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RESEARCH

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Uterine smooth muscle tumors of uncertain malignant potential: a retrospective evaluation of clinical pathology and immunohistochemistry features

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Abstract

Background Uterine smooth muscle tumor of uncertain malignant potential (STUMP) is a group of uterine smooth muscle tumors which cannot be classified as a subtype of leiomyoma or leiomyosarcoma. Diagnosis, prognosis, and treatment of these tumors are challenging due to recurrence, potential of malignancy, and metastasis.

Methods A retrospective cohort study was conducted in southern Iran during 2011 to 2020. We included records of 21 patients with STUMP and 24 patients with leiomyoma by simple randomized sampling in the tertiary health care centers in Shiraz, southern Iran. Slides were reviewed by an expert pathologist for examining mitosis, necrosis, and atypia, and also proper blocks were selected for immunohistochemistry (IHC) staining.

Results From 45 participants, 21 (46.7%) and 24 (53.3%) patients were in the STUMP and normal leiomyoma groups, respectively. Odds ratio and 95% confidence interval (OR (95% C.I)) of pathologic size in the range of 5–10 cm was significantly higher in the STUMP group compared with normal leiomyoma. (CI: 7.22 (1.44–36.22)). Additionally, hyaline necrosis 0.05 (0.0-0.91), mild to moderate atypia 0.02 (0.0-0.4), moderate to severe atypia 0.01 (0.0-0.22), focal atypia 0.01 (0-0.26) and diffuse atypia 0.01 (0-0.26) were significantly fewer in normal leiomyoma compared to the STUMP group. Negative P16 0.01 (0.0007-0.24) and negative Bcl2 0.22 (0.06–0.81) were significantly higher in the normal leiomyoma group compared with the STUMP group. The cut-off points for predicting STUMP were 2.5% (sensitivity = 62% and specificity = 100%) and 45% (sensitivity = 43% and specificity = 96%) for P16 and bcl2, respectively.

Conclusion The category and management of STUMP continues to progress. The diagnosis for STUMP mainly depends on the histopathological manifestations. No single IHC marker such as P53, P16, and Bcl-2 has proved robust enough in separating STUMP from other leiomyoma variants; however, according to our study, we suggest combination use of P16 and Bcl-2 (cut off 2.5 and 45%, respectively) to distinguish equivocal cases of STUMP.

Keywords Uterine smooth muscle tumor of uncertain malignant potential (STUMP), Immunohistochemisy (IHC), Leiomyoma, P16, Bcl-2, P53

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studies revealed that presentation of Bcl-2 was more frequent and stronger in leiomyoma cases in comparison to STUMP and leiomyosarcoma [16, 18, 29, 37]. However, it can be used as a good prognostic marker to distinguish benign and malignant smooth muscle tumors. Despite the differences in presentation of Bcl-2 in leiomyosarcoma, leiomyoma and STUMP cases, it cannot be an exclusive diagnostic tool in this field.

Conclusion

The category and management of STUMP continues to progress. The diagnosis for STUMP mainly depends on the histopathological manifestations. No single IHC marker such as P53, P16, and Bcl-2 has proved robust enough in separating STUMP from other leiomyoma variants; however, according to our study, we suggest combined use of P16 and Bcl-2 (cut off 2.5 and 45%, respectively) to distinguish the equivocal cases of STUMP that are larger than 5 cm with at least moderate atypia and hyaline necrosis.

Abbreviations

AUB	Abnormal uterine bleeding
BSO	Bilateral salpingectomy
IHC	Immunohistochemistry
LDH	Lactate dehydrogenase
PMHx	Past medical history
STUMP	Smooth muscle tumors of uncertain malignant potential
TAH	Trans-abdominal hysterectomy
USO	Unilateral salpingectomy

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Authors' contributions

MAJ, FSA and FN designed and MAJ conducted the study. MAJ and FA reviewed pathology slides. MZ analysed and interpreted the patients' data. FA and NT contributed in writing and editing the manuscript. FA and MAJ read and approved the final manscript.

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Availability of data and materials

All data generated or analyzed during this study are included in this published article.

Declarations

Ethics approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interests.

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