Original Research Article

Histopathological study of adnexal masses at a teaching hospital

Pavankumar Deshmukh[1], Arvind Valand[2*]

[1]Associate Professor, [2]Professor, Department of Pathology, Vedanta Institute of Medical Sciences, Palghar, Maharashtra, INDIA.
Email: pkd1975@gmail.com

Abstract

Background: Adnexal masses refer to the ovarian masses or cysts, fallopian tube masses, broad ligament pathology and paratubal cysts. Characterization of clinically diagnosed adnexal mass lesions is difficult until histopathological examination and surgical exploration are done. Present study aims to correlate histopathological diagnosis of adnexal masses with clinical/radiological findings. **Material and Methods:** The present study was a prospective, hospital based observational study carried in patients of adnexal mass underwent operative intervention. Post-operative specimens were sent for histopathological examination and the reports were correlated with pre-operative clinical and imaging findings. **Results:** In present study, 88 females with adnexal mass who underwent surgery were studied. Most common age group was 20-39 years (61.36%), followed by 40-59 years (20.45 %). Based on history, examination and radiological findings, clinical diagnosis was made. Benign ovarian tumour (69.32 %) was most common diagnosis followed by malignant ovarian tumour (12.5%), ectopic pregnancy (9.09%), hydrosalpinx (5.68 %) and broad ligament Fibroid (3.41%). On histological study, 59 ovarian lesions were benign, while 13 were malignant. Serous cyst adenoma (43.18 %) was most common benign lesion, followed by mucinous cyst adenoma (12.5%), mature teratoma (dermoid) (9.09 %), sex cord stromal tumour fibroma (1.14 %) and papillary serous cyst adenoma (1.14 %). Serous cyst adenocarcinoma (9.09 %) was most common malignant tumour, others were papillary serous cyst adenocarcinoma (1.14 %), mucinous cyst adenocarcinoma (1.14 %), endometroid carcinoma (1.14 %), embryonal cell carcinoma (1.14 %) and metastatic carcinoma (1.14 %). In present study, clinically we suspected malignancy in 11 patients, after histopathological examination 13 cases of malignancy were diagnosed. In present study, values of diagnostic validity of clinical diagnosis were noted as - sensitivity (91.67 %), specificity (98.33 %), positive predictive value (91.67 %), negative predictive value (98.33 %) and accuracy (97.22 %). **Conclusion:** Adnexal masses commonly found in the reproductive age group. Most of ovarian masses were benign while surface epithelial ovarian tumors were most common malignant masses.

Keywords: Histopathological diagnosis, adnexal mass, ovarian lesion, ovarian malignancy

***Address for Correspondence:**
Dr Arvind Valand, Professor, Department of Pathology, Vedanta Institute of Medical Sciences, Palghar, Maharashtra, INDIA.
Email: arvind_valand@yahoo.co.in

Received Date: 04/01/2021 Revised Date: 10/02/2021 Accepted Date: 11/03/2021
DOI: https://doi.org/10.26611/10121834

Access this article online	
Quick Response Code:	Website: www.medpulse.in
	Accessed Date: 17 June 2021

INTRODUCTION

Adnexal region is composed of ovary, fallopian tube, broad ligament, and associated blood and nerve supply. Adnexal masses refer to the ovarian masses or cysts, fallopian tube masses, broad ligament pathology and Para tubal cysts. Characterization of clinically diagnosed adnexal mass lesions is difficult until histopathological examination and surgical exploration are done. Indeed ovarian pathology is responsible for 70% of pelvic masses found at exploratory surgery on patients with preoperative diagnosis of pelvic mass.[1] Incidence of invasive epithelial ovarian cancer peaks at 50-60 yrs. of age. In postmenopausal women about 30% of ovarian neoplasms are malignant, whereas in the premenopausal patient only about 7% of ovarian epithelial tumours are frankly malignant.[2] Ovarian tumors are often difficult to detect until they are advanced in stage or size, as symptoms are vague and insidious. Identification of various histological

How to cite this article: Pavankumar Deshmukh, Arvind Valand. Histopathological study of adnexal masses at a teaching hospital. *MedPulse International Journal of Gynaecology.* June 2021; 18(3): 53-57. http://medpulse.in/Gynacology/index.php

patterns of ovarian tumors is important for diagnosis as well as prognosis. A complete evaluation from the history, physical examination, ultrasound and selected laboratory tests will find the most likely cause of an adnexal mass. Transvaginal ultrasonography remains the gold standard for evaluation of adnexal masses. Present study aims to correlate histopathological diagnosis of adnexal masses with clinical/radiological findings.

MATERIAL AND METHODS

The present study was a prospective, hospital based observational study carried in the Department of Obstetrics and Gynecology, XXX medical college and Hospital, XXX. Study duration was of 1 year (from July 2019 to June 2020). Present study was approved by institutional ethical committee.

Inclusion criteria

Patients of adnexal mass underwent operative intervention.

Exclusion criteria

Adnexal mass treated conservatively, mass arising from uterus, adnexal mass of non-gynecological origin.

Written informed consent was taken from patients/guardians. Detailed history (demographic, presenting complaints, menstrual/obstetric/medical/surgical) was noted and general physical, gynecological examination was done. Laboratory investigations such as CBC, blood sugar level, liver and renal function tests were done. In few cases special investigations such as tumour markers like CA 125 were done. All patients underwent X ray chest, ultrasound examination (transabdominal and/or transvaginal) and if required color doppler was done. Various feature of adnexal mass such as size, laterality, locularity, solid elements, hemorrhage, presence of ascites, evidence of metastasis and doppler studies with pulsatility index (PI) and resistance index (RI) were assessed. When malignancy was suspected clinically or in ultrasonography, advanced tests like CECT, MRI were done whenever needed. feasible. All patients underwent laparotomy or laparoscopic surgery. Post-operative specimens were sent for histopathological examination and the reports were correlated with pre-operative clinical and imaging findings. Frequencies and percentages were calculated for categorical data. Validity and predictive values and accuracy for the test were calculated.

RESULTS

In present study, 88 females with adnexal mass who underwent surgery were studied. Most common age group was 20-39 years (61.36%), followed by 40-59 years (20.45 %).

Table 1: Age wise distribution of patients operated for ovarian masses.

Age in years	Number of patients (n=88)	Percentage
<19	9	10.23 %
20-39	54	61.36 %
40-59	18	20.45 %
>60	7	7.95 %

Based on history, examination and radiological findings, clinical diagnosis was made. Benign ovarian tumour (69.32 %) was most common diagnosis followed by malignant ovarian tumour (12.5%), ectopic pregnancy (9.09%), hydrosalpinx (5.68 %) and broad ligament Fibroid (3.41%).

Table 2: Clinical diagnosis of adnexal mass.

Clinical diagnosis	Number	Percentage
Benign ovarian tumour	61	69.32
Malignant ovarian tumour	11	12.5
Ectopic pregnancy	8	9.09
Hydrosalpinx	5	5.68
Broad ligament Fibroid (true)	3	3.41
Total	**88**	

On histological study, 59 ovarian lesions were benign, while 13 were malignant. Serous cyst adenoma (43.18 %) was most common benign lesion, followed by mucinous cyst adenoma (12.5%), mature teratoma (dermoid) (9.09 %), sex cord stromal tumour fibroma (1.14 %) and papillary serous cyst adenoma (1.14 %). Serous cyst adenocarcinoma (9.09 %) was most common malignant tumour, others were papillary serous cyst adenocarcinoma (1.14 %), mucinous cyst adenocarcinoma (1.14 %), endometroid carcinoma (1.14 %), embryonal cell carcinoma (1.14 %) and metastatic carcinoma (1.14 %).

Table 3: Histological findings

Histological findings	Number	Percentage
Benign tumour		
Serous cyst adenoma	38	43.18
Mucinous cyst adenoma	11	12.5
Germ cell tumour - Mature teratoma (dermoid)	8	9.09
Sex cord stromal tumour Fibroma	1	1.14
Papillary serous cyst adenoma	1	1.14
Malignant tumour		
Serous cyst adenocarcinoma	8	9.09
Papillary serous cyst adenocarcinoma	1	1.14
Mucinous cyst adenocarcinoma	1	1.14
Endometroid carcinoma	1	1.14
Embryonal cell carcinoma	1	1.14
Metastatic carcinoma	1	1.14

In present study, clinically we suspected malignancy in 11 patients, after histopathological examination 13 cases of malignancy were diagnosed.

Table 4: Clinical diagnosis versus histopathology in diagnosis of malignant tumour.

Clinical diagnosis	Histopathological diagnosis		Total
	Malignancy present	Malignancy absent	
Malignancy present	11	1	12
Malignancy absent	59	1	60
Total	70	2	72

In present study, values of diagnostic validity of clinical diagnosis were noted as - sensitivity (91.67 %), specificity (98.33 %), positive predictive value (91.67 %), negative predictive value (98.33 %) and accuracy (97.22 %).

Table 5: Diagnostic validity of clinical diagnosis as compared with histopathological diagnosis in patients with adnexal masses

Statistical Parameter	Percentage (%)
Sensitivity	91.67
Specificity	98.33
Positive Predictive Value	91.67
Negative Predictive Value	98.33
Accuracy	97.22

DISCUSSION

Differential diagnosis of adnexal mass is complex and includes functional cysts, benign and malignant ovarian tumors, paraovarian cysts, tuboovarian abscesses, hydrosalpinx, ectopic pregnancies, tubal malignancy, broad ligament fibroid, fimbrial cysts, sigmoid colon or colon distended with gasses or feces, pelvic kidney, and pregnancy in bicornuate uterus. Ectopic pregnancy, acute PID/ TO abscess and the complications of adnexal masses like torsion, hemorrhage, rupture presents with acute abdomen and require quick assessment and diagnosis and urgent management. According to International Ovarian Tumour Analysis (IOTA), an adnexal lesion is defined as 'the part of an ovary or an adnexal mass that is judged from an assessment of ultrasound images to be inconsistent with normal physiologic function'.[4] Ovarian tumours include a complex, wide spectrum of neoplasms involving a variety of histological patterns ranging from epithelial tissues, connective tissues, specialized hormone-secreting germinal and embryonal cells.[5] Girija W,[6] studied 100 consecutive patients with adnexal mass, most common presenting complaint was pain (68%) followed by no complains (15%) and abdominal distention (7%). Other symptoms include lump in abdomen, nausea and vomiting. Most of the adnexal pathologies were unilateral (83%) on presentation with 47% involving left side. Most common pathology identified in the left adnexa was ovarian cyst, followed by ectopic pregnancy. Most common benign pathology diagnosed as per sonography was ovarian cyst (40%). Mukta Agarwal *et al.*,[7] studied 81 cases with the diagnosis of adnexal mass were included in the study. Mean age of presentation was 36.26 years. Most common presentation was pain in abdomen; 70 (86.4%) patients had benign masses, while 11 (13.6%) masses were malignant including two cases of borderline variety. Both patients underwent exploratory laparotomy with peritoneal lavage with total abdominal hysterectomy with bilateral salpingo-oophorectomy with infracolic omentectomy. Das MJ[8]

studied 145 patients of adnexal mass, 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. In study by Rai R *et al.*,[9] adnexal masses of ovarian origin were most common (80.3%), of which 12.7% were malignant. Epithelial ovarian malignancy was the most common malignant ovarian tumor, serous cystadenocarcinoma being the most common. Malignancy was significantly more in older, postmenopausal women with high RMI. 7 out of 11 women with high RMI were diagnosed in Stage 3 or 4. RMI score at cutoff of 200 was 54.6% sensitive and 85.7% specific. They concluded that malignancy was significantly more in older, postmenopausal women with high RMI. RMI showed moderate correlation in diagnosing epithelial ovarian malignancies. In study by Dasgupta S,[10] most patients (54.2%) were between 30 and 50 years of age. 61% ovarian tumors were found to be benign and 39% were malignant. Surface epithelial tumors were the most common type (59.3%), followed by germ cell tumors (18.6%) and sex cord stromal tumors (15.3%). A statistically significant association was noted between parity, menstrual status, laterality, size, gross appearance of tumor, and nature (benign/malignant) of the mass. Sensitivity (57%) and specificity (86%) of the clinical diagnosis were good, but diagnostic accuracy (88%) of sonographic findings was better. While serum CA125 level measurement had a diagnostic accuracy of 78%, the risk of malignancy index (RMI) 2 score, with an accuracy of 86%, has the potential to guide further management in a patient with adnexal mass. Increased incidence of malignancy was noted with postmenopause, nulliparity, bilaterality of tumors, and complex tumor morphology. In present study, 12.5% of women presenting with adnexal mass had an ovarian malignancy. Epithelial ovarian cancers were majority of them, the rest being metastatic from other primaries. Various studied reported the incidence of ovarian malignancy in adnexal masses as 4.9%, 9.5%. and 19.3% by Sharadha S *et al.*[11], Javdekar R,[12] Badkur P[13] from various parts of India. The seemingly high rate of ovarian malignancy Badkur P could have been due to referral bias. Sensitivity of ultrasonography in detection of malignant adnexal mass by Das MJ[8], Radhamani S *et al.*[14] and Sokalska A *et al.*[15], was found to be 86.67%, 87.5% and 93% respectively. There are several causes that have an inconclusive link to the incidence of ovarian cancers such as smoking, alcohol or coffee intake, fertility and infertility drug use, hormone replacement therapy (HRT), talc use, diet, obesity, first-born period, menarche/menopause period, breastfeeding.[16,17] Appropriate preoperative evaluation to discriminate between benign and malignant adnexal masses helps guide gynecologists refer women with suspected malignancies to a gynecologic-oncologist for appropriate therapy and optimal debulking, which is known to improve survival rate.[18]

CONCLUSION

Adnexal masses commonly found in the reproductive age group. Most of ovarian masses were benign while surface epithelial ovarian tumors were most common malignant masses. Ultrasound is the main diagnostic imaging modality prior to treatment. Improved detection and characterization of ovarian tumour contributes to better diagnostic accuracy.

REFERENCES

1. Avhad A, Lakhkar DL, Kachewar SG, Ghule SS, Chaudhari MK, Tamhane TM. Role of ultrasonography and colour Doppler in the evaluation of gynaecological pelvic masses. Scholars Journal Aplied Medical Science. 2016; 4(10B):3654-3664.
2. Berek JS, Natarajan S. Ovarian and fallopian tube cancer. In: Berek JS, editor. Berek and Novak's Gynecology. 14th ed. New Delhi: Wolters Kluwer Health (India) private Limited; 2007. p. 1457–47.
3. Mankar DV, Jain GK. Histopathological profile of ovarian tumours: A twelve year institutional experience. Muller J Med Sci Res 2015;6(2):107–11.
4. Maria Elisabetta Coccia, Francesca Rizzello, Chiara Romanelli, Tommaso Capezzuoli. Adnexal masses: what is the role of ultrasonographic imaging? Arch Gynecol Obstet 2014; 290 (2):843-854.
5. Murthy NS, Shalini S, Suman G, Pruthvish S, Mathew A. Changing trends in incidence of ovarian cancer – The Indian scenario. Asian Pac J Cancer Prev. 2009;10(6)1025-1030.
6. Girija Wagh, Ninad Dilip Kade. Evaluation of Adnexal Mass Diagnosed in Women Presenting in A Tertiary Care OPD. Indian J Obstet Gynecol. 2019;7(4)(Part-II):600–604.
7. Mukta Agarwal *et al.*, Analysis of Patients Presenting with Adnexal Mass in a Tertiary Care Centre Journal of Clinical and Diagnostic Research. 2019 Oct, Vol-13(10): QC04-QC06
8. Das MJ, Phukan P. Adnexal mass: a clinicopathological study at a tertiary care centre in Assam, India. Int J Reprod Contracept Obstet Gynecol 2019;8:1457-62.
9. Rai R, Bhutia PC, Tshomo U. Clinicopathological profile of adnexal masses presenting to a tertiary-care hospital in Bhutan. South Asian J Cancer 2019;8:168-72.
10. Dasgupta S, Mangal S, Naskar K. Evaluation of adnexal masses – Correlation of clinical and radiologic features with histopathologic findings: An observational study in a tertiary care center of Eastern India. Biomed Biotechnol Res J 2021;5:21-6.

11. Sharadha S, Sridevi TA, Renukadevi TK, Gowri R, Binayak D, Indra V. Ovarian masses: Changing clinico histopathological trends. J Obstet Gynaecol India 2015;65:34-8.
12. Javdekar R, Maitra N. Risk of malignancy index (RMI) in evaluation of adnexal mass. J Obstet Gynaecol India 2015;65:117-21.
13. Badkur P, Gupta K. Clinico-pathological correlation of adnexal masses in tertiary care centre. Med Sci 2016;5:526-9.
14. Radhamani S, Akhila MV. Evaluation of adnexal masses-correlation of clinical, sonological and histopathological findings in adnexal masses. Inter J Scientific Study. 2017; 4 (11): 88-92.
15. Sokalska A, Timmerman D, Testa AC, Van Holsbeke C, Lissoni AA, Leone FP, *et al.* Diagnostic accuracy of transvaginal ultrasound examination for assigning a specific diagnosis to adnexal masses. Ultrasound Obstetr Gynecol. 2009;34(4):462-70.
16. Patel A, Patel NV. Study of frequency and histopathological pattern of soft tissue tumours in tertiary care centre of Gandhinagar, Gujarat. Trop J PatholMicrobiol. 2019;5(1)20-25.
17. Pradhan A, Sinha AK, Upreti D. Histopathological patterns of ovarian tumors at BPKIHS. Health Renaissance. 2012;10(2)87-97.
18. American College of Obstetricians and Gynecologists' Committee on Practice Bulletins – Gynecology. Practice bulletin no 174: Evaluation and management of adnexal masses. Obstet Gynecol 2016;128:e210-26.

Source of Support: None Declared
Conflict of Interest: None Declared