

Original Article

Correlation of Ultrasonography and Doppler Findings of Pelvic Masses in Female Patients with Clinical and Histopathological Features

Shankarsnehit B Patil¹, Raveendra D Totad², Ramesh V Mankare³, Praveen Ganganahalli⁴

Authors' affiliation: ¹Assistant Professor, Dept. of Radiodiagnosis; ²Associate Professor, Dept. of Microbiology; ³Professor, Dept. of Radiodiagnosis, Al-Ameen Medical College Hospital, Vijayapura – Karnataka; ⁴Associate Professor, Dept. of Community Medicine, BLDE (DU) Shri. B. M. Patil Medical College, Vijayapura - Karnataka

Correspondence: Dr. Praveen Ganganahalli, Email: praveen.g@bldedu.ac.in, Mob. No: 09901317974

ABSTRACT

Introduction: Pelvic masses are quite common presentation of a gynaecological pathology. In clinical practice these are assessed by clinical pelvic examination. Differential diagnosis of pelvic mass is difficult and complex. Sonography usually provides clinically important parameters for the evaluation of pelvic mass. Pelvic sonography can confirm the presence or absence of a suspected pelvic mass.

Objectives: To compare the diagnostic accuracy of preoperative ultrasound with operative and pathological findings. To know the sensitivity, specificity and predictive value of Ultrasonography of benign and malignant masses.

Methods: correlation study conducted among females of all age group in designated hospitals presenting with abdominal/pelvic problems or attending USG scanning for any reason.

Observations: Out of total of 80 patients who presented with pelvic mass were part of this study spread over a period of one and half year. Out of 80 cases, 4 cases are wrongly diagnosed on Ultrasonography. Ultrasound diagnosis in all the patients is confirmed either on histopathology, post-operative findings or on follow-up ultrasound scans.

Conclusion: Ultrasonography is recommended to be a very useful modality with regards to diagnostic yield. It makes possible to establish the diagnosis quickly and thus start appropriate treatment early.

Key words: Ultrasonography, Histopathology, Pelvic mass, Correlation

INTRODUCTION:

Pelvic masses are quite common presentation of a gynecological pathology. In clinical practice these are assessed by clinical pelvic examination. Differential diagnosis of pelvic mass is difficult and complex. Pelvic mass may be of gynecological or non-gynecological origin. Although most of the pelvic masses are benign yet they are associated with significant morbidity and are the commonest indication for surgery. It is the risk of malignancy that propels us for early, accurate and prompt diagnosis to lessen the mortality and morbidity.¹

Sonography usually provides clinically important parameters for the evaluation of pelvic mass. Pelvic sonography can confirm the presence or absence of a suspected pelvic mass.²

Many pelvic masses are asymptomatic like small simple cyst which resolves spontaneously or by conservative treatment, on the other hand the asymptomatic masses can be early ovarian cancer which requires early immediate attention. The advent and use of diagnostic ultrasound changed the spectrum of diagnostic approach to pelvic masses. Pelvic ultrasound today forms the primary examination mode in the evaluation of pelvic masses. The diagnosis of ovarian tumors is based on clinical examination, sonography and measurements of CA-125 collectively known as triple diagnostic method. It provides the gynecologist the necessary information to plan out the right therapeutic approach required in the given situation.^{3,4,5,6}

With this background the study was planned to study was conducted with a view to find out the diagnostic value of Ultrasonography and its correlation with laparotomy and histological diagnosis.

MATERIALS & METHODS:

The Hospital based Cross-sectional study was conducted in Al-Ameen Medical College & District Hospital of Vijayapura district located in Karnataka state.

Inclusion Criteria - Female patients of all age group presenting with symptoms like pain in abdomen/pelvis, PV bleeding, PV white discharge, urinary and gastrointestinal pressure symptoms and palpable mass & also asymptomatic patients where pelvic mass detected at time of routine pelvic examination or at the time of Ultrasonography [Transabdominal and Transvaginal Sonography] done for other diagnosis.

Exclusion Criteria - Women on ovulation induction drugs & Normal Pregnancy.

All eligible patients were properly counselled and gave informed consent before entry into the study. Detailed menstrual, obstetric and medical histories of each patient were taken and general, physical, systemic and gynaecological

examination was done. Relevant investigations were done according to clinical findings.

All of them were subjected to Transabdominal Ultrasonography with full bladder technique with 3.5MHz probe and then Transvaginal Sonography with empty bladder technique with 6.5MHz except for the unmarried female patients. TAB and TVS was performed with the use of TOSHIBA Nemio XG Diagnostic Ultrasound System. Observations included size, shape and echo texture of the pelvic masses in sagittal and transverse planes. IOTA scoring system was applied to differentiate benign and malignant ovarian tumours.

The information collected was entered in the excel sheet and analysed statistically for Descriptive statistics & tests of significance (chi-square test).

RESULTS

Ultrasound scan was performed in 80 patients who presented with history, symptoms, and signs of pelvic mass whereas Histopathological examination was conducted in 74 cases & six cases were confirmed surgically or on follow-up ultrasound scan (histopathological examination was not required).

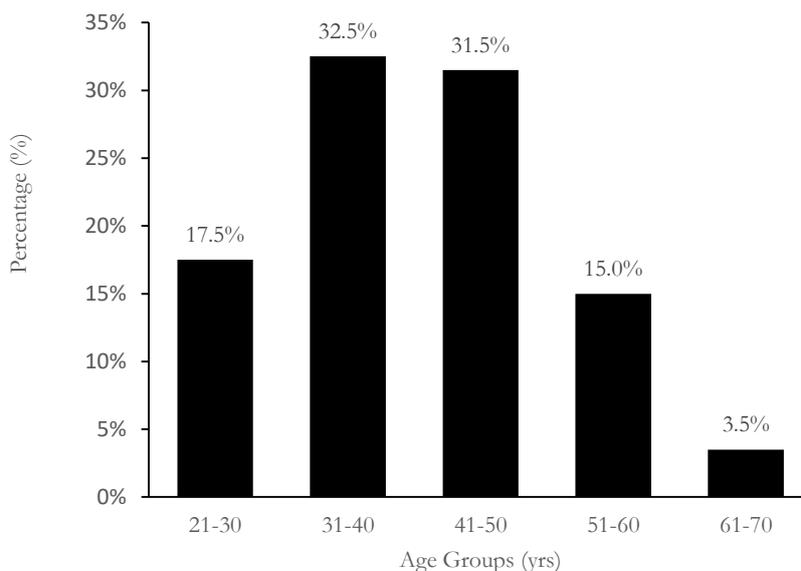


Figure 1 – Age group wise distribution of patients

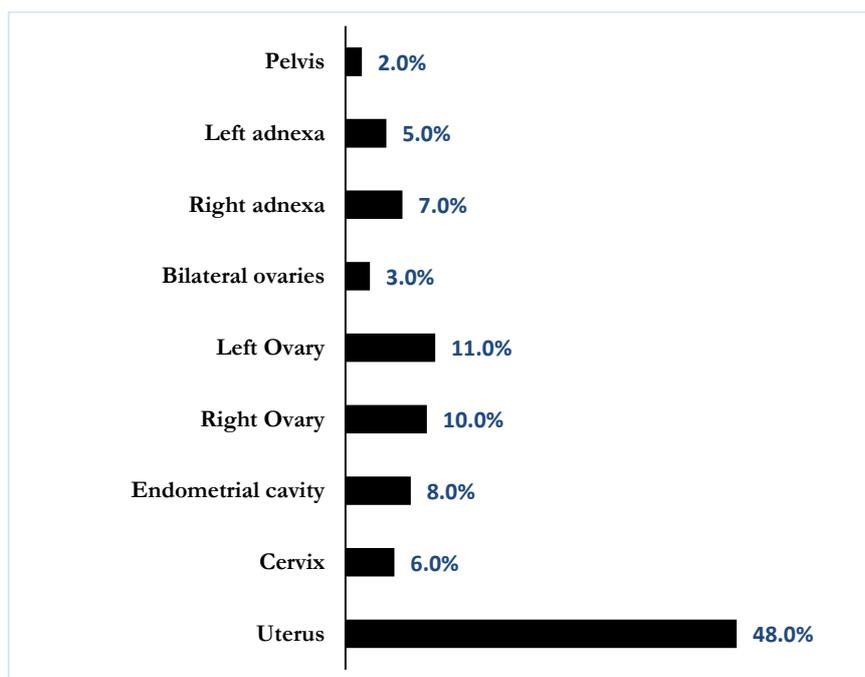


Figure II – distribution of participants according to USG site of lesion

Table I – distribution of participants according to Clinical Presentation

Clinical diagnosis	Cases	Percentage
DUB	32	40
Pelvic mass	29	36
Cervical mass	05	06
Mass P/A	04	05
PID	03	04
Left ovary torsion	03	04
Right ovary torsion	01	01
Ectopic pregnancy	02	03
Appendicitis	01	01
Total	80	100

Table II – distribution of diagnosis of participants according to Mode of investigation

Diagnosis	Mode of investigation			
	USG (n=80)		Histopathology (n=74)	
	Cases	%	Cases	%
Fibroid	36	45	36	49
Adenomycosis	04	05	04	05
Endometrial polyp	04	05	04	05
Ca cervix	04	05	04	05
Vesicular mole	01	01	01	01
Ectopic pregnancy	02	03	02	03
Pelvic abscess	02	03	02	03
Hydrosalpinx	01	01	00	00
Ovarian torsion	03	04	00	00
Ovarian lesions	23	28	21	28
Total	80	100%	74	100%

Chi-square value (p-value) 3.863 (0.92)

Figure 1 shows the maximum numbers of cases were in the age group of 31 – 50 years and the minimum number were in the age group of 61 – 70 years.

According to Table I, most common clinical presentation was DUB (40%) followed by Pelvic mass (36%). Among remaining 24% presentation were cervical mass, Mass per abdomen, PID, Ovary torsion, Ectopic pregnancy & appendicitis.

According to Figure II, majority of the lesions detected by USG were uterine origin (48%) followed by 21% of lesions were ovarian origin.

According to Table II, majority of the participants diagnosed by USG were having Fibroid uterus (45%) followed by Ovarian lesions (28%) whereas Histopathological investigation was conducted on 74 cases, which gave the similar result with respect to Fibroid (36 out of 74) & other lesions whereas 21 out of 74 were diagnosed of having ovarian lesions like ovarian dermoid 7%, serous cystadenoma 8%, serous Cystadenocarcinoma 7%, Mucinous Cystadenocarcinoma 3%, Granulosa cell tumour of ovary 1% & Endometrial cyst of ovary 3%.

Out of 80 cases 70 (88%) were **correctly diagnosed the site of lesion** by USG (confirmed by Histopathological examination) whereas Four cases (5%) were wrongly diagnosed by USG and confirmed by Histopathological examination and six cases (7%) were confirmed surgically or on

follow-up ultrasound scan (histopathological examination was not required).

The diagnoses made by USG was **very much specific to the lesion (underlying pathology)** in 53% of cases and not able to diagnose exact lesion of ovaries like benign or malignant carcinoma.

Two cases are wrongly diagnosed as fibroid, which turned out to be adenomyosis of uterus on histopathology & two cases are wrongly diagnosed as adenomyosis of uterus, which turned out to be uterine fibroid on histopathology.

DISCUSSION

A total of 80 patients who presented with pelvic mass were part of this study spread over a period of one and half year. Out of 80 cases, 4 cases are wrongly diagnosed on Ultrasonography. Ultrasound diagnosis in all the patients is confirmed either on histopathology, post-operative findings or on follow-up ultrasound scans.

In our study 63.75% of cases were in the age group of 31-50yrs. Majority of cases (61.25%) were arising from Uterus and cervix, 36.25% of cases were found to be adnexal lesions, 2.5% were pelvic abscess.

Chu LC et al⁷ commented in his research Ultrasonography is the primary imaging modality for evaluation of pelvic masses. Ultrasonography has the advantage of being inexpensive, widely available, and offering superior tissue characterization compared with computed tomography. Many pelvic masses have characteristic sonographic appearances that allow confident diagnosis and management.

Perveen et al⁸ studied 110 patients of pelvic masses were evaluated out of which 88 patients were found ultrasonographically positive and the remaining 22 were negative and out of these 88 patients 84 were again histopathologically confirmed. Out of 22 ultrasonographically negative patients, eight cases were found to be histologically confirmed. Further he commented that proper clinical assessment remains the mainstay of diagnosis whereas addition of routine abdominal ultrasound by graded compression technique can improve the diagnostic accuracy.

Kupescic S et al⁹ studied 12 ovarian cancers, seven (58.3%) showed vascular distribution suggestive of malignancy at nonenhanced three-dimensional power Doppler sonography. After injection of contrast agent, a penetrating vascular pattern and/or a mixed penetrating and peripheral pattern were detected in all cases of ovarian malignancy. Contrast-enhanced, three-dimensional power Doppler sonography provides better visualization of tumor vascularity in complex adnexal masses.

Hafeez, S et al¹⁰ analysed retrospective data depicted sensitivity and specificity of ultrasound to be 90.7%, 95%CI (0.77, 0.97) and 91.4%, 95%CI (0.76, 0.98) respectively. Positive predictive value was 93%, 95%CI (0.79, 0.98) and negative predictive value was 89%, 95%CI (0.73, 0.96). A total of 78 ovarian masses were detected, out of which 42 were malignant and 36 were benign. The ultrasound should be used as an initial modality of choice in the workup of every woman suspected of having an ovarian mass. It not only results in decreasing the mortality but also avoids unnecessary surgical interventions.

Gupta KP et al¹ studied 50 cases, benign and malignant lesions were found in patients belongs to 30-50 and 50-70 years, respectively. Out of 50 cases, 47 cases (94%) were confirmed by histopathology. USG showed an overall sensitivity of 94% and specificity of 90% in comparison to the histopathological findings. USG is a very useful, highly diagnostic and a reliable method in the diagnosis of pelvic masses with good sensitivity and specificity.

CONCLUSION

Ultrasonography is recommended to be a very useful modality with regards to diagnostic yield. It makes possible to establish the diagnosis quickly and thus start appropriate treatment early. This greatly reduces the morbidity, mortality and the period spent by the patient in the hospital.

It is also useful in serious cases and in some conditions which threaten the patient's life, as it is available on the bedside of the patient and also could be used in the operation theatre, thus improving the outcome of surgery. It thus has become an indispensable tool for the diagnosis, management and follow-up of all cases with pelvic mass.

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