

MRI AND THE BENIGN OR MALIGNANT NATURE OF GYNAECOLOGICAL UTERINE TUMOURS - CASE REPORT

RADU CHICEA¹, ANCA CHICEA², PAULA NIȚĂ³

^{1,2,3}“Lucian Blaga” University of Sibiu

Keywords: MRI, tumour, ultrasound, leiomyoma, pelvis

Abstract: Magnetic Resonance Imaging (MRI) is a superior imaging examination that is intended to add more information to the evaluation of gynaecological pathology. MRI has the advantage of providing additional information about the origin, nature, number, size, location and degree of degeneration of the tumour formations. The aim of the paper is to present our experience regarding the MRI investigation in gynaecological tumour pathology. We will present a case that has raised major issues of differential approach and diagnosis following the MRI result. MRI is a useful tool in tumour evaluation, but when it comes to gynaecological tumour pathology, both literature studies and our own experience show that its effectiveness is reduced in terms of the benign or malignant nature of a tumour.

INTRODUCTION

The current trend in treating gynaecological tumour pathologies is to use minimally invasive surgery. In view of a minimally invasive approach, information about the benign or malignant nature of the tumour is extremely important. Although, at present, the minimally invasive approach has expanded to treat malignant pathologies, there are still cases where this approach is not recommended. Any additional information brought by imaging investigation into establishing a therapeutic course is essential.(1,2,3) In this paper we are interested in uterine leiomyomas, leiomyosarcomas and smooth muscle tumours of uncertain malignant potential (STUMP). Uterine fibroids are the most common pelvic tumour in women. Leiomyomas are benign tumours of the uterus resulting from its smooth muscles.(4) Most of the times, leiomyomas are asymptomatic, but there are situations where they can give a number of symptoms such as menorrhagia, metrorrhagia, pelvic and abdominal pain or compression. When they are asymptomatic, no treatment is required.(5) Uterine leiomyomas, on T1- and T2-weighted MRI scans look as sharply emarginated areas of low to intermediate signal intensity according to the literature data.(6,7) At the ultrasound, leiomyomas are concentrated, solid, hypoechoic, heterogeneous or hyperechoic masses within the myometrium or attached to it. At colour or power-Doppler imaging, circumferential flow around the tumour is often visible.(8,9)

Uterine sarcomas are malignant tumours that have a rather poor prognosis. Most often these are large, single tumours that grow rapidly. They do not have specific echocardiographic or MRI features, but have vascularisation at the Power Doppler exam. Also, their imaging aspect with haemorrhagic and necrotic areas is not specific to uterine sarcomas. The same aspect can be found in uterine leiomyomas with degeneration.(10,11,12,13,14,15) Another category of tumours that are of interest in this paper is smooth muscle tumours of uncertain malignant potential (STUMP). The preoperative diagnosis of STUMP is difficult to obtain depending on the symptomatology or the imaging criteria. Clear diagnosis can only be given by the histopathological examination.

Tumours of smooth uterine muscle were histologically divided into leiomyoma and leiomyosarcomas. Histological diagnosis of uterine sarcoma must be supported by at least two Stanford criteria. Moderate to severe diffuse cellular atypia, at least 10 mitotic figures/10 HPF and tumour cell necrosis criteria are found among the Stanford criteria; absence of necrosis and atypia, ≤ 4 mitosis indicating benign leiomyoma.(16)

AIM

The aim of the paper is to present our experience in the pelvic tumour pathology. We also intend, by reporting a clinical case, to evaluate the MRI contribution in establishing a diagnosis related to the malignant or benign nature of the pelvic tumour masses.

CASE REPORT

We report the case of a 50-year-old patient who came to our clinic accusing pelvic pain, pelvic pressure, pollakiuria, and dyspareunia. The patient presented in her personal physiological history, two births, one vaginally, the other through caesarean. Also, the patient did not have a significant reproductive gynaecological history. Menarche was installed at the age of 13, the patient was currently presenting irregular menstrual cycles, metrorrhagia and menorrhagia and was in premenopause. The gynaecological examination revealed a large volume of abdomen on the back of a tumour that occupied the right flank. Also noticeable was the supple, elastic, synchronous and mobile abdomen with respiratory movements. The abdomen was painfully spontaneous and on palpation in the lower floor at the time of examination. No signs of peritoneal irritation. Also, the entire pelvis was occupied by an ovulatory tumour, well delimited with increased consistency, regular outline and difficult to mobilize, sensitive to mobilization. The spec exam did not detect cervical lesions without vaginal bleeding at the time of consultation. The vaginal touch revealed the uterus mobile with increased volume, sensitive to mobilization, being difficult to determine the affiliation of the tumour at the clinical examination. The ultrasound examination highlighted a voluminous tumour mass, retro uterine that occupied the entire

³Corresponding author: Paula Niță, Str Ascanio Damian, Nr. 24, Cisnădie, România, E-mail: Paola_10k@yahoo.com, Phone: +40753 656569
Article received on 16.10.2018 and accepted for publication on 22.10.2018
ACTA MEDICA TRANSILVANICA December 2018;23(4):62-64

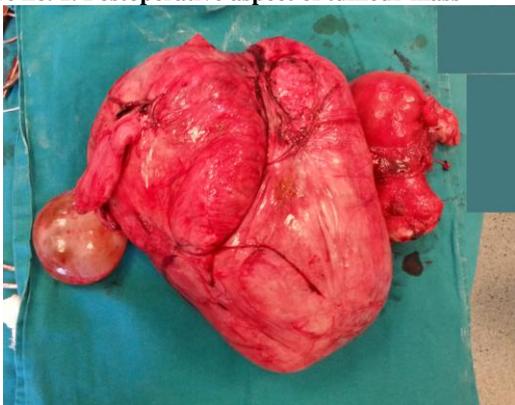
CLINICAL ASPECTS

pelvis, oval, well defined, intensely hypoechoic, inhomogeneous with areas with slightly higher echogenicity and low Doppler signal in the periphery. Following the gynaecological examination and the ultrasound examination we established the diagnosis of uterine fibroids with degeneration.

The MRI exam described a large tumour mass, which belonged to the retroperitoneum, with imaging characters suggestive of malignancy. Following the MRI result, the problem of differential diagnosis between the benign or malignant nature of the tumour formation has been raised. Also, its retroperitoneal location described in the MRI would pose great problems in terms of surgical approach. The patient has performed tumour markers that were within normal limits, without other pathological changes in routine investigations. We have put differential diagnostic problems on the location of the tumour. In the MRI investigation, the tumour mass was described as a retroperitoneal formation. Both clinical and ultrasound examinations were suggestive for voluminous uterine leiomyoma. Considering the large dimensions of the tumour we have chosen as a way to approach the classical laparotomy. After pre-operative preparation and pre-anaesthetic consultation, surgery was performed. We chose to open the abdomen on the Pfannenstiel incision. During surgery we found: a well-defined oval tumour with low consistency, mobile (figure no. 1).

The tumour mass located on the base of the broad left ligament occupying the pelvis and the left flank entirely. Clinical features were suggestive for degenerative uterine fibromyoma. Fallopian tubes, the uterus and ovaries looked normal and could be mobilized.

Figure no. 1. Postoperative aspect of tumour mass



Total hysterectomy with bilateral adnexectomy was performed. There were no complications during surgery. The patient was discharged on the 5th day after surgery. She had a good evolution, without immediate complications or at a distance. One month after surgery, the patient resumed her professional activity.

The result of the histopathological examination confirmed the diagnosis established after the gynaecological examination and the ultrasound examination: Uterine leiomyoma with cystic degenerations, edematous, hemorrhagic, myxoid areas and plexiform aspects. The malignancy of the tumour mass suggested by the MRI investigation was denied by the histopathological examination.

DISCUSSIONS

MRI is a subjective investigation when it comes to interpreting the results obtained. The obtained images are interpreted by specialists, who may have different perceptions about the acquired imaging data. An important role in establishing a MRI diagnosis is the experience of the interpreter.

The malignant or benign nature of gynaecological tumours is very important because, depending on it, we opt for therapeutic behaviour. Also, the character of tumours can also influence the path of surgical approach. In the case of a tumour with benign characteristics and of course, where the dimensions of the tumours allow us, it is most often chosen for minimally invasive surgery. If tumours have malignancies most often, one would opt for a radical and not conservative approach. In the case of gynaecological tumour pathology, in women in premenopause or climax, we believe that it would greatly reduce the cost if all tumours would be surgically treated at least as STUMP. Since the result of the histopathological examination is the only diagnosis of certainty, then it would greatly reduce the surgical interventions for relapse. The most difficult part of the treatment in these tumours remains the one related to young women who want to preserve fertility. It is hard to say what the best therapeutic strategy in these cases is. In the case presented in the paper, following the clinical and ultrasound examination, we focused on a benign uterine tumour pathology. Following MRI, we encountered difficulties primarily related to the malign or benign nature of the tumour. The temptation was to believe in the outcome of MRI, as it is supposed to be a superior investigation. Even it is a superior imaging investigation in many situations, but in our case, it turned out that it was not so. Another problem that we encountered in addressing this case was related to the location of the tumour. The description of MRI in which the tumour was described retroperitoneally required interdisciplinary collaboration with a general surgery specialist. Thus, for a case interpreted as simply to be approached after ultrasound and clinical examination, MRI has increased the cost of this case. Data obtained from MRI should always be interpreted in a clinical context.

CONCLUSIONS

From both our experience and the data published in the literature we conclude that MRI is not a specific investigation in determining the malignant or benign character of a tumour mass in gynaecological pathology. MRI is a costly, hard-to-reach investigation that provides poor information about the nature of gynaecological tumours.

REFERENCES

1. Benedetti Panici P, Perniola G, Tomao F, Fischetti M, Savone D, Di Donato V, Angioli R, Muzii L: An Update of Laparoscopy in Cervical Cancer Staging: Is It a Useful Procedure? *Oncology*. 2013;85:160-165. doi: 10.1159/000351995.
2. Wimberger P, Kimmig R. Significance of laparoscopy in gynaecological oncology : limitations for adnexal tumours *Geburtshilfliche Rundsch*. 2009;49:133-137. doi: 10.1159/000213062.
3. Fabio M, Francesca R, Stefano C, Davide D, Stefano P, Carla P, Enrico R, A safe method of vaginal longitudinal morcellation of bulky uterus with endometrial cancer in a bag at laparoscopy., *Surg Endosc*. 2014 Jun; 28(6):1949–1953. Published online 2014 Feb 25. doi: 10.1007/s00464-014-3422-0.
4. Segars JH, Parrott EC, Nagel JD, et al. Proceedings from the Third National Institutes of Health International Congress on Advances in Uterine Leiomyoma Research: comprehensive review, conference summary and future recommendations. *Human Reproduction Update*. 2014;20(3):309-333. doi:10.1093/humupd/dmt058.
5. Seema D, Alok K, Archana Ve; Clinicopathologic Correlation of Leiomyoma With Clinical Findings and Secondary Changes in a Rural Population of North India,

- American Journal of Clinical Pathology. 2014;141(2):275-279, <https://doi.org/10.1309/AJCPSLMZ1TOC4JCF>.
6. Jondal DE, Wang J, Chen J, Gorny KR, Felmlee J, Hesly G, et al. Uterine fibroids: correlations between MRI appearance and stiffness via magnetic resonance elastography. *Abdom Radiol (NY)*. 2017 Sep 26.
 7. Bolan C, Caserta MP. MR imaging of atypical fibroids. *Abdom Radiol (NY)*. 2016;41(12):2332-2349.
 8. Van den Bosch T, Dueholm M, Leone FP, Valentin L, Rasmussen CK, Votino A, Van Schoubroeck D, Landolfo C, Installé AJ, Guerriero S, Exacoustos C, Gordts S, Benacerraf B, D'Hooghe T, De Moor B, Brölmann H, Goldstein S, Epstein E, Bourne T, Timmerman D. Terms, definitions and measurements to describe sonographic features of myometrium and uterine masses: a consensus opinion from the Morphological Uterus Sonographic Assessment (MUSA) group. *Ultrasound Obstet Gynecol*. 2015;46:284-298. doi:10.1002/uog.14806.
 9. Fabiana D, Paola C, Rossella C, Claudiana O, Antonella V, Caterina E. Ultrasound diagnosis of uterine myoms. *Minerva Ginecologia*. 2016;68(3):297-312.
 10. Bonneau C, Thomassin Naggara I, Dechoux S, Cortez A, Darai E, Rouzier R. Value of ultrasonography and magnetic resonance imaging for the characterization of uterine mesenchymal tumors. *Acta Obstet Gynecol Scand*. 2013; 93: 261–268.
 11. Exacoustos C, Romanini ME, Amadio A, Amoroso C, Szabolcs B, Zupi E, Arduini D. Can gray scale and color Doppler sonography differentiate between uterine leiomyosarcoma and leiomyoma? *J Clin Ultrasound*. 2007;35:449–457.
 12. Aviram R, Ochshorn Y, Markovitch O, Fishman A, Cohen I, Altaras MM, Tepper R. Uterine sarcomas versus leiomyomas: gray scale and Doppler sonographic findings. *J Clin Ultrasound*. 2005;33:10-13.
 13. Hata K, Hata T, Maruyama R, Hirai M. Uterine sarcoma: can it be differentiated from uterine leiomyoma with Doppler ultrasonography? A preliminary report. *Ultrasound Obstet Gynecol* 1997; 9: 101–104.
 14. Hata K, Hata T, Makihara K, Aoki S, Takamiya O, Kitao M, Harada Y, Nagaoka S. Sonographic findings of uterine leiomyosarcoma. *Gynecol Obstet Invest*. 1990;30:242-245.
 15. Szabo I, Szantho A, Csabay L, Csapo Z, Szirmai K, Papp Z. Color Doppler ultrasonography in the differentiation of uterine sarcomas from uterine leiomyomas. *Eur J Gynaecol Oncol*. 2002;23:29-34.
 16. Bacanagil BH, Deveci M, Karabuk E, Soyman Z. Uterine Smooth Muscle Tumor of Uncertain Malignant Potential: Clinicopathologic-Sonographic Characteristics, Follow-Up and Recurrence. *World Journal of Oncology*. 2017;8(3):76-80. doi:10.14740/wjon1031w.