Journal of Advanced Medical and Dental Sciences Research

@Society of Scientific Research and Studies ***NLM ID:*** *101716117*

Journal home page: www.jamdsr.com doi: 10.21276/jamdsr Indian Citation Index (ICI) Index Copernicus value = 100

(e) ISSN Online: 2321-9599; (p) ISSN Print: 2348-6805

Original Research

Assessment of role of MRI in detecting pelvic masses in females

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ABSTRACT:
Background: This study was conducted for the Assessment of role of MRI in detecting pelvic masses in females. **Material and methods**: This study comprised of 20 females with pelvic masses. The subjects were informed about the procedure and were asked to give written consent. The study included subjects with pelvic masses and those who were willing to participate. The females who were not ready for the procedure were not involved in the study. All the females underwent MRI procedure. The findings had been recorded. SPSS software had been used for statistical analysis. **Results**: the study comprised of 20 females. Among 11 subjects, fibroid (leiomyoma) was seen under MRI. Rectal carcinoma, combined masses as well as bladder diverticulum were observed in 6,2 as well as 1 subject, respectively. **Conclusion**: MRI has a major role in the assessment of pelvic masses among females. The most common MRI finding among females was fibroid (leiomyoma).
Keywords: MRI, pelvic masses

Received: 17 March, 2024 Accepted: 20 April, 2024

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This article may be cited as: Rather SA, Sharma NK, Gupta S. Assessment of role of MRI in detecting pelvic masses in females. J Adv Med Dent Scie Res 2024;12(5):20-22.

INTRODUCTION

In the pelvis are located urogenital and gastrointestinal organs, and pelvic pathologies affect females in all different age groups. The pathologies vary in size, location, and classification, such as masses, ectopic pregnancy, ovarian torsion, and ruptured ovarian follicles, to name a few. Patients can commonly present with gynecological complaints such as menstrual irregularities, abnormal pelvic bleeding, and infertility. Extra-gynecological symptoms such as dysuria and painful defecation can also manifest. To diagnose these pathologies, magnetic resonance imaging (MRI) and other imaging modalities can be useful alongside history and physical examination for early clinical diagnosis.[1]

MRI is an excellent reproducible imaging technique that can be used in pregnant patients with suspicious abdominal or pelvic cancer. It does not use ionizing radiation and is generally considered safe for the fetus. MRI use in gynecology provides a more detailed view of the female pelvic anatomy compared to other imaging modalities such as ultrasound and computed tomography (CT). It provides the option of utilizing a paramagnetic contrast agent and permits the capture of multiplanar images with high resolution without radiation exposure.[1] Magnetic Resonance Imaging (MRI) is an imaging modality that has been developed and used since mid-1970s.[2] MRI has several advantages over computed tomography and ultrasonography. One important feature is its non-invasiveness. A second feature that makes MRI particularly attractive is its capability for multiplanar imaging. A third advantage of MRI is its excellent tissue-differentiating capabilities. A fourth advantage of MRI is its intrinsic sensitivity to flowing blood. Both arterial and venous abnormalities can be assessed by MRI.[2] This study was conducted for the Assessment of role of MRI in detecting pelvic masses in females.

MATERIAL AND METHODS

This study comprised of 20 females with pelvic masses. The subjects were informed about the procedure and were asked to give written consent. The study included subjects with pelvic masses and those who were willing to participate. The females who were not ready for the procedure were not involved in the study. All the females underwent MRI procedure.

The findings had been recorded. SPSS software had been used for statistical analysis.

RESULTS

Table 1: MRI findings of pelvic masses.

MRI findings	Number of subjects
Fibroid (Leiomyoma)	11
Rectal Carcinoma	06
Combined Compartment Masses	02
Bladder Diverticulum	01
Total	20

Among 11 subjects, fibroid (leiomyoma) was seen under MRI. Rectal carcinoma, combined masses as well as bladder diverticulum were observed in 6,2 as well as 1 subject, respectively.

DISCUSSION

MRI is also beneficial in the diagnosis of focal uterine lesions such as leiomyomas, diffuse disorders such as adenomyosis, evaluation of complex pelvic masses, sonographically indeterminate adnexal lesions, and detection as well as the staging of gynecological malignancies. Additionally, MRI is helpful in postoperative monitoring, identifying tumor recurrence, and distinguishing it from residual scarring after surgery.[3] In addition, it is also considered generally safe for pregnant women since it does not use ionizing radiation, giving it an advantage over other imaging modalities.[4] There is a well-defined role for MRI in the study of the female pelvis after the initial ultrasound evaluation, as has been amply demonstrated in the literature.[5,6] When the examination is indicated in the appropriate clinical context, the inherent characteristics of the method (related to its multiplanar capacity, the possibility of tissue differentiations of the pelvic organs, and the absence of ionizing radiation) outweigh its disadvantages (longer examination time, possible motion artifacts, lower availability, and higher costs) when compared with computer tomography. This study was conducted for the Assessment of role of MRI in detecting pelvic masses in females. In this study of 20 subjects, among 11 subjects, fibroid (leiomyoma) was seen under MRI. Rectal carcinoma, combined masses as well as bladder diverticulum were observed in 6,2 as well as 1 subject, respectively. Shaha PR et al (2017)[7]assessed the role of MRI in female pelvic mass lesions and to exploit the tissue characterization capability of MRI. A prospective observational study was done on all patients referred to Department of Radiodiagnosis, Krishna Hospital, Karad, for MRI pelvis with clinically suspected uterine and adnexal masses or with indeterminate diagnosis on ultrasonography. Study was conducted between September 2014 to August 2016 with a sample size of 100 patients. All patients were scanned using 1.5 Tesla Seimens Avanto (Tim+ Dot) scanner with Body matrix coil Tim. Histopathology was taken as gold standard. Results on continuous measurements were presented on Mean±SD (Min-Max) and results on categorical measurements were presented in Number (%). Among 100 cases, on MRI, the maximum number of patients was having uterine lesions (48) followed by ovarian lesions (40), inconclusive adnexal/ovarian lesions (6), adnexal lesions (4). Two patients had normal findings. This correlated well with histopathology results, which showed the maximum number of patients were having uterine lesions (48) followed by ovarian lesions (41), adnexal lesions (5). Normal findings were observed in two patients. Due to excellent depiction of pelvic anatomy, non-invasiveness and absence of ionizing radiation, MRI is an excellent tool for assessment of utero-ovarian disorders, for detecting and characterization of various diseases, and staging patients with carcinomas where accurate diagnosis will make an impact on their surgical and medical management planning. Almushayti ZA et al (2023)[8]demonstrated the wide spectrum of female pelvic pathologies that can be diagnosed using MRI in Qassim region, Saudi Arabia.A cross-sectional study was conducted among patients referred to the MRI Department for evaluation of female pelvic pathologies at the Department of Radiology at Maternity and Children Hospital in Buraydah, Qassim region, Saudi Arabia. A total of 325 patients were included in the study, with the majority being in the age group of 31-40 years. Fibroids were the most common pathology, being present in more than one-fifth of the study sample, followed by neoplastic growths and placental pathologies. Inflammatory pathologies were the least common pathologies, being present in approximately 5% of the participants. Statistically significant associations were found between the age groups, and the presence of anomalies ($p = 0.009$), existence of neoplastic changes ($p < 0.001$), presence of placental pathologies ($p < 0.001$), inflammatory changes ($p = 0.025$), and adenomyosis ($p = 0.028$).MRI data offer important new information about the prevalence of various disorders among different age groups in the Qassim region of Saudi Arabia. Younger age groups had much higher rates of anomalies, whereas older age groups had much lower rates. Adenomyosis and neoplastic alterations were more prevalent in the later age groups, but endometrioma was more prevalent in younger age groups. Placental pathologies were more prevalent in women in their middle years, while scar pregnancy was more prevalent in women between 31 and 40 years of age. Younger people, especially those between 16 and 20 years of age, were more likely to experience inflammatory alterations. In the younger age group, there was no discernible association between age and the prevalence of normal outcomes. These findings help us understand how different illnesses manifest differently as we get older and emphasize the value of taking aging into account when diagnosing and treating disorders.

CONCLUSION

MRI has a major role in the assessment of pelvic masses among females. The most common MRI finding among females was fibroid (leiomyoma).

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