A THREE YEAR RETROSPECTIVE STUDY OF OVARIAN NEOPLASMS WITH SPECIAL EMPHASIS ON SURFACE EPITHELIAL TUMOURS

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ABSTRACT

BACKGROUND

Ovarian tumours being second most common gynaecological cancer in India account for 30% of all cancers of female genital tract. Study conducted to determine relative frequencies of various histological types based on WHO classification and their age distribution with particular emphasis on surface epithelial tumours. This study is undertaken to find out the frequency of incidence of different histopathological subtypes with particular emphasis on surface epithelial tumours and age distribution of ovarian tumours in our institute located in coastal Andhra Pradesh.

METHODS

This is a retrospective study of 100 cases of ovarian neoplasms collected during a period of 3 years from June 2013 to May 2016 from the Department of Pathology, Katuri Medical College and Hospital, Chinakondrupadu, Guntur, A. P, India. The patients attending our hospital are mostly from rural areas around. Paraffin blocks of all 100 ovarian neoplasms retrieved. Complete clinical and radiological findings analysed from our records.

RESULTS

The tumours are grouped according to the nature of tumour whether benign or borderline or malignant according to cell of origin, histological subtyping, and age group. Surface epithelial tumours are the most common. Benign tumours outnumber the malignant tumours. Benign ovarian tumours showed a peak in 21-40 Yrs. age group and malignant in the age group of 41-60 Yrs. Results of our study compared with other studies.

CONCLUSION

Because of the geographic location, poverty, and illiteracy, patients seek medical advice late. So, awareness among public by health education, passive surveillance, and community screening facility will be helpful in early detection of ovarian neoplasms.

KEYWORDS

Benign, Malignant, Neoplasms, Ovary.

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INTRODUCTION: Ovary is an important organ as it is concerned with the production of progeny. Ovarian tumours exhibit a wide variety of histological features. The histologic classification of ovarian tumours by World Health Organisation (WHO) is based on histogenic principles and the classification categorizes ovarian tumours with regard to their derivation from coelomic surface epithelial cells, germ cells, and mesenchyme (Stroma and Parenchyma). Surface epithelial tumours further grouped into serous, mucinous, endometrioid, clear cell, transitional cell tumours, carcinosarcoma, and metastatic tumours. Certain non-neoplastic lesions of ovary frequently present as a pelvic mass and potentially mimic an ovarian neoplasm. Their proper recognition and classification is therefore important to allow appropriate therapy.[1]

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Ovarian cancer is the seventh leading cause of cancer death among women worldwide and in India it constitutes 8.7% of cancers.[2,3] Only 9% of ovarian epithelial tumours are malignant in premenopausal age and about 30% of tumours are malignant in postmenopausal age.[4] Prognosis is better in less than 45 Yrs. of age.[5]

AIMS AND OBJECTIVES: To study the frequency of incidence of different histopathological types of ovarian neoplasms with particular emphasis on surface epithelial tumours and age distribution of ovarian tumours in our institute retrospectively for a period of three years from June 2013 to May 2016.

MATERIAL AND METHODS: This retrospective study consists of 100 cases of histopathologically-proven ovarian tumours reported by the Department of Pathology in our institution over a three year period from June 2013 to May 2016.

Paraffin blocks of all the ovarian tumours retrieved, thin sections prepared, stained with haematoxylin and eosin and studied microscopically subsequently.

Complete clinical details including age, provisional diagnosis, and radiological findings were analysed from our archived hospital records. Macroscopic details of specimens including size, external surface, consistency, and cut-section appearance were also collected from our records. Few recent surgical biopsy specimens were retrieved and studied. Microscopic examination done and the results matched with diagnosis in our records.

Inclusion Criteria: Ovarian neoplasms, which have retained paraffin blocks in our lab, clinical, and radiological details available in our records were included in study.

Exclusion Criteria: Non-neoplastic lesions of ovary were excluded.

RESULTS: The commonest presenting symptom was mass per abdomen followed by pain abdomen, loss of appetite and weight, and menstrual irregularities. Vague abdominal and constitutional symptoms were more in malignant cases. Thyrotoxicosis, hoarseness of voice, virilisation, menstrual abnormalities including postmenopausal bleeding were more in hormone secreting sex cord stromal and germ cell tumours. Pleural effusion was seen with fibroma. (Table-1).

The most consistent prevention factor for ovarian neoplasm is child bearing and use of oral contraceptives.[6] Incidence of malignancy is inversely proportional to parity. In our study, it was observed that malignant tumours were common in nulliparous women with 33.33% (Table-2).

Out of 100 ovarian neoplasms studied, surface epithelial tumours were most common (74%) followed by 18% of germ cell tumours and 6% of sex cord stromal tumours (Table-3) and compared with other studies (Table-4).

Of total 74 surface epithelial tumours, serous tumours are more common constituting 40% of total ovarian neoplasms (Table-5) followed by mucinous tumours (28%) and compared with other studies (Table-7). Serous cystadenoma (Figuer-1) dominated other types of epithelial tumours followed by mucinous cystadenoma (Figure-2). Serous cystadenocarcinoma (9%) - (Figure-3) outnumbered mucinous cystadenocarcinoma (4%) - (Figure-4, 5) followed by endometrioid carcinoma (4%) - (Figure-6) and clear cell carcinoma (1%) (Table-8). Mucinous cystadenocarcinoma was 6.1% according to studies of I.V. Sharma,[7] but less than 4% in other studies.[1,3,8]

Among germ cell tumours, benign mature cystic teratoma constituted the most. Among sex cord stromal tumours, granulosa tumours (Figure-7, 8) constituted the most (Table-6).

Among all ovarian tumours, benign tumours were more (59%) than borderline (7%) and malignant (34%) tumours comparable with other studies. (Table-9).

Ovarian tumours can occur at any age including infancy and childhood. In our study, the youngest patient was of 11 year and oldest of 60 years, which was in concordance with Couto F et al.[9] Most of the benign tumours were observed in the age group of 21-40 Yrs. while most of the malignant tumours were common in >40 Yrs. of age (Table-10). Our results were compared with other studies. (Table-11).

Signs and Symptoms	Our Study	Bhuvanesh et al[10]	Kuladeepa A[8]
Pain abdomen	55%	50%	65%
Mass per abdomen	60%	61%	72%
Menstrual irregularities	5%	-	-
Pain abd. With mass per abdomen	25%	-	-
Loss of weight and appetite	5%	9%	8%

Table 1: Clinical Presentation of Ovarian Tumours

Marital Status and Parity	Type of tumour		Total
	Benign	Malignant	
Unmarried	7	2	9
Nulliparous	18	12	30
Parity 1	14	9	21
Parity 2	13	7	21
Parity 3	12	6	19
Total	**64**	**36**	**100**

Table 2: Incidence of Marital Status and Parity Distribution

Origin	Percentage	Age group
Surface epithelial tumours	74%	21-60 Yrs.
Germ cell tumours	18%	11-40 Yrs.
Sex cord stromal tumours	6%	21-60 Yrs.
Metastatic and others	2%	41-60 Yrs.
Total	**100**	

Table 3: Ovarian Neoplasms - Frequency and Age Distribution

Ovarian tumour	Our study	Pilli et al[11]	Gupta et al[1]	Couto F et al[9]	R. Jha et al[12]
Surface epithelial tumour	74%	70.9%	48.8%	68.81%	52.2%
Germ cell tumour	18%	21.2%	23.9%	20.39%	42.2%
Sex cord stromal tumour	6%	6.75%	8.3%	-	3.1%
Metastatic tumours	2%	0.7%	2%	1.46%	2.4%

Table 4: Comparative Incidence of all Ovarian Neoplasms

Histopathological type		No. of cases	Peak Age group
Serous - 40 cases	Benign	27	21-40 Yrs.
	Borderline	4	21-40 Yrs.
	Malignant	9	41-60 Yrs.
Mucinous - 28 cases	Benign	20	21-40 Yrs.
	Borderline	3	21-40 Yrs.
	Malignant	5	41-60 Yrs.
Endometrioid Carcinoma - 4 cases		4	21-40 Yrs.
Clear cell carcinoma 1 case		1	41-60 Yrs.
Transitional cell - 1 case	Benign Brenner	1	21-40 Yrs.
Total cases 74		**74**	

Table 5: Frequency and Age Distribution of Histologic Subtypes of Surface Epithelial Tumours

Histological type		No. of cases	Age group
Germ cell tumours 18 cases	Benign mature cystic Teratoma	8	11-40 yrs.
	Immature teratoma	1	>40 Yrs.
	Yok sac tumour	3	21-40 Yrs.
	Yok sac tumour with embryonal carcinoma	2	21-40 Yrs.
	Embryonal carcinoma	2	21-40 Yrs.
	Dysgerminoma	2	21-40 Yrs.
Sex cord stromal tumours 7 cases	Granulosa cell tumour	3	41-60 Yrs.
	Fibroma	3	41-60 Yrs.
	Sertoli-Leydig cell tumour	1	21-40 Yrs.
Others 1 case	Metastatic	1	21-40 Yrs.
Total Cases 26		**26**	

Table 6: Frequency of Germ Cell, Sex Cord Stromal, and Other Neoplasms

Study	Serous	Mucinous
Mondal Santosh Kumar et al[3]	46.7%	16.3
Zaman S et al[13]	43.2%	20%
Pilli GS[11]	49.9%	25.2%
Kuladeepa et al[8]	33.82%	32.5%
Our study	40%	28%

Table 7: Comparative Study; Frequency of Mucinous and Serous Tumours

Histologic subtype	Present study	Mondal Santosh Kumar et al[3]
Serous	9%	11.3%
Mucinous	5%	3.3%
Endometrioid	4%	1.25%
Clear cell	1%	1.5%

Table 8: Comparative Studies: Relative Frequencies of Malignant Histologic Types.

	Present study	Kayastha et al[14]	Sumaira Yasmin et al[15]	Mondal Santosh Kumar et al[3]	Ameena Ashraf et al[4]
Benign	59%	90.5%	89.71%	63.1%	64.5%
Borderline	7%	-	-	7.3%	-
Malignant	34%	9.5%	10.29%	29.6%	35.43%

Table 9: Comparative Study: Relative Frequency of Ovarian Neoplasms

Age	Benign	Borderline	Malignant	Total Cases
0-20 Yrs.	2%	0	0	2
21-40 Yrs.	54%	7%	15%	76
41-60 Yrs.	3	0	19%	22
Total	59	7	34	100

Table 10: Peak Age Incidence for Ovarian Neoplasms

Type	Our study	Mondal Santhosh Kumar et al[3]	Kayastha et al[14]
Benign	21-40 Yrs.	21-40 Yrs.	All ages
Borderline	21-40 Yrs.	21-40 Yrs.	All ages
Malignant	41-60 Yrs.	41-60 Yrs.	>40 Yrs.

Table 11: Comparative Study; Peak Age Incidence for Ovarian Tumours

DISCUSSION: In our study, most of the lesions presented with mass per abdomen (60%) and a few were found incidentally on ultrasonography (5%) comparable to other studies (Table-1). Of total neoplasms, benign tumours constituted the most (59%) comparable with some studies[3,4] and being far less than some other studies (15,16) (Table-9). Both benign and malignant tumours were inversely proportional to parity (Table-11).

Majority of ovarian neoplasms belonged to surface epithelial stromal category (74%) followed by germ cell category (18%) and compared with other studies (Table-4). Among surface epithelial tumours, serous cystadenoma were more common followed by mucinous cystadenoma. Serous cystadenocarcinoma cases (9%) outnumbered mucinous cystadenocarcinoma (5%) and endometrioid carcinoma seen in (3%). Similar results were shown in studies by Mandal et al and Ameena Ashroff et al.[3,4]

We categorised surface epithelial tumours into subtypes based on microscopic examination and correlating with gross clinical and radiological findings.

In case of serous cystadenoma, lining of cysts was single layer of cuboidal epithelium whereas papillae of serous cystadenocarcinoma showed stratification of epithelial lining with nuclear atypia, mitotic activity, and stromal invasion.

In case of mucinous cystadenoma, cyst lining was single layer of tall, columnar, clear, mucin-containing epithelium and uniform basally arranged nuclei whereas papillae of mucinous cystadenocarcinoma were lined by stratified mucinous epithelium with stromal invasion.

The endometrioid carcinomas we diagnosed were well differentiated (Grade 1). Predominant histological picture in clear cell carcinoma was that of tubules and glandular structures lined by hobnail cells. Benign Brenner tumour showed solid and partly cystic epithelial nests in dense fibrous stroma. Epithelial cells showed coffee-bean appearance.

Serous carcinoma was found predominantly as stage III or IV. In contrast, clear cell and endometrioid carcinoma found to remain confined to ovary. Clear cell and endometrioid carcinoma maybe of unique histological types compared to serous carcinoma with respect to stage distribution.

In our study, benign serous tumours found to affect women in a wide age range with peak incidence in the 21-40 Yrs. age group. In literature,[5] benign serous tumours were reported to occur at any age with a peak in 5th decade. All mucinous tumours showed an increasing age at incidence for benign, borderline, and malignant types, which is consistent with literature[9]. Endometrioid carcinomas were common in age group between 40-60 years in our study. Mean age of incidence was found to be 52 Yrs. as quoted in literature.[10]

Majority of the tumours in our study were unilateral. 10% of serous tumours and 4% of mucinous tumours were bilateral. In our study, only 20% of malignant serous tumours were bilateral, but a higher percentage is quoted in other study.[7,11]

Incidence of germ cell tumours (18%) was correlated with other studies except with the study of R Jha et al (Table-4) who showed 42%. Frequency of sex cord stromal tumours and metastatic tumours comparable with other studies (Table-4).

Ovarian cancers are called as "Silent Killer" as in most of the primary ovarian tumours, they remain asymptomatic until the advanced stage. However, histomorphological study of tumour is still today a gold standard method to provide valuable baseline information regarding frequency and pattern of ovarian tumours in our rural settings.

CONCLUSION: The ovarian neoplasms in our institute represented a wide variety of histological spectrum. Frequency in distribution of neoplasms was similar to the reports in literature. The most common neoplasm in our study was serous cystadenoma. A significant proportion of malignant serous tumours were bilateral in our study.

To conclude, number of various clinical parameters such as age of the patient, presenting complaints, location of the lump, dimensions of the lump on one hand, and histologic type of ovarian neoplasms on the other hand are all interrelated. All these clinical and histopathological parameters can help to early diagnosis and to plan the line of treatment and also have prognostic significance.

Because of the geographic location, poverty, and illiteracy, patients seek medical advice late in rural areas. So, awareness among public by health educations, passive surveillance, and community-screening facility will be helpful in early detection of ovarian neoplasms.

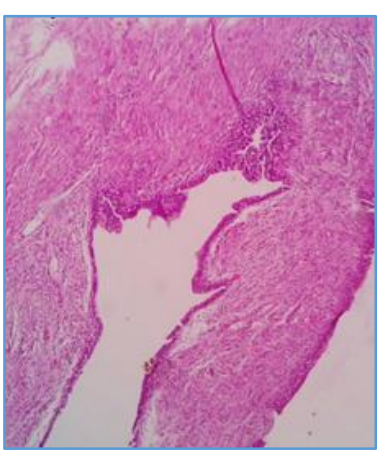

Fig. 1: Serous cystadenoma 40x.jpg (158 KB)

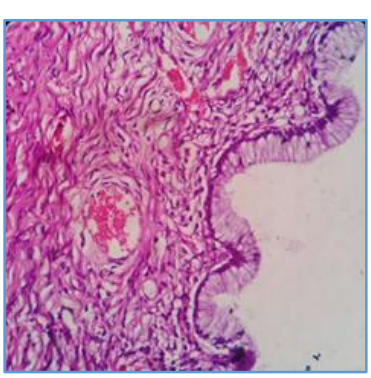

Fig. 2: Mucinous Cystadenoma 40x.jpg (165 KB)

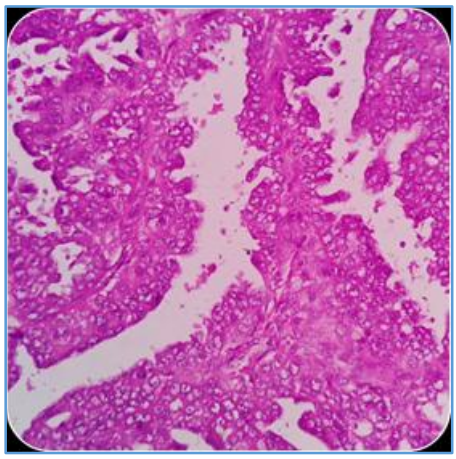

Fig. 3: Serous Cystadenocarcinoma 10x.jpg (148 KB)

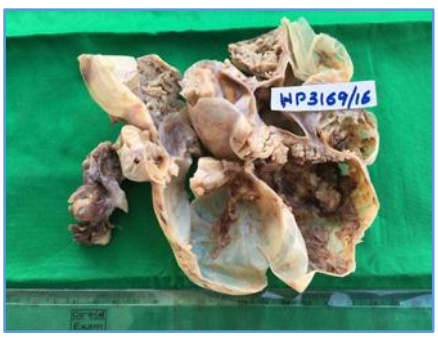

Fig. 4: Mucinous Cystadenocarcinoma-Gross.jpg (245MB)

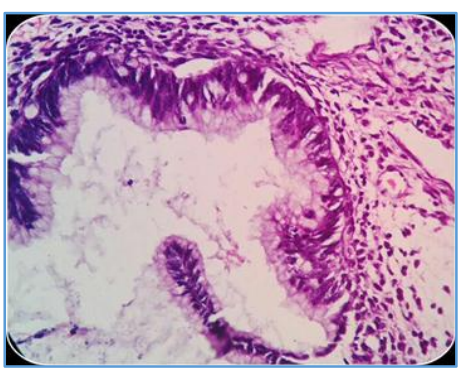

Fig. 5: Mucinous Cystadenocarcinoma 40x.jpg (114 KB)

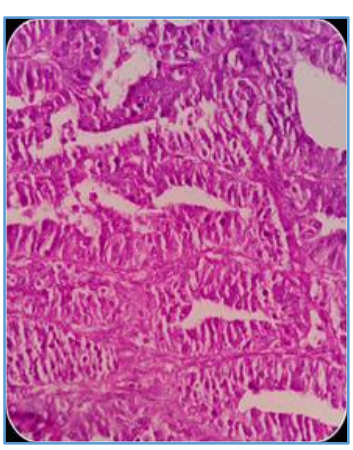

Fig. 6: Endometrioid Carcinoma 10x.jpg (159 KB)

Fig. 7: Granulosa Cell Tumour-Gross.jpg (192 KB)

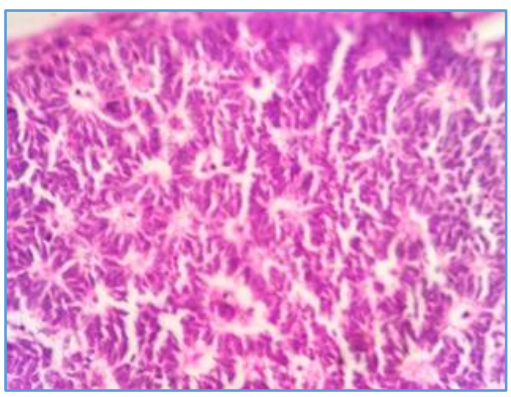

Fig. 8: Granulosa Cell Tumour 40x. jpg (540 KB)

REFERENCES

1. Gupta N, Bisht D, Agarwal AK, et al. Retrospective and prospective study of ovarian tumours and tumour-like lesions. Indian J Pathol Microbiol 2007;50(3):525-527.
2. Basu P, De P, Mandal S, et al. Study of patterns of care of ovarian cancer patients in a specialised cancer institute in Kolkata, eastern India. Indian J Cancer 2009;46(1):28-33.
3. Mondal Santosh Kumar, Banyopadhyay R, Mondal PK, et al. Histologic pattern, bilaterality, and clinical evaluation of 957 ovarian neoplasms: a 10-year study in a tertiary care hospital of eastern India. J Can Res Ther 2011;7(4):433-437.
4. Ashraf A, Shaikh AS, Akram AIA, et al. The relative frequency and histopathological pattern of ovarian masses. Biomedica 2012;28:98-102.
5. Scully RE. Ovarian tumours. A review. Am J Pathol 1977;87(3):686-720.
6. Modugno F. Ovarian cancer and polymorphisms in the androgen and progesterone receptor genes: a huge review. Am J Epidemol 2004;159(4):319-335.
7. Sharma I, Sarma U, Dutta UC. Pathology of ovarian tumour-a hospital-based study. International Journal of Medical Science and Clinical Invention 2014;1(6):284-286.

8. Kuladeepa AVK, Muddegowda PH, Lingegowda JB, et al. Histomorphological study of 134 primary ovarian tumours. Adv Lab Med Int 2011;1(4):69-82.
9. Couto F, Nadkarni NS, Rebello MJ. Ovarian tumours in Goa: a clinicopathological study. J Obstet Gynaecol India 1993;43(2):408-411
10. Bhuvanesh U, Logambal A. Study of ovarian tumours. J Obst Gynaecol India 1978;28:271-277.
11. Pilli GS, Suneeta KP, Dhaded AV, et al. Ovarian tumours: a study of 282 cases. J Indian Med Assoc 2002;100(7):420-447.
12. Jha R, Karki S. Histological pattern of ovarian tumours and their age distribution. Nepal Med Coll J 2008;10(2):81-85.
13. Zaman S, Majid S, Hussain M, et al. A retrospective study of ovarian tumours and tumour-like lesions. J Ayub Medical Coll Abbottabad 2010;22(1):104-108.
14. Kayastha S. Study of ovarian tumours in Nepal Medical College Teaching Hospital. Nepal Med Coll J 2009;11(3):200-202.
15. Yasmin S, Yasmin A, Asif M. Clinico-histologic pattern of ovarian tumours in Peshawar region. J Ayub Med Coll Abbottabad 2008;20(4):11-13.