ORIGINAL ARTICLE

Role of Ultrasonography in Diagnosing Adnexal Masses: Cross-Sectional Study

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ABSTRACT

Background: Transvaginal ultrasonography (TVUS) is a non-invasive radiological investigation with more sensitivity and specificity to diagnose adnexal masses.
Aim: To determine the diagnostic accuracy of transvaginal ultrasonography (TVUS) for adnexal masses.
Study Design: Descriptive, cross-sectional.
Methodology: New but undiagnosed patients (n=100) who presented with obstetrical and gynaecological issues were enrolled at Sir Ganga Ram Hospital (SGRH), Lahore-Pakistan for 6 months. Every patient had trans-vaginal ultrasonography. The sensitivity and specificity of transvaginal ultrasound in diagnosing adnexal masses was calculated by using the OpenEpi Collection of Epidemiologic Calculators Version 3.01.
Results: The highest sensitivity and specificity was found for functional cysts USG (Sensitivity 92.9%, Specificity 98.8%) while the poorest USG correlation with pathology was of Malignancy (50%).
Conclusion: Transvaginal ultrasonography (TVUS) is a cheap diagnostic tool with high sensitivity and specificity for different adnexal masses.
Keywords: Trans-vaginal ultrasonography, Adnexal masses, Sensitivity and Specificity.

INTRODUCTION

Adnexa comprises the region in the pelvis that includes the ovaries fallopian tubes, round ligaments and the structures arising from ovaries the associated embryological rests[1]. Most frequently found adnexal masses are physiological follicular cysts, corpus luteum cysts, tubo-ovanan, abscess, hydrosalpinx, endometrioma, ectopic pregnancy, both benign and malignant neoplasms of adnexa. Although it is rare for a malignant ovarian neoplasm to occur in this age group (reproductive) and its incidence increases with advancing age.

A woman may present with pelvic pain or dyspareunia or totally asymptomatic that may involve either gynaecological or non-gynaecological sources[2]. These masses can be an incidental findings during a routine clinical examination as well[3]. As they have a variable presentation so they are usually difficult to diagnose and differentiate from other malignant lesions such as ovarian cance[2].

Correct and early diagnosis of adnexal mass is a basic requirement for constructing its treatment and management plan. The ability of any imaging modality to differentiate between a benign and malignant lesion further adds to its importance as a diagnostic tool. Thus it also controls the decision for its management either medically or surgically[4]. The gold standard investigations for the specific diagnosis of adnexal mass include laparoscopic observation and histopathological examination[5]. Due to the invasive nature of both above mentioned procedures, simple transvaginal ultrasonography (TVUS) has now become a standard initial investigation among suspected cases of adnexal masses in our setups[6,7]. Due to the high incidence of adnexal masses among our female population with limited data regarding its correct and early diagnosis, we planned the current study to determine the diagnostic accuracy of transvaginal ultrasonography (TVUS) for adnexal masses.

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The objective of the study was to determine the diagnostic accuracy of transvaginal ultrasonography (TVUS) for adnexal masses.

METHODOLOGY

In present descriptive cross sectional study, newly undiagnosed patients (n=100) who presented with obstetrical and gynaecological issues were enrolled at Sir Ganga Ram Hospital (SGRH), Lahore-Pakistan for 6 months following the approval by the Hospital's Ethical Committee. Every patient had history, clinical examination, preliminary investigations (Haemoglobin %age, complete blood count, urine complete examination) with trans-vaginal ultrasonography (TVUS). Consent was taken from subjects. Enrolled females presented with pelvic pain, menstrual disorders, dyspareunia, infertility and suspicion of adnexal masses were included. Patients with known malignancies or pregnancy were ruled out.

Descriptive statistics were used to find out the frequency of various adnexal masses and characteristics of the patients. The sensitivity and specificity of transvaginal ultrasound in diagnosing adnexal masses was calculated by using The OpenEpi Collection of Epidemiologic Calculators Version 3.01**.**

RESULTS

All enrolled patients presented with different symptoms as summarized in table-1. Some patients had more than one symptoms. Among 100 enrolled patients, frequency and percentages of cases diagnosed by ultrasonography (Table 2) Among 100 enrolled patients, frequency and percentages of cases diagnosed by histology (Table 3). A comparative analysis of clinical and histopathological pre-operative diagnosis to ultrasound diagnosis was done for the cases as summarized in table-4.

Table 1: Clinical symptoms among enrolled patients (n=100)

Symptoms	Frequency	%age
Pain	45	45
Dysmenorrhea	12	12
Dysparunia	10	10
Infertility	14	14
G.I.T. problems	13	13
Urinary & bowel complaints	6	6

Table 2: Diagnosis by ultrasonography among enrolled patients

Diagnosis	Frequency	%age
Ectopic pregnancy	18	18
Ovarian Neoplasm	8	8
Functional Cysts	14	14
Endometriotic cysts /Endometrioma	16	16
Sub-serosal pedunculated	2	2
Dermoid	13	13
Paraovarian cyst	15	15
Hydrosalpinx	10	10
Malignancy	4	4

Table-3: Diagnosis based on histology among enrolled patients (n=100)

Diagnosis	Frequency	%age
Ectopic pregnancy	20	20
Ovarian Neoplasm	12	12
Functional Cysts	14	14
Endometriotic cysts / Endometrioma	16	16
Sub-serosal pedunculated	2	2
Dermoid	10	10
Paraovarian cyst	12	12
Hydrosalpinx	6	6
Malignancy	8	8

Table 4: Accuracy of Ultrasound as diagnostic tool in adnexal mass among enrolled patients (n=100)

Diagnosis	Histopathology	Ultrasonography	Sensitivity	Specificity
Ectopic pregnancy	20	18	80.0%	97.5%
Ovarian Neoplasm	12	8	66.7%	100%
Functional Cysts	14	14	92.9%	98.8%
Endometriotic cysts / Endometrioma	16	16	81.3%	96.4%
Sub-serosal pedunculated	2	2	100.0%	100%
Dermoid	10	13	80.0%	94.4%
Paraovarian cyst	12	15	91.7%	95.5%
Hydrosalpinx	6	10	83.3%	94.7%
Malignancy	8	4	50.0%	100%

DISCUSSION

Several imaging modalities are available for making a specific diagnosis among patients with adnexal mass[8]. However, these modalities cannot replace histopathology or biopsy as the gold standard for diagnosis. Imaging modalities still have a major role in clinical practice as these are non-invasive and are able to significantly reduce the diagnostic delay and complications associated with invasive diagnostic techniques[9]. Since TVUS is a widely used imaging tool for adnexal masses, it is important to evaluate the diagnostic accuracy of this modality in differentiating between benign and malignant adnexal mass[10].

In present study, almost all of the patients presented with pain and many other symptoms as shown in table-1. Urinary & bowel complaints (6%) wereon the lower side. Our findings were in line with many previous studies who documented nausea and pain as the most common presenting complain[11].

In present study, the highest sensitivity and specificity was found for functional cysts USG (Sensitivity 92.9%, Specificity 98.8%) while the poorest USG correlation with pathology was of Malignancy where only 4 out of 8 cases were reported correctly as Malignancy. Ectopic pregnancy was correctly identified on USG in 16 (80%) cases. In 8 out of 10 cases dermoid were confirmed on USG making 80.0% sensitive and 94.4% specific test. Our finding were in line with one previous study that showed highest sensitivity and specificity for functional cysts[11]

CONCLUSION

Transvaginal ultrasonography (TVUS) is a cheap diagnostic tool with high sensitivity and specificity for different adnexal masses.

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Limitations: Our study had several limitations like financial constraints and fewer resources. We did not employ other investigations like CT and MRI pelvis. Serum markers to see malignancy was not done among enrolled subjects.

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