

**Role of MRI and USG in the evaluation of adnexal mass lesions and its correlation with histopathological examination**

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Abstract

Background: Adnexal mass is a lump arising from structures closely related to uterus such as fallopian tube, ovaries and surrounding connective tissue. Adnexal mass can be benign or malignant.

Methods: This study was conducted at department of Radio diagnosis, S.P. Medical College & A.G. of P.B.M Hospitals, Bikaner. It is a multi-disciplinary tertiary care referral hospital.

Results: The comparison of findings of USG with HPE has 62.00% sensitivity, 100% specificity and 82.00% diagnostic accuracy. In comparison of MRI findings with HPE has 92.00% sensitivity, 100% specificity and 96% diagnostic accuracy.

Conclusion: The results conclude that MRI had high sensitivity, accuracy value than USG. MRI is dominant in diagnosis and characterization of Adnexal mass lesion than Ultrasonography.

Keywords: MRI, USG, Adnexal mass

Introduction

Adnexal mass is a lump arising from structures closely related to uterus such as fallopian tube, ovaries and surrounding connective tissue. Adnexal mass can be benign or malignant.

Causes of Adnexal mass lesion may be benign or malignant. Benign lesions are simple functional cyst, serous cyst adenoma, Mucinous cystadenoma, endometriotic cyst, fibroma, thecoma, Brenner tumour tuboovarian cyst or hydrosalpinx.

Malignant lesions are serous cystadenocarcinoma, mucinous cystadenocarcinoma, endometrotic carcinoma immature teratoma, dysgerminoma, krukengbergstumor. Cause of adnexal mass lesion varies with different age group.¹⁻²

Incidence of ovarian carcinoma is increasing in recent times. Ovarian ca is responsible for 3.6 % of all cancer cases, with a mortality of 4.3%. Characterization of clinically diagnosed Adnexal mass lesions is difficult until Histopathological examination and surgical exploration are done³.

Diagnosis of Adnexal lesions based on radiological findings have become revolution, which helped to cease the unwanted surgeries⁴

Ultrasonography (USG) is a preliminary choice in the diagnosis of Adnexal masses because it is cost effective and easily available. Around 90% of Adnexal mass lesion can be adequately diagnosed and characterized by USG alone -. However, MRI is superior diagnostic modality in the characterization of indeterminate Adnexal masses diagnosed by USG⁵⁻⁶.

MRI well delineates the abnormalities in female reproductive organs disorders including myomas, ovarian mass lesions, Adenomyosis, cervical lesions, endometrial malignancy etc.

Materials and Methods

Study Area

This study was conducted at department of Radio diagnosis, S.P. Medical College & A.G. of P.B.M Hospitals, Bikaner. It is a multi-disciplinary tertiary care referral hospital.

Source of data

Data for the study was collected from patients attending or referred to Sardar Patel Medical College and & A.G. of P.B.M. Hospitals, Bikaner.

Study Design

This is an observational cross sectional non interventional study in patients with Adnexal mass.

Study Population

Patients with pelvic/ Adnexal lesions (palpable and non-palpable), detected on clinical examination, referred to and attending the Radiology department at, S.P. Medical College & A.G. of P.B.M. Hospitals, Bikaner included as study population.

Sample Size

A Total of 100 cases with Adnexal mass was studied.

Inclusion Criteria

1. Female patients aged 18 years and above with presence of an Adnexal mass (Simple cyst > 5cm, complex Adnexal lesion) detected on ultrasound (Transvaginal and/or Transabdominal).
2. Pelvic MRI performed for the same Adnexal lesion within 14 days of the ultrasound.
3. Surgical excision or image-guided biopsy performed, with Histopathological examination available within 6 weeks of MRI.

Exclusion Criteria

1. Patients with pace makers, metallic implants or foreign bodies in their body.
2. Uncooperative or unstable patient.

3. Patients not willing to undergo for both ultrasound and MRI.
4. Patients those having claustrophobia.
5. Simple Adnexal cyst < 5cm.
6. Ectopic pregnancy and ovarian torsion.
7. Patients having contrast allergy
8. Clinically and USG confirmed case of ectopic pregnancy
9. Patient with midline uterine mass lesion.

Results

Table 1: Details of descriptive data of study participants

Age in years	35.26 ± 10.12
Unilateral : Bilateral	20 : 80
Thickness USG	2.46 ± 1.06
Thickness MRI	3.16 ± 1.11

Table 2: Frequency of HPE, USG and MRI findings

Variable	HPE vs USG	HPE vs MRI
Sensitivity	62.00%	92.00%
Specificity	100.00%	100.00%
Accuracy	82.00%	96.00%

The comparison of findings of USG with HPE has 62.00% sensitivity, 100% specificity and 82.00% diagnostic accuracy. In comparison of MRI findings with HPE has 92.00% sensitivity, 100% specificity and 96% diagnostic accuracy.

Discussion

Ultrasonography (USG) is the primary preference in the identification and characterization of adnexal lesions ⁶⁻⁷. Studies suggested that USG give 90% accurate diagnostic characterization adnexal masses ⁸. MRI is an alternate a diagnostic tool for lesion evaluation after ultrasonography⁹. This study was designed to assess the efficacy of USG and MRI in the evaluation of adnexal mass lesions and its comparison with histopathological examination.

The comparison of findings of USG with HPE has 62.00% sensitivity, 100% specificity and 82.00% diagnostic accuracy. In comparison of MRI findings with HPE has 92.00% sensitivity, 100% specificity and 96% diagnostic accuracy. Study by Shiva Shankar MP et al., observed sensitivity and specificity of ultrasound was 92.5% and 93.3% respectively, whereas MRI has sensitivity and specificity of 97.1% and 100% respectively. MRI has more sensitivity and specificity value than USG ¹⁰

Study by Aruna et al., found that the sensitivity and specificity for USG was 80% and 95% respectively. MRI had sensitivity of 100% and specificity of 97.7% ¹¹. Study by Madan R et al., on Adnexal lesion by gray scale USG had sensitivity of 92.5%and specificity of 55.3%. The value of this study was similar to the findings of Hriack H et al and Scoutt LM et al. ¹²⁻¹⁴. Study by Sohieb et al., found accuracy of MRI in lesion detection has sensitivity of 95% and specificity of 88% ¹⁵.

Conclusion

The result concludes that MRI had high sensitivity, accuracy value than USG. MRI is dominant in diagnosis and characterization of Adnexal mass lesion than Ultrasonography.

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