Sonographic evaluation of gynaecological pelvic masses

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Abstract   **Introduction:** The legion of pelvic masses confront the Gynaecologists with the dilemmas that pose diagnostic and management challenges in differentiating the various pelvic masses and it has been seen many a times that the final diagnosis after laparotomy is a different one. There is a need to differentiate among various structures and to assess the degree of danger that such a lesion represents to the patient. The understanding about various differential diagnosis is vital. **Aims and Objective:** To evaluate role of Sonography in the diagnosis of gynaecological pelvic masses and correlating them with final histopathological diagnosis. **Materials and Method:** The present study was conducted at department of Obstetrics and Gynaecology of ACPM medical college, Dhule during the period of June 2013 to October 2014. Total 100 cases of fulfilling the inclusion criteria were enrolled in the present study. A detailed history of presenting complaints and associated symptoms were noted along with menstrual history. A thorough general and systemic examination was performed. Examination assessed the presence or absence of mass (upon P/A, P/Sp or P/V). Various biochemical investigations were undertaken as per the proforma along with Ultrasonography (Transabdominal/ Transvaginal). After surgical treatment all specimens were submitted for detailed Histopathological examination. The final diagnosis was concluded based on Histopathological Diagnosis. The comparison of various pelvic lumps was done with Histopathological Diagnosis which was taken as Gold Standard. Finally, the clinical diagnosis was analyzed as regards to their true positivity, false positivity and false negativity by correlating them with final histopathological diagnosis. **Results:** Ultrasonography suggested that there were 46% cases of fibroid, 15% cases of adenomyosis, 12% cases of polyp and 3% cases were having collection in endometrial cavity. 1% was detected as having normal USG findings. Among the adnexal structures; 5% were diagnosed as Hydrosalpinx, 3% chocolate cyst. 11% were diagnosed as ovarian masses and 7% as Tubo- ovarian mass. Histopathological diagnosis was taken as final diagnosis. HPE reports found that the most common mass was fibroid (53%). Other masses were Adenomyosis (11%), Chocolate cyst 3%, Polyp (13%). Out of which endometrial polyps were 9%, cervical were 4%. Pyometra was seen in 3%, Hydrosalpinx in 3%, Benign ovarian tumors were seen in 15% cases, Cancer Cervix in 2%, Malignant ovarian mass in 1% and Endosalpingiosis in 1%. Ultasonographic Sensitivity of diagnosing was quite good for certain uterine and adnexal masses. Diagnostic sensitivity for fibroid was 84.91%, polyp was 92.31%, cervical cancer was 0%, adenomyosis was 90.91%, ovarian mass (benign and malignant) was 62.5% and 100% for Pyometra, Hydrosalpinx and chocolate cyst. However the sensitivity was zero for cancer cervix and Endosalpingiosis. **Conclusion:** Thus in the end we conclude that ultrasound can be used as an effective tool in diagnosing gynaecological pelvic masses. Ultrasonography can be more useful in detecting non-palpable or suspicious pelvic masses than the palpable pelvic masses.
Keywords: Ultrasonography, gynaecological pelvic masses, Histopathological diagnosis.

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INTRODUCTION

The legion of pelvic masses confront the Gynaecologists with the dilemmas that pose diagnostic and management challenges in differentiating the various pelvic masses and it has been seen many a times that the final diagnosis after laparotomy is a different one. There is a need to differentiate among various structures and to assess the degree of danger that such a lesion represents to the patient. The understanding about various differential diagnosis is vital.[1] When a pelvic mass is encountered in a female patient, there are several tools available to the

physician as diagnostic aids. The patient's age, history and physical examination; diagnostic imaging studies; and laboratory tests can contribute valuable information to the diagnosis and management of the case. The potential origins of a pelvic masses cause great confusion. History taking assumes paramount importance with the evaluation of a pelvic mass. Because of the numerous potential sites of origin; the history cannot be limited to gynaecological history only.[2] The importance of a through physical examination cannot be overstated. Clues from location of the mass and the history may help diagnose even rare conditions. With advances in medical technology, gynaecological evaluation of female pelvis has been transformed considerably. Diverse histopathologies are common in pelvic mass, reflecting the different organs of origin of the mass and thus histopathological evaluation becomes gold standard for definitive diagnosis of pelvic masses.[3] The diagnosis of pelvic mass can be inferred in light of appropriate history, a through clinical examination, complemented with sonographic findings and confirmed with histopathology. Imaging plays a pivotal role in resolving common complaints that present to a gynaecologist's practice. Thus in the present study we tried to evaluate role of Sonography in the diagnosis of gynaecological pelvic masses and correlating them with final histopathological diagnosis.

AIMS AND OBJECTIVE

To evaluate role of Sonography in the diagnosis of gynaecological pelvic masses and correlating them with final histopathological diagnosis.

MATERIALS AND METHOD

The present study was conducted at department of Obstetrics and Gynaecology of ACPM medical college, Dhule during the period of June 2013 to October 2014. The following inclusion and exclusion criteria were used for recruitment of patients in study

Inclusion Criteria

- Patients attending gynaecological OPD with clinically suspected pelvic mass.
- Age group 20-60 years.
- Presenting asymptomatically or symptomatically for detected gynaecological pelvic mass.
- Masses arising from uterus, ovary, fallopian tube, broad ligament or cervix.

Exclusion Criteria

- Patient with age less than 20 or more than 60 years.
- Masses arising from other pelvic organs such as ureter, bladder, rectum.
- Intrauterine pregnancy.

- Functional Ovarian Cyst.

Thus total 100 patients were enrolled in the study who were fulfilling the inclusion criteria. A detailed history of presenting complaints and associated symptoms were noted along with menstrual history. A thorough general and systemic examination was performed. Various biochemical investigations were undertaken as per the proforma along with Ultrasonography (Transabdominal/ Transvaginal). After counseling and explaining the procedure to patient regarding the surgical intervention, a written informed consent was taken. Depending on the case, all patients were counseled and appropriate procedure was explained. A written informed consent for surgical management was taken and every patient was evaluated preoperatively for fitness to undergo surgery. All specimens were submitted for detailed Histopathological examination. The final diagnosis was concluded based on Histopathological Diagnosis. The comparison of various pelvic lumps was done with Histopathological Diagnosis which was taken as Gold Standard. Finally, the Ultrasonographic diagnosis was analyzed as regards to their true positivity, false positivity and false negativity by correlating them with final histopathological diagnosis.

RESULTS

Table 1: Distribution of patients according age and parity

Variable		Frequency (n=100)
Age Group (years)	Upto 25	1
	26 to 35	8
	36 to 45	82
	46 to 55	8
	>55	1
Parity	Nullipara	2
	P1L1	16
	P2L2	55
	P3L3	24
	More than 3	3

In the present study majority of the women were belonging to age group of 36 to 45 years. It was seen that 98% cases were parous while just 2% were nulliparous.

Table 2: Distribution of patients according to diagnosis on ultrasonography

Mass type		Frequency (n=100)
Uterus	Fibroid	46
	Polyp	12
	Collection in endometrial cavity	3
	Adenomyosis	15
Adnexal structure	Tubo-Ovarian mass	7
	Hydrosalpinx	5
Ovary	Ovarian mass	11
	Chocolate cyst	3
Normal		1

Ultrasonography suggested that there were 46% cases of fibroid, 15% cases of adenomyosis, 12% cases of polyp and 3% cases were having collection in endometrial cavity. 1% was detected as having normal USG findings. Among the adnexal structures; 5% were diagnosed as Hydrosalpinx, 3% chocolate cyst. 11% were diagnosed as ovarian masses and 7% as Tubo- ovarian mass.

Table 3: USG features of the gynaecological pelvic masses

USG features		Frequency
Uterine Component (n=74)	Solid	44
	Solid with Cystic	1
	Cystic	1
	Complex	2
Adnexal Component (n=25)	Solid	1
	Solid with Cystic	3
	Cystic	17
	Complex	4
U/L or B/L	Unilateral (U/L)	20
	Bilateral (B/L)	4
Minimum free fluid	Present	11

Ultrasonography differentiated masses of uterine origin as having solid component (44%), solid with cystic areas (1%), cystic (1%) and complex (2%). Similarly the adnexal masses were solid (1%), solid with cystic areas (3%), cystic (17%) and complex (4%). Most Adnexal mass were unilateral (20%) while just 4% were bilateral. Minimum free fluid was detected in 11%.

Table 4: Histopathological diagnosis as gold standard

H/P findings		Frequency (n=100)
Uterus	Fibroid	53
	Endometrial Polyp	9
	Cervical Polyp	4
	Cancer cervix	2
	Pyometra	3
	Adenomyosis	11
Adnexal structure	Endosalpingiosis	1
	Hydrosalpinx	3
Ovary	Benign ovarian	15
	Malignant ovarian	1
	Chocolate cyst	3

Histopathological diagnosis was taken as final diagnosis. HPE reports found that the most common mass was fibroid (53%). Other masses were Adenomyosis (11%), Chocolate cyst 3%, Polyp (13%). Out of which endometrial polyps were 9%, cervical were 4%. Pyometra was seen in 3%, Hydrosalpinx in 3%, Benign ovarian tumors were seen in 15% cases, Cancer Cervix in 2%, Malignant ovarian mass in 1% and Endosalpingiosis in 1%.

Table 5: Comparison of USG diagnosis to HPE diagnosis

| Clinical diagnosis		HPE		Sensitivity	Specificity
		Positive	Negative		
Fibroid	Positive	45	1	84.91%	97.87%
	Negative	8	46		
Polyp	Positive	12	0	92.31%	100%
	Negative	1	87		
Cancer cervix	Positive	0	0	0%	100%
	Negative	2	98		
Pyometra	Positive	3	0	100%	0%
	Negative	0	0		
Adenomyosis	Positive	10	5	90.91%	94.38%
	Negative	1	84		
Endosalpingiosis	Positive	0	0	0%	100%
	Negative	1	99		
Hydrosalpinx	Positive	3	1	100%	98.97%
	Negative	0	96		
Ovarian mass	Positive	10	1	62.5%	98.81%
	Negative	6	83		
Chocolate cyst	Positive	3	0	100%	100%
	Negative	0	97		
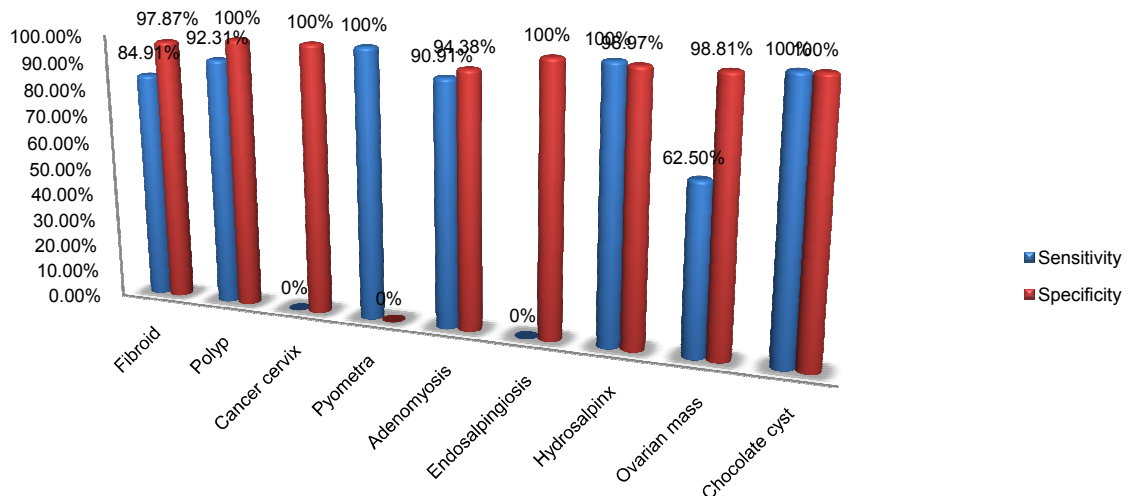
Figure 1: Efficacy of diagnosis by USG against HPE

Ultasonographic Sensitivity of diagnosing was quite good for certain uterine and adnexal masses. Diagnostic sensitivity for fibroid was 84.91%, polyp was 92.31%, cervical cancer was 0%, adenomyosis was 90.91%, ovarian mass (benign and malignant) was 62.5% and 100% for Pyometra, Hydrosalpinx and chocolate cyst. However the sensitivity was zero for cancer cervix and Endosalpingiosis.

DISCUSSION

In the present study majority of the women were belonging to age group of 36 to 45 years. It was seen that 98% cases were parous while just 2% were nulliparous. Similar results were found by the study conducted by Abbasi et al[3] where the highest frequency of these patients was in the reproductive years and 60% were between 30-40 years in their study. It was observed that on Ultrasonography there were 46% cases of fibroid, 15% cases of adenomyosis, 12% cases of polyp and 3% cases were having collection in endometrial cavity. 1% was detected as having normal USG findings. HPE reports found that the most common mass was fibroid (53%). Other masses were Adenomyosis (11%), Chocolate cyst 3%, Polyp (13%). Out of which endometrial polyps were 9%, cervical were 4%. Pyometra was seen in 3%, Hydrosalpinx in 3%, Benign ovarian tumors were seen in 15% cases, Cancer Cervix in 2%, Malignant ovarian mass in 1% and Endosalpingiosis in 1%. It was observed that out of the 100 cases in the study, the highest prevalence was found to be of uterine fibroid (53%), which is in concordance to Munir et al[4] (46.7%) and Pandey et al[5] study (39.8%). Present study undertook cases where the patient presented clinically with symptoms/signs of pelvic lumps and it was found that menstrual irregularities was

the commonest symptom (81%), followed by lump in abdomen (60.3%), pain in abdomen (33.9%), urinary complains (22%) and GIT disturbances (11.3%). The results are in concordance with Pradhan's study [6] where patients reported menstrual disturbance (73%), pain in abdomen (58.3%), lump in abdomen (13%) and urinary complaints (2.2%). Okogbo's study[7] also shows similar results where menstrual irregularities (47.7%), abdominal swelling (39.1%) and abdominal pain (24.2%) were chief complaints. Ultrasonography (TAS/TVS) was able to correctly detect 45 (84.91%) cases while 8 (15.09%) cases were missed. 46 cases were correctly diagnosed as negative for fibroid. The diagnostic sensitivity of fibroid is found to be 84.90% which is in accordance with the study of Hanafi et al[8] and Noor et al[9]. This myometrial lesion was present in 11% cases in the age group of 36 to 45 years which is in accordance with Shrestha A et al[10] study where 23.4% cases. Diagnostic sensitivity of USG was 90.9%. In a study by Hanafi et al[8] show that the sensitivity of USG is 86.5% while the specificity was just 43.4%. Pyometra was seen in 3% cases in the present study and all these cases were correctly diagnosed on USG thus the sensitivity of diagnosing pyometra was 100%. There were 13% cases of polyp in the present study diagnosed on HPE. Sensitivity of diagnosing polyp was 92.31% on USG. In the present study, 2% cases were diagnosed as Squamous Cell Carcinoma of cervix upon HPE. But on USG no case was diagnosed, thus the sensitivity of USg to diagnose carcinoma cervix was 0%. According to HPE Hydrosalpinx was present in 3% cases whereas acoording to USG it was diagnosed in 4 cases. Thus the sensitivity of diagnosing hydrosalpinx was 100% and specificity was 98.97%. G. Romosan et al[11] observed that Ultrasound sensitivity was 82% while

specificity was 77% in their study. In the present study, there were 3% cases of chocolate cyst and all were found in the age group of 20 to 45 years. And USG gave 100% sensitivity in diagnosis. In the present study, 15% benign epithelial tumours and 1% malignant epithelial tumour of ovary were diagnosed on HPE. The sensitivity of diagnosing the ovarian masses on USG was 62.5 % with specificity of 98.81%. Thus we could state that USG can be used effectively to rule out the ovarian masses. All the patients underwent USG (TAS/TVS/both) and the overall sensitivity was found to be 83%. USG accurately diagnosed Chocolate cysts and Hydrosalpinx (100%). Diagnostic sensitivity was valuable for Fibroids (84.9%), Adenomyosis (90.9%) and Polyps (94.3%). Detection of ovarian tumours was 62.5% where the malignancy was suggested based on presence of ascitis and metastatic nodes. Even though definite diagnosis of pyometra was not made, collection in endometrial cavity was suggested and correlation with clinical and biochemical tests was requested. Cancer cervix was one diagnosis which was not made by USG probably due to the stage of cancer. Even Andolf E *et al*[12] checked the reliability of Ultrasound against clinical examination and observed that ultrasound was superior to clinical examination in terms of sensitivity (83% and 67% respectively), whereas specificity was similar for both methods (96% and 94% respectively). Neither ultrasound nor clinical exam was reliable in detecting tubal anomalies, whereas small solid lesions were missed by sonography. Noor *et al*[9] concluded that Ultrasonography is more useful in detecting non-palpable or suspicious pelvic masses than the palpable pelvic masses. Ultrasound would seem to be superior in overall performance over clinical examination and a useful complement to palpatory exam but it may not be that helpful in those lesions which give an evident diagnosis on clinically examination itself. The increased reliance of gynaecologists on USG and other imaging techniques may be the cause of low diagnostic sensitivity of clinical examination.

CONCLUSION

Thus in the end we conclude that ultrasound can be used as an effective tool in diagnosing gynaecological pelvic masses. Ultrasonography can be more useful in detecting non-palpable or suspicious pelvic masses than the palpable pelvic masses.

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