SONOGRAPHIC EVALUATION OF ADNEXAL MASSES IN PREDICTION OF UNDERLYING PATHOLOGY

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SUMMARY

A total of 100 patients admitted in the department of Obstetrics and Gynaecology, Medical College, Rohtak with the diagnosis of adnexal mass were studied. Clinical examination and sonographic examination was done in all the patients. Ultrasound was found to be an important tool for adnexal masses with overall accuracy of 80% in contrast to 62% by clinical examination ($p<0.05$). Ultrasound could diagnose accurately ovarian cysts, ectopic gestation, tubo-ovarian masses, and endometriosis in 79.41%; 71%, 57%, 80% and 100% respectively by clinical examination. More liberal use of ultrasound is recommended for accuracy in diagnosis of adnexal masses.

Introduction

Adnexal masses are frequent presentations in gynaecological practice ranking next only to uterine masses (Queenan et al, 1975). They may arise from ovaries, fallopian tubes, or broad ligament and can provide a diagnostic challenge to the gynaecologist. History and clinical examination though important, can miss ovarian tumour and ectopic gestation. In ectopic gestation failure to make the correct diagnosis markedly enhances the risk to the patient, which becomes particularly grave if a false negative diagnosis delays laparotomy (Kobayashi et al, 1969). Various radiological investigations like plan radiography, hysterosalpingography, gynaecology, pelvic arteriography and pneumography have limitations and risk the patient to radiation exposure.

With the advent of ultrasound in obstetrics and gynaecology in 1958, there has been a steady proliferation of its use in gynaecology (Queenan et al, 1975) and has become increasingly valuable in the evaluation of pelvic and abdominal masses (Jamieson et al, 1978). Sonography is the imaging method best suited for evaluation of a patient with adnexal mass and allows complete evaluation of uterus and adnexal structure and localisation of ovaries and thus helpful in determination of origin of an adnexal mass (Fleischer et al, 1982). It

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has also played an ever increasing role as a diagnostic modality in ectopic gestation (deCrespigny, 1987). As it does not utilize ionising radiation, it is safe to use.

Material and Methods

Present prospective study was caried out on 100 patients admitted in department of Obstetrics and Gynaecology, Medical College, Rohtak with the provisional diagnosis of an adnexal mass. Detailed clinical history was recorded in all the patients including relevant past, menstrual and obsterical history. Detailed clinical examination was made in dorsal position after evacuation of bladder which included general physical, systemic, per-abdomen, per speculum and per-vaginum examination. All the patients were then subjected to ultrasonographic examination in supine position with full bladder with the ultrasound machine available in radiology department having linear array, B compound scan and gray scale 3.5 mHZ with electronic callipes and multi image camera. After applying ultrasound gel on the abdomen, whole of lower abdomen of patient was scanned starting from midline and proceeding laterally till psoas muscles, in transverse plane and from symphysis pubis to Xiphisternum in longitudinal plane. Uterus, both tubes, ovaries were scanned and adnexal mass were scanned for its location, texture, wall, echogenicity, presence of septa, ascites and echogenic extension from the tumour to the abdominal wall. The findings of clinical and ultrasonographic examination were finally confirmed by clinical response laparoscopy and laporotomy and compared with pathological diagnosis wherever possible.

Results

Age of the patients ranged from 15 to 62 years with mean being 31.5 years. Majority of the patients were of reproductive age group (86%) with 48% in 16-30 years and 38% 31-45 years. Most of the patients were multiparae (mean parity 3.2). Table I shows distribution of total number of cases based on final diagnosis on laparoscopy or laparotomy, clinical course and histopathological examination. Majority of the patients (68%) were of ovarian tumours out of which benign ovarian neoplasm accounted for 46 cases, malignant neoplasm for 12 patients and functional ovarian cyst for 10 women. Ectopic gestation was seen in 28 women and tubo-ovarian inflammatory mass in 10 patients. Distribution of other conditions is shown in Table I.

TABLE - I
SHOWING DISTRIBUTION OF TOTAL NUMBER OF CASES BASED ON FINAL DIAGNOSIS

Sl.	Diagnosis	No.	%age
1.	Benign ovarian neoplasm	46	46
2.	Malignant ovarian neoplasm	12	12
3.	Functional ovarian cyst	10	10
4.	Ectopic gestation	14	14
5.	Tubo-ovarian inflammatory mass	10	10
6.	Endometriosis	4	4
7.	Broad ligament fibroid	2	2
8.	Normal	2	2
Total		100	100

Accuracy of clinical examination

As shown in Table II correct diagnosis of adnexal masses could be made in 62 cases by clinical examination, while erroneous diagnosis was made in 38 percent patients. Benign ovarian tumours could be diagnosed in 74% patients while malignant neoplasms and functional ovarian cysts could be diagnosed in 50% and 20%

cases respectively. However, clinical examination was accurately diagnostic of inflammatory tubo-ovarian masses in 8 (80%) cases and 100% (4 cases) in endometriosis. Out of 14 confirmed ectopic pregnancy cases clinical examination could diagnose it in only 8 cases (57% accuracy) and erroneously in 6 cases (43%).

acterisation of various adnexal masses. Thus ultrasound could correctly diagnose 80 cases (80% accuracy) of adnexal masses. On analysing the data, it is evident that 38 out of 46 cases of benign ovarian tumours could be diagnosed by sonar examination making an accuracy of 83%. Malignant ovarian tumour and functional ovarian

TABLE - II
SHOWING ACCURACY OF CLINICAL EXAMINATION IN DIAGNOSIS OF VARIOUS ADNEXAL MASSES

Sl. No.	Type of mass	No.of cases	Correct		Incorrect		Accuracy (Percentage)
			No.	%	No.	%	
1.	Benign ovarian tumour	46	34	74	12	26	74
2.	Malignant ovarian tumour	12	6	50	6	50	50
3.	Functional ovarian cyst	10	2	20	8	80	20
4.	Ectopic gestation	14	8	57	6	43	57
5.	Tubo-ovarian masses	10	8	80	2	20	80
6.	Endometriosis	4	4	100	—	—	100
7.	Broad ligament myoma	2	—	—	2	100	0
8.	Normal	2	—	—	2	100	0
	Total	100	62	62	38	38	62

Accuracy of Sonography Examination

Table III shows accuracy of sonographic examination in pathological characysts could be diagnosed in 83% and 60% patients respectively. While exact prediction rate was 71% and 80% respectively

TABLE - III
SHOWING ACCURACY OF SONOGRAPHIC EXAMINATION IN DIAGNOSIS OF ADNEXAL MASSES

Sl. No.	Type of adnexal mass	No.of cases	Correct		Incorrect		Accuracy (Percentage)
			No.	%	No.	%	
1.	Benign ovarian tumour	46	38	83	8	17	83
2.	Malignant ovarian tumour	12	10	83	2	17	83
3.	Functional ovarian cyst	10	6	60	4	40	60
4.	Ectopic gestation	14	10	71	4	29	71
5.	Tubo-ovarian masses	10	8	80	2	20	80
6.	Endometriosis	4	4	100	—	—	100
7.	Broad ligament myoma	2	2	100	—	—	100
8.	Normal	2	2	100	—	—	100
	Total	100	80	80	20	20	80

for ectopic gestation and tubo-ovarian masses, it was 100% for endometriosis, broad ligament myoma and normal cases.

Comparison of accuracy of sonographic and clinical examination

Percentage of accuracy in diagnosis of adnexal masses by clinical examination and ultrasound is depicted in Table IV. As evident overall accuracy of clinical examination in gross and pathological characterisation was 62 per cent and 60% respectively while the corresponding figures for sonographic examination were 84% and 80% respectively.

In diagnosis of benign ovarian tumours clinical examination was correct in 74 percent cases as far as gross characterisation was concerned and in 70 percent for pathological characterisation. Corresponding figures for sonographic examination were 91 percent and 83% respectively. Clinical examination could correctly make diagnosis of malignant ovarian tumour and functional ovarian cyst in 50% and 20% cases respectively while the corresponding accuracy for sonar examination was 83% and 60% respectively. Similarly accuracy of sonographic examination in correctly diagnosing ectopic gestation was 71 percent in contrast to only 57% by clinical examination. Difference in accuracy for other conditions is shown in Table IV. Overall accuracy of ultrasound in diagnosis adnexal masses is 80% which is 16% more than that of clinical examination and the difference is statistically significant ($p<0.05$).

TABLE - IV
SHOWING COMPARATIVE ACCURACY OF SONOGRAPHIC VERSUS CLINICAL EXAMINATION IN GROSS AND PATHOLOGICAL CHARACTERISATION OF VARIOUS ADNEXAL MASSES

Sl. No.	Type of adnexal mass	Accuracy of clinical examination		Accuracy of sonographic examination	
		Gross (%)	Pathologic (%)	Gross (%)	Pathologic (%)
1.	Benign ovarian tumour	74	70	91	83
2.	Malignant ovarian tumour	50	50	83	83
3.	Functional ovarian cyst	20	20	60	60
4.	Ectopic gestation	57	57	71	71
5.	Tubo-ovarian mass	80	80	80	80
6.	Endometriosis	100	100	100	100
7.	Normal	0	0	100	100
	Total	62	60	84	80

Discussion

Out of total 100 cases of adnexal masses clinical diagnosis was correct in gross and pathological characterisation in 62 and 60 cases respectively (accuracy 60-62 percent). These observations are consistent with those of O'Brien et al (1984), Sunden (1964) and Voss et al (1983) who reported accuracy of 67%, 69% and 68%

respectively in their study. Schlensker and Beckers (1980) reported higher accuracy (75.81%) whereas Levi and Delval (1976) reported very low accuracy rate of 37%.

On comparing the accuracy of diagnosis of various adnexal masses it was found that clinical examination could diagnose benign ovarian neoplasm, malignant ovarian neoplasms, tubo-ovarian masses, ectopic gestation in 74%, 50%, 80% and 57% cases respectively which are better than those of Levi and Delval (1976) who reported 31%, 0%, 27% and 37% accuracy respectively.

Sonographic examination could accurately diagnose adnexal masses in 80% cases in the present study which was comparable to 84%, 77%, 93% and 80% respectively of Thompson et al (1987), Kobayashi et al (1969), Deland et al (1979) and Walsh et al (1979).

TABLE - V
SHOWING COMPARATIVE ACCURACY OF SONOGRAPHIC DIAGNOSIS OF VARIOUS ADNEXAL MASSES BY VARIOUS AUTHORS

Sl. No.	Authors (year)	Percentage of accuracy					
		Ovarian cyst		Ectopic gestation	Tubo-ovarian masses	Endometriosis	Overall
		Benign	Malignant				
1.	Thompson et al (1967)	80	76	—	81	100	84
2.	Kobayashi et al (1969)	69	78	75	—	—	77
3.	Deland et al (1979)	93	93	—	—	—	93
4.	Walsh et al (1979)	82	82	60	67	77	80
5.	Present Study (1987-89)	83	83	71	80	100	80

Comparative accuracy of sonographic diagnosis in various adnexal by different authors diseases is shown in Table V. Thus result of present study in diagnosing various adnexal masses are consistent and comparable with other authors. Hence ultrasound is an important tool for making an accurate diagnosis in various adnexal masses and its use is recommended for all pelvic tumours.

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