited, managed by laparohysterectomy and bilateral adnexectomy, which metastasized to the right-side humerus after 5-year follow-up.

In a 2005 study, Amant et al [8] reported a retroperitoneal/pelvic relapse after 4 years in a STUMP patient managed by hysterectomy and adnexectomy. In this patient, the relapse had the distinctive features of leiomyosarcoma, leading the authors to postulate a malignant evolution of the primary tumor.

In our case, the patient is diagnosed as having STUMP after doing abdominal hysterectomy with bilateral adnexetomy which showed smooth muscle tumour of low malignant tumour on histopathological examination (mitotic index of <5/HPF with moderate degree of cellular atypia and no evidence of coagulative necrosis).

The clinical manifestations of STUMP are the same as benign leiomyomas and uterine sarcomas, i.e. uterine mass, abnormal uterine bleeding and pelvic pain/pressure symptoms. Likewise, there is no imaging modality that can reliably distinguish these lesions from other uterine tumours.

STUMP is diagnosed following myomectomy or hysterectomy. There are no available guidelines regarding whether hysterectomy, if not already performed, is required in women with this diagnosis. For women who have been diagnosed with STUMP following myomectomy, a detailed discussion should be held with the patient to review the characteristics of the tumour and the patient's plan for future pregnancy. Management options include hysterectomy or annual surveillance with pelvic imaging.

The prognosis and management of uterine smooth muscle tumours are not uniform, and may be controversial in some settings. This is especially so with a histopathologic diagnosis of STUMP. Numerous small series have investigated the use of marker expression profiles to aid in the triage of smooth muscle tumours. A significant difference in staining intensity for Ki-67 between leiomyosarcoma and STUMP has been reported [9]. Other investigators have suggested that STUMPs that express p16 and p53 may have a greater propensity to recur [10].

CONCLUSION

In conclusion, the diagnosis of smooth muscle tumours of uncertain malignant potential (STUMP) carries

with it an uncertain prognosis, although studied seem to suggest that the recurrence risk is low and that clinical outcomes are generally favourable. When disease recurs, it is likely to be loco-regional in nature and amenable to resection. Questions for future study might include whether complete surgical "re-staging" after histological diagnosis aids treatment and therefore outcome, and what adjuvant therapy if any is appropriate.

A primary focus of future research should then be finding markers that are based on a better understanding of the molecular pathways leading to malignant transformation, thus allowing investigators to predict the clinical behavior of tumor in general.

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