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Original Research Article

Adnexal mass: a clinicopathological study at a tertiary care centre in Assam, India

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ABSTRACT

Background: An adnexal mass may be found in females of all ages with significantly variable prevalence, but more common among women of reproductive age. Adnexal masses pose a special dilemma to the attending gynaecologist because the diagnosis is often difficult and differential diagnosis is vast. Clinical examination is the first step in evaluation of patients with adnexal mass. Pelvic masses which are undetected or overlooked on physical examination can be identified by Ultrasonography. The aims and objectives of the study were to: to find out different types of adnexal pathology clinically, correlation of clinical finding with histopathology, correlation of ultrasonography finding with histopathology.

Methods: The present study was carried in the Department of Obstetrics and Gynecology, Assam medical college and hospital, Dibrugarh from 1st July 2017 to 30th June 2018. This study was a hospital based observational study which included 145 patients of adnexal mass attending the GOPD who required admission and operative intervention. All cases underwent an abdominal ultrasound examination with color Doppler. Transvaginal sonography was done wherever feasible. Following surgery, specimens were sent for histopathological examination and the reports were correlated with pre-operative clinical and ultrasonography findings.

Results: The most common site of origin of adnexal mass was ovary (92.41%) followed by fallopian tube (6.20%) and broad ligament (1.39%). Majority (79.31%) were non neoplastic or benign adnexal masses. All cases of adnexal malignancy were of ovarian origin. The sensitivity and specificity of clinical examination for diagnosis and discriminating benign and malignant ovarian neoplasms were 70% and 86.6% and that of ultrasonography was 86.67% and 96.65% respectively.

Conclusions: Adnexal mass in reproductive age group were mostly non neoplastic and benign, whereas malignancy was mostly seen in peri and post-menopausal age group. Ultrasonography is a useful adjunct to clinical examination for diagnosis and proper management of patients with adnexal mass in low resource setup.

Keywords: Adnexal mass, Clinical examination, Ultrasonography, Histopathology

INTRODUCTION

The term adnexa are derived from the pleural form of the Latin word “adnexus” which means “appendage”. The fallopian tube and ovary and their mesenteries are so closely related anatomically that they are often collectively called the adnexum (plural=adnexa).¹

Adnexal masses refer to the ovarian masses or cysts, fallopian tube masses, broad ligament pathology and Para tubal cysts. An adnexal mass may be found in females of all ages with significantly variable prevalence. Ovarian cancer is one of the commonest causes of death from gynaecological malignancy and is fifth commonest cause of cancer deaths in women.² Fortunately, the benign

lesions far outnumber the malignant ones.³ Adnexal masses pose a special dilemma to the attending gynaecologist because the diagnosis is often difficult and differential diagnosis is vast.



Figure 1: Mucinous cystadenoma.

A significant variation is observed among the patients who clinically presents with adnexal masses.



Figure 2: Ectopic pregnancy.

Some patients may be asymptomatic, some may have pain abdomen, lump abdomen, menstrual irregularities, infertility etc. while some others may present with an acute abdomen which can be due to infection, haemorrhage, torsion, rupture of ovarian cyst or ruptured ectopic pregnancy.⁴

It is the risk of malignancy that propels us for early, accurate and prompt diagnosis to lessen the morbidity and mortality. A thorough abdominal and pelvic examination with a high index of suspicion should be done during the initial encounter with the patient. Pelvic masses which are undetected or overlooked on physical examination can be identified by ultrasonography (USG). Transvaginal sonography is the first choice for imaging of an adnexal mass. Transvaginal technique offers high-resolution imaging, especially of the adnexa.^{5,6}



Figure 3: Serous cystadenocarcinoma.

Several studies have shown that the examiner's subjective impression has good diagnostic performance for characterizing adnexal masses by this modality.^{7,8} With the advancement of technology, the role of computerized tomography (CT), magnetic resonance imaging (MRI) and positron emission tomography (PET) in diagnosis and management of adnexal masses has increased vastly, but they may not be feasible in every patient in low resource set up. The advantages of USG are its wide availability, low cost, safety and simplicity of the examination. USG has been shown to be accurate for both detecting and characterizing adnexal mass as confirmed by histopathology.⁹

METHODS

The present study was carried in the Department of Obstetrics and Gynecology, Assam medical college and Hospital, Dibrugarh. This study was undertaken from 1st July 2017 to 30th June 2018 covering a total period of 1 year.

Inclusion criteria

- It was a hospital based observational study which included all patients of adnexal mass who attended the Gynecological Outpatient Department (GOPD) of Assam medical college and hospital, Dibrugarh and required admission and operative intervention.

Exclusion criteria

- Adnexal mass treated conservatively, mass arising from uterus, adnexal mass of non-gynecological origin were excluded from the study.

Detailed history about demographic factors, presenting complaints and menstrual history were obtained. Complete general physical examination and gynecological examination were performed, and provisional diagnosis was made.

To evaluate the adnexal mass further, an ultrasound examination consisting of transabdominal and transvaginal (not done in unmarried) sonography were done. Color doppler was added in suspicious cases of malignancy where sonographic findings regarding size of adnexal mass, laterality, locularity, solid elements, hemorrhage, presence of ascites, evidence of metastasis and doppler studies with pulsatility index (PI) and resistance index (RI) were assessed.

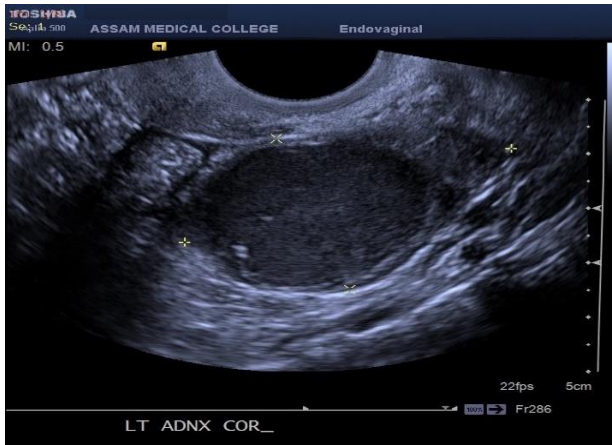


Figure 4: Endometrioma.

An ultrasound diagnosis was made. Standard laboratory tests consisting of complete hemogram, blood sugar level, liver and renal function tests and other pre-operative investigations were done.



Figure 5: Mucinous cyst.

When malignancy was suspected clinically or in ultrasonography, advanced tests like CECT, MRI, tumour markers and ultrasound guided core biopsy was done where ever feasible. Laparotomy was performed. Following surgery, specimens were sent for histopathological examination and the reports were correlated with pre-operative clinical and imaging findings. The accuracy of clinical and ultrasound diagnosis was assessed.



Figure 6: Serous cystadeno carcinoma.

Statistical analysis

Sensitivity, specificity, negative and positive predictive value of clinical findings and sonography were noted and tabulated using SPSS software for windows. Frequencies and percentages were calculated for categorical data. Association between groups for categorical data was calculated using chi-square test. Validity and predictive values and accuracy for the test were calculated. $P < 0.05$ at 95% confidence interval was considered statistically significant. Ethical committee clearance and patient consent were obtained for all cases in the study.

RESULTS

The total admissions to the gynaecology ward were 1250 during the study period. The number of cases of adnexal masses with surgical interventions were 145. The occurrence of adnexal mass in all age group was 8.62% of all gynaecological admissions and 1.08% of all patients attending the GOPD of Assam Medical College and hospital, Dibrugarh.

Table 1: Relative frequency of adnexal mass.

Type of adnexal pathology	Number	Percentage
Ovarian		
Non-neoplasm	30	20.68
Benign tumour	74	51.04
Malignant tumour	30	20.68
Total	134	92.40
Fallopian tube		
Ectopic pregnancy	7	4.86
Hydrosalpinx	2	1.37
Total	9	6.23
Broad ligament		
Fibroid (true)	2	1.37
Total	2	1.37
Grand total	145	100.00

The occurrence of adnexal mass was highest in 30-39 years of age with youngest case being 16 years and oldest case being 68 years of age. The mean age of presentation of adnexal masses was 38.11 years. (Table 1) shows the most common site of origin of adnexal mass was ovary (92.41%) followed by fallopian tube (6.20%) and broad ligament (1.39%).

Among the ovarian origin adnexal masses, 20.68% were non neoplastic, 51.04% were benign neoplasms and 20.68% were malignant neoplasms. Fallopian tube pathology included ectopic pregnancy (4.86%) and hydrosalpinx (1.37%). Broad ligament fibroids (1.37%) were the only broad ligament pathology detected in the study.

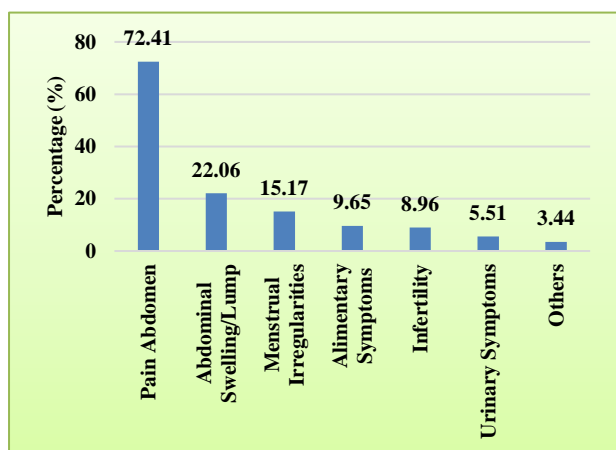


Figure 7: Clinical findings.

Figure 7 shows the relative frequency of clinical findings. The majority of patients had multiple symptoms. The most common clinical presentation in all adnexal masses were pain abdomen (72.41%) followed by abdominal lump (22.06%). Other complains like menstrual irregularities, infertility, urinary symptoms, alimentary symptoms, pressure symptom etc. were also found.

Out of 145 patients, 10 (6.86%) patients presented to the OPD with acute abdomen. Ruptured ectopic pregnancy (2.76%) was the most common cause followed by twisted ovarian tumor (2.07%), ruptured endometrioma (1.38%) and ruptured corpus luteal cyst (0.69%). Most common complication seen in the study intraoperatively was adhesions (28.96%) followed by haemorrhage (14.48%).

Table 2: Non -neoplastic ovarian mass.

Pathology	Number	Percentage
Simple cyst	4	13.33
Corpus luteal cyst	7	23.33
Endometrioma	17	56.67
Ovarian ectopic pregnancy	2	6.67
Total	30	100.00

Non neoplastic ovarian masses accounted for 20.68% of adnexal masses.

Table 2 shows different non neoplastic ovarian masses.

The most common non neoplastic ovarian mass was endometrioma followed by corpus luteal cyst.

The occurrence of benign tumor in the present study was 51.04% and the most common benign tumor was serous cyst adenoma.

Table 3: Benign tumour (histology).

Benign tumour (histology)	Number	Percentage
Epithelial Tumor		
Serous cyst adenoma	31	41.89
Papillary serous cyst adenoma	1	1.35
Mucinous cyst adenoma	17	22.97
Germ cell tumor		
Mature teratoma (dermoid)	24	32.44
Sex cord stromal tumor		
Fibroma	1	1.35
Total	74	100.00

Table 3 shows different benign tumors encountered in the study.

The occurrence of malignant tumor in the present study was 20.68% and the most common malignant tumor was papillary serous cyst adenocarcinoma.

Table 4: Malignant tumour (histology).

Malignant tumour (histology)	Number	Percentage
Epithelial tumor		
Serous cyst adenocarcinoma	15	50.00
Papillary serous cyst adenocarcinoma	1	3.33
Mucinous cyst adenocarcinoma	4	13.33
Endometroid carcinoma	2	6.67
Germ cell tumor		
Dysgerminoma	3	10.00
Immature teratoma	2	6.67
Embryonal cell carcinoma	1	3.33
Metastatic carcinoma	2	6.66
Total	30	100.00

Table 4 shows different malignant tumors encountered in the study.

Table 5: Clinical diagnosis versus histopathology in diagnosis of malignant tumor.

Clinical diagnosis	Histopathological diagnosis		Total
	Malignancy present	Malignancy absent	
Malignancy present	21	15	36
Malignancy absent	9	100	109
Total	30	115	145

The chi-square statistic is 41.3566. The p-value is <0.001. This result is significant at $p < 0.05$.

In present study, clinical examination had a sensitivity of 70% and specificity of 86.96% in detecting malignant adnexal mass as shown in Table 5.

Table 6: Ultrasound diagnosis versus histopathology in diagnosis of malignant tumor.

Ultrasound diagnosis	Histopathological diagnosis		Total
	Malignancy present	Malignancy absent	
Malignancy present	26	5	31
Malignancy absent	4	110	114
Total	30	115	145

The chi-square statistic is 95.9222. The p-value is <0.001. This result is significant at $p < 0.05$.

On the other hand, ultrasonography had a sensitivity of 86.67% and specificity of 95.65% in detecting malignant adnexal mass as shown in (Table 6).

DISCUSSION

Majority of adnexal mass may regress on conservative treatment while some may require operative intervention.

There is no effective screening test to detect ovarian malignancy.¹⁰ In the present study, out of 1250 admissions in the gynecology ward, the incidence of adnexal masses undergoing surgical intervention was 8.62%. 92.41% were ovarian in origin of which 20.68% were non neoplastic, 20.68% were malignant and 51.04% were benign neoplasms. This is comparable to the study Ganga P et al, Sharma I et al, Yogambal M et al, who found the frequency of benign and malignant tumor to be similar.¹¹⁻¹³

The mean age of patient with adnexal mass was 38.61 years. This is comparable to findings of Radhamani S et al and Bhagde AD et al, but more than the finding of Al Shukri et al. Mean age of malignant tumors was 45 years in present study.¹⁴⁻¹⁶ The higher percentage of malignant ovarian tumors in peri and postmenopausal women in the present study is similar to that in other studies.

In the present study, it was found that the most common benign tumor was serous cyst adenoma (41.89%). Similar findings were observed by Kanthikar SN et al, where serous cyst adenoma was found in 35.71% cases.¹⁷ Also Sharma I et al in their study found serous cystadenoma as most common tumor (34%).¹² Most common malignant tumor was serous cyst adenocarcinoma (14.44%) which is similar to Kanthikar SN et al, (8.57%) and Sharma I et al, (12.74%) where they also found serous adenocarcinoma as the most common malignant tumor.^{12,17}

In the present study, among the non-ovarian origin adnexal masses, 9 (6.2%) cases were of fallopian tube origin (7 ectopic pregnancy, 2 hydrosalpinx) and 2 (1.37%) cases were true broad ligament fibroid. This finding was comparable to finding of Radhamani S et al, but less compared to the finding of Bhagde AD et al, where they found 16% cases to be of fallopian tube origin.^{14,15}

The commonest symptom in the present study was pain abdominal and it was found to be 72.41% which was similar to other studies by Al shukri et al, Bhagde AD et al and Radhamani S et al, where they found it to be in 98%, 92% and 82% of cases respectively.¹⁴⁻¹⁶ Second most common symptom found in the present study was lump abdomen. Other symptoms included menstrual irregularities, urinary symptoms, infertility, alimentary symptoms, etc.

Sensitivity of clinical examination for distinguishing a malignant mass from a benign one is not full proof, and the results need to be confirmed with investigations.¹⁸ Clinical examination appears to have limited ability to discriminate benign from malignant adnexal masses in early stages. In the present study, the sensitivity of clinical examination in detection of malignant adnexal mass was found to be 70%. This was comparable to the finding of Radhamani S et al, but more than the finding of Padila LA et al.^{14,19} Sonography (transvaginal and transabdominal) is a sensitive method for detecting adnexal mass and ovarian cancer. In the present study, the sensitivity of ultrasonography in detection of malignant adnexal mass was found to be 86.67%. This finding is similar to the finding of Radhamani S et al and Timmerman D et al, who found sensitivity of ultrasonography to be 87.5% and 93% respectively.^{9,14}

CONCLUSION

Adnexal mass in the reproductive age group were mostly non neoplastic and benign, whereas in peri and postmenopausal age group were malignant. Majority of adnexal masses were of ovarian origin. The differentiation between benign and malignant ovarian tumor is, however, a clinical challenge. Imaging plays an important role in the identification and characterization of adnexal masses and can help the clinician in determining the further course of management. Ultrasonography is an

useful adjunct to clinical examination for diagnosis and proper management of patients with adnexal mass. The present study was able to give an insight into the burden of the disease in the population. In this era of CT scan, MRI, PET scan, Immunohistochemistry and molecular pathology, where the diagnosis is based on these high-end investigations, in our institute with limited resources and low socioeconomic status of patient, the clinico-morphological features were still greatest guide in the diagnosis and proper management of patients with adnexal mass.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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