Section: Obstetrician & Gynaecologist

Original Research Article

TO STUDY THE PATTERN AND CLINICOPATHOLOGICAL CORRELATION OF ADNEXAL MASSES

Sonakshi Pandey[1], Anshuman Pandey[2], Divya Suman[3]

[1]Department of Obstetrician & Gynaecologist, Consultant in Sankritya Hospital, Kushinagar, UP, India.
[2]Senior Resident, Department of General Surgery, ASMC, Kushinagar, UP, India.
[3]Specialist Medical Officer, Bihar, India.

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Corresponding Author:
Dr. Sonakshi Pandey,
Email: drsonakshipandey@gmail.com.

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Abstract

Background: To study the pattern and clinicopathological correlation of adnexal mass. **Materials and Methods:** 268 patients with adnexal masses were subjected to imaging techniques to evaluate the adnexal masses (USG, CT/ MRI depending on clinical diagnosis). Ca-125 and other tumor marker with appropriate investigations were done. MRI and other tumor markers i.e; CEA, CA 19-9 were also done in selected patients. Ultrasound and clinical findings were correlated. **Results:** Out of 268 patients, 201 patients were operated and these findings on USG were correlated with operative and histopathological findings. From total 268 pt. 53 patients were already diagnosed with simple cyst. So, from remaining 215 patients, 20 patients were taken for emergency laparotomy, so their USG had not been done, so total 195 patients went for sonology under which 12 had been conservatively managed for ectopic pregnancy, as they are stable, so only 52 patients of ectopic pregnancy underwent for sonography. Considering HPE as final diagnosis, comparison with radiology findings are having slight discrepancies as one of our patient diagnosed with hydrosalphinx in USG, and her HPE report were fallopian tube carcinoma. As one of our patient diagnosed with fibroid in sonological findings but her PER –OP findings were para ovarian cyst & HPE reports suggestive of malignant small round cell tumor. **Conclusion:** Sonography with good equipment when appropriately performed by an experienced radiologist, using a proper methodology and standard guidelines has proved to be a very useful, highly diagnostic and a reliable method with good sensitivity and specificity.

INTRODUCTION

The fallopian tubes and ovaries collectively are referred to as adnexa. Women with adnexal mass lesions present in all age groups and more commonly in reproductive age group. These adnexal masses can vary from benign mass like functional cysts to malignant mass like ovarian cancer.[1] Adnexal mass may be of gynecological or non-gynecological origin, and are found frequently in both symptomatic and asymptomatic females. Many asymptomatic masses are small simple cyst which resolves spontaneously or by conservative treatment, on the other hand some asymptomatic masses can be early ovarian cancer which requires immediate attention.[2]

Around 1-2% of the masses seen in children are adnexal, of which 60-70% are ovarian origined. Mostly are benign in nature. Ultrasonography is a cheap, non-invasive test to delineate ovaries and associated adnexal pathologies. The advent use of diagnostic USG changed the spectrum of diagnostic approach to adnexal masses. Pelvic ultrasound today forms the primary examination mode in the evaluation of adnexal masses. It provides the necessary information to plan out the right therapeutic approach required in the given situation. Hence sonography has become a mandatory examination in the approach to the management of adnexal masses.[3]

The histopathogenesis of ovarian tumor revolves around four main components mainly surface epithelium, germ cells, sex cord and specialized ovarian stroma. These tumor occur in all age group with various histological types. Invasive epithelial cancers occur in the age group of 56-60 years. The prominent type of tumors during younger age group is germ cell tumor. Sex cord stromal tumors seen in females of all ages.[4] Commonest is epithelial ovarian cancers account for 90 to 95% of malignant ovarian tumors while others are 5 to 10%. Therefore, a thorough clinical pelvic examination

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with a high suspicion index should be done. Pelvic masses that are overlooked on physical examination will be identified by ultrasonography examination.[5] Adnexal masses present a diagnostic dilemma, the differential diagnosis is extensive with most masses representing benign processes.[6] Hence, the study was carried out with an aim to evaluate the diagnostic accuracy of combined approach with pelvic examination and pelvic sonography in the patients suspected with adnexal masses and its correlation with per-operative findings and histological diagnosis.

MATERIALS AND METHODS

This study was conducted on 268 patients in the department of Obstetrics and Gynaecology in collaboration with Department of Radiology and Department of Pathology, Teerthankar Mahaveer Medical College and Research Centre (TMMC & RC), Moradabad From January 2017 to August 2018.

Detailed history about demographic factors, presenting complaints and menstrual history were obtained. Complete general physical and bimanual examination of all the patients with adnexal masses, coming to Gynaecology OPD or casualty was performed and provisional diagnosis was made. Stable patients were subjected to imaging techniques to evaluate the adnexal masses (USG, CT/ MRI depending on clinical diagnosis) while unstable patients were immediately taken for further management.

Ultrasonography findings included size of adnexal mass, organ of origin, laterality, locularity, solid elements, haemorrhage, presence of ascites, evidence of metastasis and Doppler studies with pulsatility index (PI) and resistance index (RI) were assessed and a diagnosis was made. Routine and specific laboratory tests comprising of complete blood count, blood grouping, urine routine microscopy, fasting and postprandial blood sugars, thyroid profile, liver and renal function tests, β-hCG, Ca-125 and other tumor marker with appropriate investigations were done. Further if required MRI and other tumor markers i.e; CEA, CA 19-9 were also done accordingly, in selected patients. Ultrasound and clinical findings were correlated. The results were compiled and subjected for statistical analysis. P value less than 0.05 was set significant.

RESULTS

Table 1: Patients distribution

Age	Functional cyst	Hydrosalphix Or Infective pathology	Ectopic pregnancy	Benign	Malignant	Total	%
<15yr	12	0	0	0	2	14	5.2%
15-24yr	14	15	18	16	0	63	23.05%
25-44yr	26	35	54	24	4	143	53.05%
45-65yr	01	0	0	17	21	39	14.55%
>65yr	00	0	0	0	9	9	3.3%
TOTAL	53	50	72	57	36	268	100%

Majority of cases were from the age group 25-44 years. Main bulk of the malignant tumors was in 5th & 6th decades, in comparison to the benign tumors where main bulk was 3rd & 4th decades. Benign tumors were clustered in a decade earlier than malignant tumor. The malignant masses were predominantly seen in age category of 45-60 years. 60% presented of them showed advanced stage [3rd & 4th stage]. 2 patients of <15 year age group were presented with germ cell tumor.

Table 2: Parity wise distribution

PARITY	FUNCTIONAL CYST	HYDROSALPHINX/ INFECTIVE PATHOLOGY	ECTOPIC PREGNANCY	BENIGN	MALIGNANT	TOTAL	%
NULLIPAROUS	16	21	34	28	16	115	42.9%
PRIMIPARA	15	18	26	18	9	86	32%
MULTIPARA	22	11	12	11	11	67	25%
TOTAL	53	50	72	57	36	268	100%

Majority of Ectopic pregnancies were found in nullipara and primipara patients. Here, we found to have malignant ovarian masses majority in nulliparous women. There was no significant parity wise distribution in rest of the cases.

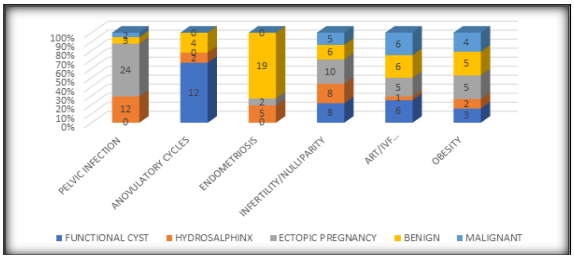

Figure 1: Co- existing factors

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Table 3: Clinical presentation of adnexal masses

PARITY	FUNCTIONAL CYST	HYDROSALPHINX/ INFECTIVE PATHOLOGY	ECTOPIC PREGNANCY	BENIGN	MALIGNANT	TOTAL	%
MASS ABDOMEN	0	0	15	18	7	40	14.92 %
PAIN ABDOMEN	16	24	45	52	25	162	60.44 %
ABNORMAL BLEEDING PV/DISCHARGE PV	22	20	23	13	9	87	32.46 %
ABDOMINAL DISTENTION/ASCITES	0	0	8	0	14	22	8.20%
PRESSURE SYMPTOMS	0	4	6	5	11	26	9.70%
WEIGHT LOSS	0	6	0	0	17	23	8.58%

Commonest presentation with functional cyst was prolonged /scanty menstrual cycles followed by heavy menstrual cycles. Most patients with hydrosalphinx and infective pathology presented with polymennorhagia. In this study 6 cases of infective pathology (tuberculosis) were found. Beside discharge per vaginum, associated urinary symptoms and history of amennorhoea were also found in cases of hydrosalphinx. Out of 11 patient of chronic ectopic pregnancy, 6 patients presented with pressure symptoms.

Table 4: Clinical signs in Ectopic Gestation

SIGNS	NO. OF PATIENTS [N=72]	%AGE
PELVIC OR ABDOMINO PELVIC MASS	23	31.94
ADNEXAL FULLNESS	45	62.5%
TENDERNESS	32	44.44%
ASCITES	8	11.11%

Patient diagnosed as ectopic pregnancy clinically and with TVS were managed either conservatively or surgically. Almost all cases in the present study were presented with pain lower abdomen and tenderness in the iliac fossa.

Table 5: Non-Neoplastic lesions in adnexal masses

TYPE	NO. OF CASE [N=53]	%
SIMPLE OVARIAN CYST	16	5.9%
THECA LUTEAL CYST	10	3.7%
FOLLICULAR CYST	21	7.8%
HEMMORHAGIC CYST	6	2.23%

Majority of the functional cysts were identified as follicular cyst followed by simple ovarian cyst radiologically. Those patient diagnosed as functional cyst incidentally on USG were managed conservatively.

Table 6: Radiological diagnosis of adnexal masses

TYPES OF MASSES	NO. [N=195]	%
INCLUSION CYST/TB	3	1.53%
HYDROSALPHINX/INFECTIOUS PATHOLOGY	41	21.02%
ECTOPIC PREGNANCY	52	26.66%
ENDOMETRIOSIS [CHOCLATE CYST]	29	14.87%
TUBO-OVARIAN MASS	6	3.07%
DERMOID CYST [TORSION OVARY]	10	5.12%
BROAD LIGAMENT FIBROID	01	0.51%
BENIGN OVARIAN MASSES	26	13.33%
MALIGNANT OVARIAN MASSES	27	13.84%

Total 248 patients were subjected to Ultrasonography, and concluded that simple cyst is totally a USG diagnosed cyst and can be managed accordingly. Out of 72 ectopic, 52 cases were diagnosed on USG examination, as 20 patients were unstable, presented with shock in emergency, so emergency laparotomy was performed. 6 chronic ectopic patients presented with TO mass in USG and 3 patients were of encysted TB. 10 were being diagnosed with dermoid cyst of which 3 were presented with ovarian torsion and presented in casualty with severe pain. Most of the cases of torsion ovary were associated with dermoid cyst. 26 patients were diagnosed with benign ovarian mass and 27 patients with malignant on USG.

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Table 7: Radiological diagnosis of benign & Malignant ovarian tumors

USG FEATURES	BENIGN [57]	%	MALIGNANT [36]	%
SIMPLE CYSTIC	23	8.58%	0	0%
SOLID CYSTIC	20	7.46%	6	2.23%
COMPLEX CYSTIC	8	2.98%	12	4.47%
PRE-DOMINANTLY SOLID	4	1.49%	18	6.71%
ASCITES	2	0.745	16	5.97%
INCREASED VASCULARITY [LOW RI & PI]	0	0%	30	11.19%
OMENTAL CAKING/DEPOSITS	0	0%	18	6.71%

More than 1 features are found in benign as well as malignant in ultrasonography.

Table 8: Ca-125 Value in diagnosis of benign and malignant tumor

CA-125	BENIGN N=57	MALIGNANT N=36	TOTAL%
>35 IU/ml	7	33	40 [14.92%]
<35IU/ml	16	3	19 [7.08%]
Total	23	36	59 [22.01%]

CA- 125 >35 IU/ml had 7 benign and 33 malignant and <35IU/ml had 16 benign and 3 malignant lesions.

Table 9: Treatment

	TREATMENT	CASES [201]	%
SALPHINGECTOMY	LAP	42	15.67%
<35IU/ml	OPEN	25	9.32%
SALPHINGO-OOPHERCTOMY	LAP	24	8.95%
	OPEN	34	12.68%
OVARIAN-CYSTECTOMY	LAP	17	6.34%
	OPEN	20	7.46%
DEBULKING SURGERY & STAGING [WITH TAH]		22	8.20%
RADIO/CHEMOTHERAPY		17	6.34%

In our study out of 268 patient, total 65 patients were managed conservatively & 2 were of germ cell tumor & rest 184 pt. underwent some surgical procedure and further some of them underwent chemo/radiotherapy. From total 72 pt. of ectopic, six patients were of chronic ectopic in which laparotomy was done and, tissues were sent for HPE report. Out of 66 patients were of acute ectopic of which 12 patients managed conservatively, 20 presented in casualty with shock for which immediately laparotomy was done. 24 patients were stable being planned for laparoscopic salphingectomy and 10 patients underwent salphingo-oopherectomy. From 50 patient of infection three patients were having encysted T.B, after giving one month of ATT, they were operated. Debulking surgery was done in 22 patients with TAH +BSO.

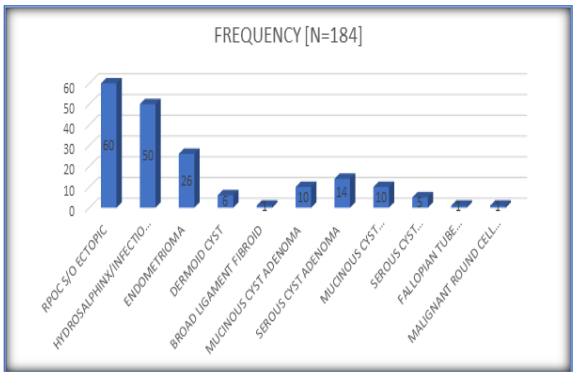

Figure 3: Frequency of occurrence of different adnexal masses based on HPE

From total 268 patient ,184 patient got operated and tissue were sent for HPE. 40 patients confirmed as RPOC diagnosis as found on USG,50 patients came of infective pathology, 26 patients confirmed with the diagnosis of Choclate cyst. Total 57 patients confirmed with the diagnosis of benign tumor, out of which 6 were of Dermoid cyst, 26 came endometriosis, 1 as broad ligament fibroid and from remaining 24, 10 were diagnosed as mucinous cyst adenoma and 14 as serous cyst adenoma. 1 patient diagnosed as hydrosalphinx on USG turned out to be fallopian tube carcinoma on histopathology. 1 patient diagnosed with fibroid broad ligament per operatively was confirmed with broad ligament fibroid on HPE.

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Correlation between histopathology and USG findings

SONOLOGICAL FINDINGS							
HPE REPORT N=184	ECTOPIC	HYDROSALPHINX/INFECTIVE PATHOLOGY	ENDOMETRIOSIS/CHOCLATE CYST	TOMASS	DERMOD CYST	BENIGN	MALIGNANT
RPOC S/O ECTOPIC [N=60]	49	0	0	3	0	1	0
INFECTIOUS PATHOLOGY [50]	0	41	4	3	2	0	0
ENDOMETRIOMA [26]	0	0	24	0	2	0	0
DERMOID CYST [6]	0	0	1	0	5	0	0
BROAD LIGAMENT FIBROID [1]	0	0	0	0	0	1	0
FALLOPIAN TUBE CARCINOMA [1]	0	1	0	0	0	0	0
BENIGN CYST ADENOMA [24]	0	0	0	1	1	22	0
MALIGNANT CYST ADENOCARCINOA [16]	0	0	0	0	0	2	14
TOTAL	49	42	29	8	10	26	14

Out of 268 patients, 201 patients were operated and these findings on USG were correlated with operative and histopathological findings. From total 268 pt. 53 patients were already diagnosed with simple cyst. So from remaining 215 patients,20 patient were taken for emergency laparotomy, so their USG had not been done, so total 195 patients went for sonology under which 12 had been conservatively managed for ectopic pregnancy, as they are stable, so only 52 patient of ectopic pregnancy underwent for sonography. Considering HPE as final diagnosis, comparison with radiology findings are having slight discrepancies as one of our patient diagnosed with hydrosalphinx in USG, and her HPE report were fallopian tube carcinoma. As one of our patient diagnosed with fibroid in sonological findings but her PER –OP findings were para ovarian cyst & HPE reports suggestive of malignant small round cell tumor.

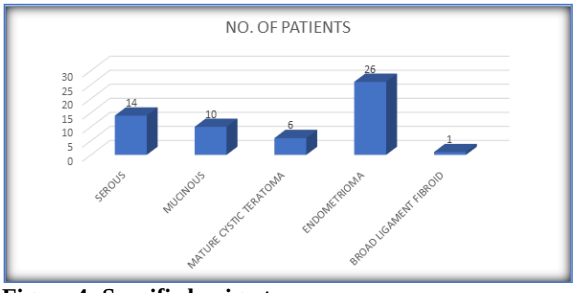

Figure 4: Specific benign tumours

Considering histopathology report as our gold standard, 14 patients confirmed with serous cyst adenoma,10 patient is of mucinous cyst adenoma, 6 patients were of mature cystic teratoma, 26 out of 29 confirmed as chocolate cyst and one patient of broad ligament fibroid.

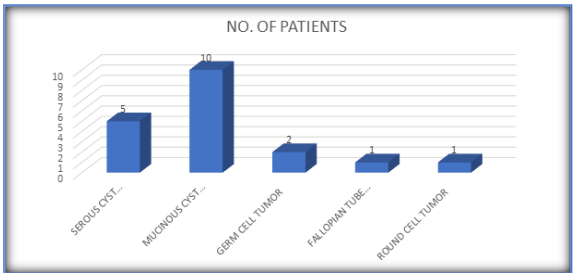

Figure 5: Distribution of different malignant tumor

From total 36 malignant tumor diagnosed on USG,17 were of malignant in origin was in advance stage, given chemo/radiotherapy. Two were diagnosed as malignant germ cell tumor on USG only. One patient diagnosed as hydrosalphinx on USG turned out to be fallopian tube carcinoma. One case diagnosed as fibroid on USG came malignant round cell tumor on histopathology report. Eight patients were diagnosed with mucinous cyst adenocarcinoma and 6 patients with serous cyst adenocarcinoma. From remaining 15 malignancies, 10 came mucinous cyst adenocarcinoma & 5 confirmed as serous cyst adenocarcinoma.

DISCUSSION

Best modality for early screening and diagnosis of ovarian carcinoma is increased use of TVS which may result in decreasing the mortality of the disease. Thus, imaging by ultrasonography helps to locate its origin [ovarian, uterine or bowel] the mass size, consistency, internal architecture by scorings system which will grade the malignant tumors. Subjective

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evaluation by Doppler ultrasound findings and preoperative serum levels of CA-125 both can discriminate benign from malignant adnexal masses. Ultrasonography usually provides clinically important parameters for the evaluation of adnexal mass. TVS can almost confirm the presence or absence of a suspected adnexal mass. Even on USG various pathologies, sometimes become difficult to diagnose especially if mass is arising from bowel or omentum and the type of tumor whether benign or malignant.[7]

Ovarian cysts are commonly detected ultrasonographically in nearly all premenopausal women and in most of the postmenopausal women. Ovarian tumors are wide spectrum of benign and malignant masses with origin from various histological type like epithelial, germ cell, connective tissue, embryonic or highly specialized cells.[8] The diagnosis of ovarian tumor is based basically on clinical examination, sonography and measurements of CA-125 collectively known as triple diagnostic method.

We found that Benign tumors were clustered in a decade earlier than malignant tumor. The malignant masses were predominantly seen in age category of 45-60 years. 60% presented of them showed advanced stage [3rd & 4th stage]. 2 patient of <15 year age group were presented with germ cell tumor. Majority of Ectopic pregnancies were found in nullipara and primipara patients. Here, we found to have malignant ovarian masses majority in nulliparous women.

Most patients with hydrosalphinx and infective pathology presented with polymennorhagia. In this study 6 cases of infective pathology (tuberculosis) were found. Beside discharge per vaginum, associated urinary symptoms and history of amennorhoea were also found in cases of hydrosalphinx. Out of 11 patient of chronic ectopic pregnancy, 6 patients presented with pressure symptoms. Patient diagnosed as ectopic pregnancy clinically and with TVS were managed either conservatively or surgically. Almost all cases in the present study were presented with pain lower abdomen and tenderness in the iliac fossa. Majority of the functional cysts were identified as follicular cyst followed by simple ovarian cyst radiologically. Those patient diagnosed as functional cyst incidentally on USG were managed conservatively.

Total 248 patients were subjected to Ultrasonography, and concluded that simple cyst is totally a USG diagnosed cyst and can be managed accordingly. More than 1 features are found in benign as well as malignant in ultrasonography. CA-125 >35 IU/ml had 7 benign and 33 malignant and <35IU/ml had 16 benign and 3 malignant lesions. In our study out of 268 patient, total 65 patients were managed conservatively & 2 were of germ cell tumor & rest 184 pt. underwent some surgical procedure and further some of them underwent chemo/radiotherapy. Smorgick and Maymon.[9] assessed adnexal masses using ultrasound. Pelvic ultrasound is commonly used as part of the routine gynecologic examination, resulting in diagnosis of adnexal masses, the majority of which are functional or benign. This review will describe the typical ultrasound appearance of the common physiologic, benign, and malignant adnexal masses with the aim of aiding the clinician to reach the correct diagnosis.

From total 268 patient, 184 patient got operated and tissue were sent for HPE. 40 patients confirmed as RPOC diagnosis as found on USG,50 patients came of infective pathology, 26 patients confirmed with the diagnosis of Choclate cyst. Total 57 patients confirmed with the diagnosis of benign tumor, out of which 6 were of Dermoid cyst, 26 came endometriosis, 1 as broad ligament fibroid and from remaining 24.[10] were diagnosed as mucinous cyst adenoma and 14 as serous cyst adenoma. 1 patient diagnosed as hydrosalphinx on USG turned out to be fallopian tube carcinoma on histopathology. 1 patient diagnosed with fibroid broad ligament per operatively was confirmed with broad ligament fibroid on HPE.

Out of 268 patients, 201 patients were operated and these findings on USG were correlated with operative and histopathological findings. 10. Seemer HS et al[10] have also reported ectopic pregnancy as the common cause of adnexal masses in young patients (22.66%), which is similar to our study (31.94%) & also correlating with the patient age group.

Considering histopathology report as our gold standard, 14 patients confirmed with serous cyst adenoma, 10 patient is of mucinous cyst adenoma, 6 patients were of mature cystic teratoma, 26 out of 29 confirmed as chocolate cyst and one patient of broad ligament fibroid. Terzic et al.[11] investigated which anamnestic, laboratory and ultrasound parameters used in routine practice could predict the nature of adnexal mass Among ultrasound findings, larger tumor diameter and ascites were more frequent in malignant tumors (P=0.000). Women with malignant tumors had highest values of RMI and PDI (P=0.000) & was concluded that Anamnestic data, ultrasound parameters and laboratory analyses were all found to be good discriminating factors among malignant, benignant and borderline tumors.

From total 36 malignant tumor diagnosed on USG,17 were of malignant in origin was in advance stage, given chemo/radiotherapy. Vijayalakshmi et al.[12] analyzed the clinical and pathological profile of adnexal torsion cases. It was concluded by the authors that Adnexal torsion, though a rare clinical condition can present as an emergency most of the times. High index of suspicion is required for diagnosis, as the clinical presentation can be varied. But the diagnosis can be made certain only on the operating table, either by laparoscopy. Avoiding a delay in operating upon the patient will help prevent complications, and aid in conserving the ovary.85

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CONCLUSION

Sonography with good equipment when appropriately performed by an experienced radiologist, using a proper methodology and standard guidelines has proved to be a very useful, highly diagnostic and a reliable method with good sensitivity and specificity.

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