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ORIGINAL ARTICLE

Assessment of uterine mass lesions using MRI

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ABSTRACT:

Background: Uterine mass lesions are a worldwide issue that is frequently observed. Within the reproductive age group, mass lesions in the uterus affect 15–20% of women. The present study assessed the uterine mass lesions using MRI. **Materials & Methods:**84 patients of uterine mass lesionswere subjected to MRI examination. **Results:** The age group <40 years had 38, 41-50 years had 26 and 51-60 years had 20 patients. The difference was significant (P< 0.05). Common complaints were pain in 23, discharge per vaginal in 38, mass abdomen in 49, dysmenorrhoea in 6, and bleeding per vaginal in 30 patients. The difference was significant (P< 0.05). **Conclusion:** Pelvic MR imaging is a well-tolerated, non-invasive method that accurately characterizes uterine mass lesions with good histological correlate.

Keywords: MR Imaging, Uterine mass

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INTRODUCTION

Uterine mass lesions are a worldwide issue that is frequently observed. Within the reproductive age group, mass lesions in the uterus affect 15–20% of women.[1] With an overall precision rate of 91–93%, MRI seems to be a useful modality in the diagnosis of uterine diseases, especially when contrast methods are applied. MRI is quickly replacing other diagnostic methods as the modality of choice for evaluating uterine diseases because of its excellent resolution and multiplanar imaging, which allow it to define numerous lesions.[2]

After USG, MRI is typically thought of as the following step in the assessment of a lesion. The sole disadvantage of MRI is its lack of accessibility and higher cost in comparison to USG. Additionally, anyone who are claustrophobic or have certain metallic implants shouldn't do it.[3,4] When the expense of the investigation is taken into account, there is always a big difference between MRI and USG.4 General radiologists and doctors sending cases frequently struggle to select the right patients for magnetic resonance imaging (MRI).[5]The present study assessed the uterine mass lesions using MRI.

MATERIALS & METHODS

The present study comprised of 84 patients of uterine mass lesions of both genders. The written consent was obtained from all patients.

Data such as name, age, gender etc. was recorded. According on the ultimate diagnosis, they had a hysterectomy, myomectomy, cervical biopsies, or endometrial curettage. The final histopathology report served as the gold standard. All patients were subjected to MRI examination. MRI was performed using Siemens 1.5 tesla. In MRI the maximal junctional zone thickness was measured and junctional zone to myometrial thickness ratio calculated. For this, single layer of junctional zone is measured at the level of maximum thickness and the myometrial thickness is measured at the same level. Intensity of the lesions in both T1 and T2 weighted images were noted. Number and location of the lesions were also noted. In case of endometrial lesions, level of myometrial invasion and in cases of Carcinoma Cervix, extent of the lesions was noted. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Age group (years)	Number	P value
<40	38	0.05
41-50	26	
51-60	20	

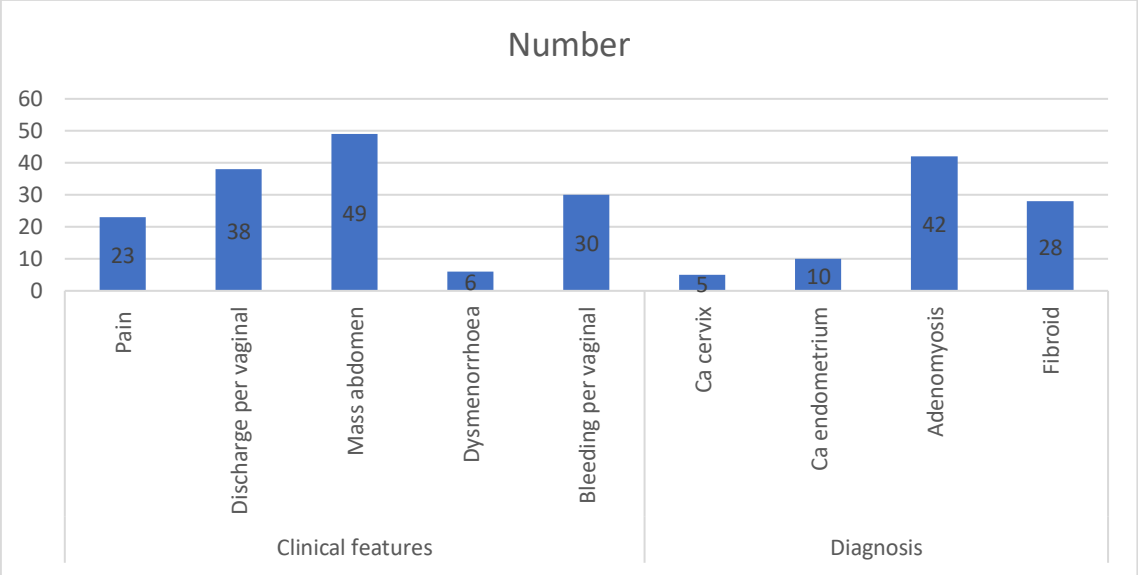
Table I shows that age group <40 years had 38, 41-50 years had 26 and 51-60 years had 20 patients. The difference was significant (P< 0.05).

Table II Assessment of parameters

Parameters	Variables	Number	P value
Clinical features	Pain	23	0.05
	Discharge per vaginal	38	
	Mass abdomen	49	
	Dysmenorrhoea	6	
	Bleeding per vaginal	30	
Diagnosis	Ca cervix	5	0.01
	Ca endometrium	10	
	Adenomyosis	42	
	Fibroid	28	

Table II, graph I shows that common complaints were pain in 23, discharge per vaginal in 38, mass abdomen in 49, dysmenorrhoea in 6, and bleeding per vaginal in 30 patients. The difference was significant (P< 0.05).

Graph I Assessment of parameters



DISCUSSION

On T1 weighted images, the uterus appears as a consistently low signal intensity structure with no discernible internal anatomy. On T2 weighted images, three different zones within the uterine corpus can be seen in all premenopausal women.[6] The endometrium and secretions inside the endometrial cavity are shown by a central stripe with a high signal intensity. The junctional zone, an area of low signal intensity, encircles this.[7] According to histology, it is the innermost layer of the myometrium. It differs from the outer myometrium in that it has a larger nuclear area, which is mostly due to the junctional zone's lower water content and higher cellularity.[8] The signal intensity of the outer layer of the myometrium is moderate.9. During the menstrual cycle, the thickness of the endometrium changes, measuring between 4 and 13 mm.During the menstrual cycle, the outer myometrium's signal strength and width can change; in the late secretory phase, it can widen up to 2.5 cm. During the menstrual cycle, the junctional zone's average diameter of 5 mm does not change much.[9]The present study assessed the uterine mass lesions using MRI.

We found that age group <40 years had 38, 41-50 years had 26 and 51-60 years had 20 patients. Chung JJ et al[10] concluded that in T2 FSE, a tumor with a signal intensity ratio more than 3 can be classified as an adenocarcinoma after comparing the results of adenocarcinoma of the uterine cervix with those of squamous cell carcinoma. Because adenocarcinoma is characterized by many tumorous glands with cytoplasmic and intraglandular mucin / serous fluid, it has a higher signal intensity than squamous cell carcinoma. However, stratified squamous tumor cells' compact cellularity was shown by squamous cell carcinoma.

We observed that common complaints were pain in 23, discharge per vaginal in 38, mass abdomen in 49, dysmenorrhoea in 6, and bleeding per vaginal in 30 patients. Hricak Hetal[11] studied invasive cervical carcinoma comparison of MR imaging and surgical findings and concluded that the overall accuracy of MR imaging in staging was 81%. MR imaging is valuable because it can accurately demonstrate tumour location, tumour size, degree of stromal penetration and lower uterine segment involvement and ruling out parametrial pelvic sidewall, bladder and rectal involvement.

Yamashita Y et al[12]determined preoperatively the depth of myometrial invasion in patients with early-stage endometrial carcinoma.In 40 patients, findings on transvaginal sonograms, unenhanced T2-weighted MR images, and contrast-enhanced T1-weighted Mr images were compared with histologic findings. The depth of myometrial invasion was classified as stage E (tumor limited to endometrium, n = 12), stage S (superficial invasion: tumor invades up to 50% of the myometrium, n = 15), or stage D (deep invasion: tumor invades more than 50% of the myometrium, n = 13).Findings on transvaginal sonograms were accurate in 27 of 40 patients (accuracy, 68%); the depth of invasion was overestimated in five patients and underestimated in eight patients. The results of unenhanced T2-weighted MR images were accurate in 27 patients (accuracy, 68%), with four overestimations and nine underestimations. The results of contrast-enhanced T1-weighted MR images were accurate in 34 patients (accuracy, 85%), with five underestimations and one overestimation. In the assessment of each stage of myometrial invasion, the sensitivity and specificity of contrast-enhanced T1-weighted imaging were higher than those of T2-weighted MR imaging and transvaginal sonography. The false-positive diagnoses based on transvaginal sonograms and T2-weighted images, respectively, involved polypoid tumors (n = 4 and 2), distension of the endometrial cavity by pyometra (n = 2 and 1), the presence of myoma (n = 2 and 1), atrophy of the myometrium (n = 1 and 0), and poor tumor/myometrium contrast (n = 0 and 2). On contrast-enhanced MR images, accuracy was influenced only in a case of polypoid tumor, because tumor, endometrial cavity, and myometrium were clearly distinguished and residual myometrium was clearly visualized. With all imaging techniques, false-negative diagnoses were caused mainly by tumors with superficially spreading growth or microscopic invasion. With transvaginal sonography, infiltrative tumor also tended to be understaged (n = 3).

CONCLUSION

Authors found that pelvic MR imaging is a well-tolerated, non-invasive method that accurately characterizes uterine mass lesions with good histological correlate.

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