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Original Article

Sonographic Evaluation of Female Pelvic masses at Institute of Nuclear Medicine and Allied Sciences,Rangpur

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Abstract:

Background: Ultrasound is a real time, noninvasive, safe, inexpensive, sensitive, scanning of patient involve no discomfort, results of scanning are immediately viewing screen and is a dynamic modalities. Ultrasonographi permits to identify the origin of the pelvic mass and distinguish correctly between benign and malignant mass and give an accurate diagnosis in most of the cases. Aim and objectives of this study were to evaluate the sonographic morphology of pelvic masses and to correlate with histopathological diagnosis. **Methods:** The study was carried out at the institute of nuclear medicine and allied sciences,Rangpur for a period of 12 months from January 2019 to December 2019.A total of 120 patients were taken to evaluate the pelvic mass by sonographic examination and findings correlated with histopathology. **Results:** Out of 120 patients majority (42%)of the patients were in the age group of 21-30 years and most of the pelvic masses were found in para 1-3(60%). Patients evaluated by sonography 47(39%) were having uterine pathologies and 71(60%) were ovarian pathologies. In the present study, most of the patients came with feeling of lump in pelvic cavity, about 34(28%) followed by abdominal pain 28(24%). In various uterine pathologies endometrial carcinoma and ca cervix were detected with 100% accuracy. Fibroid were diagnosed in 24 patients by USG, out of which 22 diagnoses were proved correct (92%), but 2 were corrected as adenomyosis after post surgical histopathology. In ovarian pathologies Follicular cysts were diagnosed in 33 patients by USG,out of which 31 diagnoses were proved correct (94%), but 2 were corrected as lutealcyst after post surgical histopathology. The accuracy of ovarian carcinoma was 75% at USG because 6 patients were proved and 2 cases were corrected after post surgical histopathology. Endometriosis, pelvic abscess and hydrosalphinx were detected with 100% accuracy at USG. **Conclusion:** USG is the most commonly preferred imaging tool to evaluate female pelvic masses.

Key words: Pelvic mass, Uterus, Ovary, Adnexa, Ultrasonography, Histopathological diagnosis.

Introduction:

The female pelvic cavity is an anatomic region which contains multiple organs and system performing different and independent functions. The urogenital system represents the main part of the female pelvis.All structure of pelvic cavity might generate pelvic masses even in para-physiologic condions or due to current illness or congenial alterations, inflammatory illness and tumours[1]. Due to the wide use of pelvic ultrasound for routine gynaecological evaluation during the reproductive years and after menopause, the incidental finding of adnexal masses has been observed in a growing proportion of women[2]. Ultarsound is a real time, noninvasive, safe,easy, quick tool, inexpensive, sensitive, scanning of patient involve no discomfort, results of scanning are immediately viewing screen and is a dynamic modalities. Ultrasonography permits to distinguish correctly between benign and malignant adnexal mass and give an accurate diagnosis most of the cases. Though sonogram is not free from error and limitation, diagnostic error can be corrected by CT or MRI scan[3].

Pelvic sonography is performed to visualize the uterus and adnexa in symptomatic and asymptomatic of reproductive and menopausal age. Pelvic sonography is highly sensitive in detecting adnexal masses but its specificity in detecting malignancy is lower. Differentiations between functional and nonfunctional ovarian

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masses are occurred in sonogram. Other type of adnexal cysts such as endometriosis, mature cystic teratoma and par ovarian cysts are also important to diagnosis correctly due to they may affect patients fertility, significant pelvic disease or ovarian torsion. Thus the correct use of pelvic sonography has become an integral part of gynaecologic evaluation and exam[4,5].

The best examination in a clinical context is undoubtedly abdominal ultrasonography. In young patients of reproductive age, sonography shows best accuracy in the differential diagnosis of ovarian and hydrosalphingx cyst, ectopic pregnancy and uterine fibroids. Serial sonography is done to detect changes in size and appearance of a particularly monitoring of a functional cyst whether changes of size or internal components[6].

Aim and objectives of this study were to evaluate the sonographic morphology of pelvic masses and to correlate with histopathological diagnosis.

Methods:

The study was carried out at the institute of nuclear medicine and allied sciences, Rangpur for a period of 12 months from January 2019 to December 2019.A total of 120 patients were selected to evaluate the pelvic mass by sonographic examination. Ultrasonography of pelvis was performed for all patients by real time equipment with 3.5 MHZ transducer of machine Phillips Affinity 70 in transabdominal route. Sonographic findings of each lesion were designed to assess size, shape, echogenecity, borders, composion, calcifications, septations and locularity. The presence or absence of ascites was also noted in suspected cases.

Size was defined as maximal dimensions of the lesion, echogenecity included hypoechoic, isoechoic, hyperechoic and anechoic. Composition was defined as solid, cystic and mixed. Borders were defined as smooth and irregular. Calcification was divided into centrally, peripherally placed. The detailed clinical history was taken from all patients and pathological evaluation was performed on all the lesions.

Pregnant patients and seriously ill patient with several comorbid disease was excluded from the study.

Results:

The results of the study are shown in tabulated form.

In the present study patients were in the range of 10-70 years. Majority were in the age group of 21-30 years. The minimum number was in the age group of 10-20 and 61-70 years (Table I).

Table I: Distribution of pelvic mass according to age group

Age group	Number of Patients	Percentage
10-20	6	5
21-30	15	12
31-40	28	23
41-50	50	242
51-60	13	11
61-70	8	7
Total	120	100

Maximum number of patients in the present study belonged to para 1-3 and minimum were unmarried (Table II).

Table II: Incidence of mass according to parity

Parity	N	%
Nuliparous	12	10
1-3	72	60
>3	30	25
Unmarried	6	05
Total	**120**	**100**

In the present study,most of the patients came with feeling of lump in pelvic cavity-34(28%) and minimum patients came with primary amenorroea-8(7%) (Table III).

TableIII: Distribution of patients according to clinical presentation

Symptoms	Number of patient	Percentage
Abdominal pain	28	24
Feeling of lump in pelvic cavity	34	28
Menstruaul abnormality	25	20
Primary amenorroea	08	7
Infertility	15	13
Post menopausal bleeding	10	8
Total	120	100

Majority pelvic masses were ovarian origin (60%), followed by uterine origin (39%). Most of the ovarian lesions were Follicular Ovarian cyst 33(28%) followed by endometriosis 18(15%), tubal ectopic pregnancy 11(10%), and ovarian malignancy 6(5%). Majority of the uterine lesion

were Fibroids 24(20%) followed by adenomyosis 11(10%),Ca cervix 6(5%) and endometrial carcinoma 2(1%) (Table IV).

Table IV: Distribution of pelvic masses according to origin

Origin of pelvic mass	Types of mass	N	%
Uterine(39%)	Fibroid	24	20
	adenomyosis	11	10
	Fibroid with pregnancy	4	3
	Endometrial carcinoma	2	1
	Ca Cervix	6	5
	FollicularOvarian cyst	33	28
Ovarian(60%)	Endometriosis	18	15
	Ovarian malignancy	6	5
	Tubal ectopic pregnancy	11	10
	Hydrosalphinx	3	2
Others(1%)	Pelvicabscess	2	1
Total		**120**	**100**

Table V: USG diagnosis of pelvic masses with correlationwith histopathological diagnosis (n=120)

Types of mass	USG Diagnosis	Histopathological Diagnosis
Fibroid	24	22
Adenomyosis	11	13
Fibroid with Pregnancy	4	4
Endometrial carcinoma	2	2
Ca cervix	6	6
Follicular Ovarian cyst	33	31
Endometriosis	18	18
Tubal ectopic preganancy	11	11
Ovarian carcinoma	6	8
Hydrosalphinx	3	3
Pelvic abscess	2	2
Total	**120**	**120**

Table V showed 24 cases of fibroid were diagnosed at USG and false diagnosis of Fibroid in 2 cases was corrected as adenomyosis after biopsy. 6 cases of carcinoma cervix and 2 cases of endometrial carcinoma were correlate with cervical biopsy and histopathological evaluation, In ovarian pathologies 33 Follicular ovarian cysts were diagnosed but in serial monitoring it was proven that 2 caseshave luteal cyst and 31 cases were follicular cyst. 18 cases of endometriosis and 11 cases of tubal ectopic pregnancy were proved with histopathology. 6 cases of ovarian malignancy were confirmed to be malignant on HPE and 2 cases were mistaken as simple ovarian cyst and corrected as ovarian carcinoma after post surgical histopathological examination.

Discussion:

The present study was undertaken to evaluate the role of ultrasound in determining the site, size, nature and consistency of female pelvic masses and to evaluate the diagnostic accuracy of ulrasonography.

In our study (Table I) the analysis of age distribution shows maximum number of cases i.e. 50(42%) in 21-30 age group. The youngest patient in present study was 10 years old and the eldest was 69 years old.

Similarly the age range in study by Firoozabadi et al[7] and Alcazar et a[8] were 17-75 and 17-79 respectively and mean age in studies by Gatreh-Samani et al[9], Hafeez et al[10], Mubarak et al[11] were 48.63 yrs, 40.95 yrs and 60 yrs respectively.

On analysing the incidence of pelvic masses according to parity it was found that maximum number of patients in the present study belonged to Para1-3 (TableII).Another study done by Razia M. Abbas et al[12] showed similar findings where 75% of women with pelvic mass were multiparous. In a study conducted by Prabhaet al[13] showed that multiparity was associated with high incidence of pelvic masses and most of the malignant pelvic masses are seen in multipara above the age of 45 years.

In our study, Fibroids were one of the commonest pelvic mass accounting for 20%, i.e. 24 cases of total 120 cases of pelvic masss. So uterine fibroid is one of the most important and common cause of female pelvic masses. The study of Lawson et al[14], Fleischer et al[15] and Walsh et al[16] also similar to our findings.A false diagnosis of Fibroid in 2 cases was corrected as adenomyosis after biopsy. So, accuracy of diagnosis of uterine Fibroid was 92% in the presenting study.

Walsh et al[16]described the features of adenomyosis.We also found 1 case of Fibroid in pregnant woman but according to Bezjian et al[17] Fibroids were one of the most common pelvic mass during pregnancy.

In our study of female pelvic masses we included 8 cases of carcinoma. In their 6 cases were carcinoma cervix which were correlate withcervical biopsy and histopathological evaluation.We included 2 cases of endometrial carcinoma where we found only thickened heterogenous endometrium by sonogram which had to be confirmed by HPE.USG with a better resolution can differentiate between a benign or malignant mass.Lesions with echogenic solid areas, irregular walls, thick septations, mural nodules and ascites along with high vascularity were suggestive of malignancy[18]. In the present study the accuracy of diagnosis of uterine and cervical malignancies was 100%.

In our study, benign cystic ovarian lesions (Follicular cyst) were the most common pelvic mass accounting for 28%,i.e.33 cases of total 120 cases of pelvic masses. In our study we found patient with follicular cyst were 33 but in serial monitoring it is proven that 2 cases had luteal cyst and 31 cases were follicular cyst which were consistent with the findings of Fleischer et al[15]. So accuracy of diagnosis of follicular cysts was 94%.

In our study of female pelvic masses we included 18(15%) cases of endometriosis, which were proved correct as Endometriosis after postsurgical histopathological examination. So, accuracy of diagnosis was 100% which was consistent with the Fleischer et al[15].

Direct visualization of tubal pregnancy gestational sac outside the uterine cavity or definite extrauterine fetus could be visualized. The criteria for ectopic pregnancy described by Kimz et al[19] which include absence of intrauterine sac with serum BHCG of more than 1000mg/l and an adnexal mass and peritoneal collection that is the similarity with our study.We found 11(10%) cases Tubal ectopic pregnancyof total 120 cases of pelvic masses which were correlate with post surgery. So, accuracy of diagnosis of Tubal ectopic pregnant were 100% in our study.

In our study six cases of ovarian malignancy were reported on USG. However 6 cases were confirmed to be malignant on HPE. In present study all malignant ovarian tumor were showing cystic mass with ill defined walls and small solid component.2 cases were mistaken as simple ovarian cyst butthese were proved correct as ovarian carcinoma after post surgical histopathological examination. So, accuracy of diagnosis of ovarian malignancy was 75% in our study. Outwateret al[20] suggested that irregular and solid component in a cystic mass suggested gross malignant changes. In our study 1 out of the 4 malignant (25%) was shows liver metastasis with ascites and peritoneal seeding.

3(2%) cases of hydrosalphinx and 2(1%) cases of pelvic abscess were reported on USG in our study which had proved correct with histopathological examination and accuracy rate was 100% in these cases.

Pelvic masses that overlooked on physical examination could be identified by ultrasonographic examination. The identification of small myomas, ovarian enlargement and physiological cysts may lead to increased patient concern and even operations that might be unnecessary.

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