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A Retrospective Analysis Of Ovarian Tumours In A Peripheral Tertiary Hospital In West Bengal

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Abstract:
Introduction: *Ovarian Tumours account for fifth most common cause of cancer related deaths in women worldwide. It accounts for 6% of all cancers among women. Though ovarian tumour is one of the treatable cancers due to its sensitivity to different modalities of anticancer therapy, it is frequently asymptomatic until it reaches an advanced stage.*
Objectives: *To study the incidence, histopathological spectrum and clinical correlates of ovarian tumours at a tertiary care teaching hospital.*
Methods: *A study was undertaken during a period of one year (1st October 2017 – 30th September 2018). The tumours were classified according to WHO classification after thorough examination of haematoxylin and eosin (H&E) slides. Data on clinical presentation were recorded in each case.*
Results: *There were a total of 107cases. Surface Epithelial Tumours (SET) emerged as the commonest variety accounting for 57.01%, followed by Germ Cell Tumours (GCT) (23.36%). Sex Cord Stromal Tumours (SCST)(0.93%) and metastatic tumours accounted for 1.87%. The age range was 8-70 years. Metastatic tumours involved younger age groups. Abdominal mass was the commonest clinical presentation followed by pain abdomen.*
Conclusion: *Ovarian tumour were found to occur in wide range of ages (8-70 years) with abdominal mass and pain abdomen being the commonest clinical presentation. SET and GCT together constitute the majority of the cases (80.37%). An accurate histological diagnosis and staging are the factors therapeutically and prognostically important.*
Keywords: *Surface epithelial tumours, Germ cell tumours, Sex-cord stromal tumours, Borderline tumour, functional cysts.*

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I. Introduction, Review Of Literature, Aims & Objectives :

Ovarian tumours include wide spectrum of neoplasms involving epithelial tissue, connective tissue, specialized hormone secreting cells, germinal and embroyonal cells **(1)**.These are treatable tumours because of sensitivity to anticancer therapies **(2)**. It accounts for 6% of total cancers among women and is the 5th most common form of cancer related deaths among women worldwide and almost half of the deaths due to gynaecological cancers. The disease has highest fatality-to-case ratio among all the gynaecologic cancers **(2)**. The risk of developing ovarian cancer is highest around the age of 55 years. The benign tumours mostly occur in young women between ages of 20 and 45 whereas the malignant tumours are common in older women between ages of 40 and 65. The incidence is high in postmenopausal women, unmarried women or in married women with low parity **(3)**. It is estimated that about 1 in every 70 women have a life time risk of developing ovarian cancer. Unfortunately, the survival rate is < 50% because of a lack of sensitive & specific screening test and asymptomatic presentation of the cases till an advanced stage **(4)**. It is important to determine the histopathological pattern of ovarian tumours from a diagnostic as well as prognostic point of view. The aim of this study was to study the incidence, histopathological spectrum and clinical correlates of ovarian tumours.

II. Materials And Methods :

This is a retrospective study done in the Department of Obstetrics & Gynaecology of Bankura Sammilani Medical College , Bankura , West Bengal, India from 1st October 2017 to 30th September 2018. All the cases of ovarian tumours operated during that period were included in this study. Data including age, clinical

presentation, related history, involvement (unilateral or bilateral) were obtained and recorded. Gross findings of all cases were also noted from the operative note and biopsy report. Histopathology reports of all the cases were recorded from the data base. Hematoxylin and Eosin (H & E) stained slides of each case were studied. The tumours were classified according to the World Health Organization classification of ovarian tumours **(5).**

III. Results & Analysis :

A total of 107 ovarian tumours were operated in the study period. Amongst them, 83 (77.57%) were benign, 1 (0.93%) was borderline while 23 (21.50%) were malignant **(Table 1) & (Figure 1).**

Surface epithelial tumour was the most common class of tumour and seen in 61 (57.01%) cases, followed by germ cell tumours seen in 25 (23.36%) cases **(Table 2) & (Figure 2).**

Of the 83 benign tumours, 42(50.60%) were surface epithelial tumours while 22 (26.51%) were germ cell tumours. Out of the 23 malignant tumours, 18 (78.26%) were surface epithelial tumours while 3 (13.04%) were of germ cell origin **(Table 1).**

Out of the 61 surface epithelial tumours, 42 (68.85%) were benign, 1 (1.64%) was borderline whereas 18 (29.51%) were malignant. Most of these tumours were of serous and mucinous in origin and were seen in 43 (70.49%) and 15 (24.59%) cases, respectively **(Table 1).**

Out of the 25 germ cell tumours, 22 (88%) were benign, most being mature cystic teratoma (95.45%). Dysgerminoma and yolk sac tumour were the common germ cell malignancy.

Fibroma was the only sex -cord stromal tumour in our study which was benign.

Overall, serous cyst adenoma was the most common benign type and was seen in 33/83 (39.76%) cases.

Only one case of borderline tumour was found in our study which was mucinous in type.

Serous carcinoma was the most common malignancy and seen in 10/23 (43.48%) patients **(Table 1).**

Metastatic tumour constituted 2 cases (1.87%), all of them were Krukenberg tumours.

Out of the 107 cases of ovarian tumours, 18 (20.56%) cases were functional cysts (haemorrhagic corpus luteal cyst, follicular cyst, endometriotic cysts).

The age distribution of the cases ranged from 8-70 years with a median age of 35.39 year. The youngest patient (8 years old girl) presented with benign cystic teratoma and the oldest patient (70 years old woman) with benign serous cyst adenoma. Approximately, 59 (55.14%) tumours were seen in the 20-40 year age group **(Table 3)** & **(Figure 3)**. Benign tumours were more common than malignancies in all age groups. Most benign tumours 50/83 (60.24%) were diagnosed in the 3rd and 4th decades of life, whereas most malignant tumours 21/23(91.30%) were seen in 3rd decade onwards, with the exception of malignant germ cell tumours which were mostly seen below the age of 20. The only borderline tumour was seen at the age of 14 **(Table 3)**.

Commonest clinical presentation was distension of abdomen and lower abdominal mass followed by pain abdomen. Irregular bleeding per vagina was seen in 12 cases. Ascites and urinary symptoms were seen in 3 malignant cases. Loss of weight was a common presentation of malignant tumours comprising of 8 cases. Symptoms related to torsion were seen in 17 cases and one incidental finding of ovarian tumour in patient who presented with subacute intestinal obstruction & surgical help was called for during laparotomy. Pregnancy was associated with 4 cases among which 2 were of serous cyst adenoma and 2 of mature cystic teratoma.

Table 1: Histological pattern of ovarian tumors

Diagnosis	Benign	Borderline	Malignant	Total
Surface epithelial tumour (SET)	**42**	**1**	**18**	**61**
Serous tumour	33	-	10	43
Mucinous tumour	9	1	5	15
Clear cell carcinoma	-	-	1	1
Endometrioid tumour	-	-	1	1
Malignant Brenner tumour	-	-	1	1
Germ Cell Tumour (GCT)	**22**	**-**	**3**	**25**
Mature cystic teratoma/ Dermoid cyst	21	-	-	21
mixed germ cell tumour (Dysgerminoma + Yolk sac)	-	-	1	1
mixed germ cell tumour (Dermoid + Mucinous cystadenoma)	1	-	-	1
Dysgerminoma			1	1
Yolk sac tumour			1	1
Sex Cord-Stromal Tumour (SCST)	**1**	**-**	**-**	**1**
Fibroma	1	-	-	1
Secondary (metastatic) tumour	**-**	**-**	**2**	**2**
Krukenberg tumour	-	-	2	2
Function cysts	**18**	**-**	**-**	**18**
Follicular cyst	4	-	-	4
Corpus luteal cyst	8	-	-	8
Chocolate cyst	6	-	-	6
Grand Total	**83**	**1**	**23**	**107**

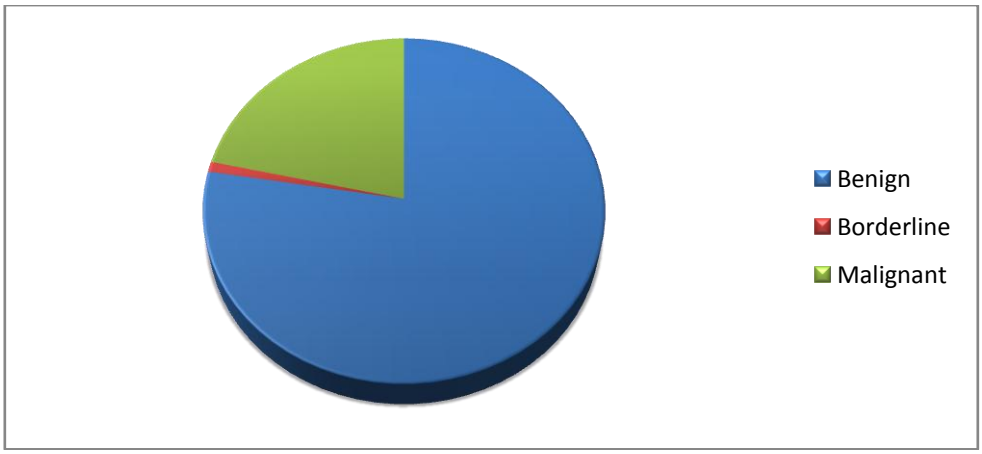

Figure 1 : showing frequency of different categories of ovarian tumours

Table 2 : Frequency of different classes of ovarian tumours

Classes of tumour	No. of cases	(%)
Surface epithelial tumour (SET)	61	57.01
Germ cell tumour (GCT)	25	23.36
Sex cord-stromal tumour (SCST)	1	0.93
Secondary (metastatic) tumour	2	1.87
Functional cysts	18	16.82
Total	107	100

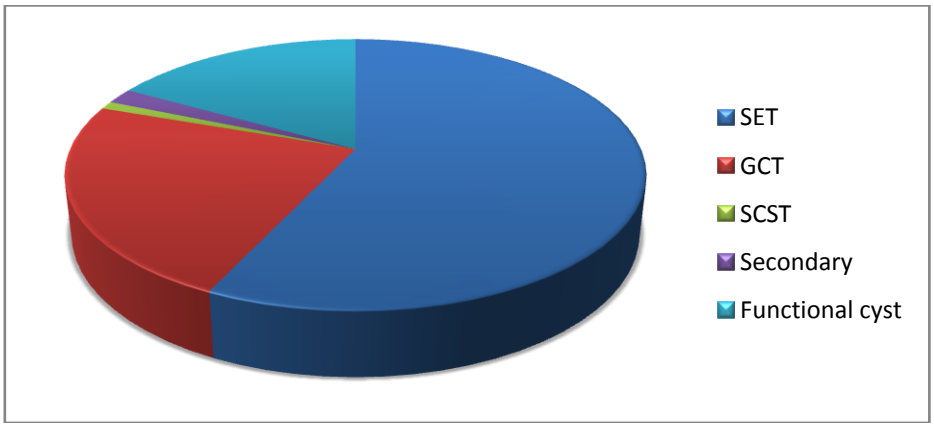

Figure 2 : showing frequency of different classes of ovarian tumours

Table 3: Frequency of different classes of ovarian tumours in different age group

Classes of tumour	Total	Types	< 20	20-29	30-39	40-49	50-59	≥60	Total
Surface epithelial (n=61)	61	Benign	1	13	9	10	6	3	42
		Borderline	1	-	-	-	-	-	1
		Malignant	-	2	5	4	4	3	18
Germ cell(n=25)	25	Benign	8	10	3	1	-	-	22
		Malignant	2	1	-	-	-	-	3
Sex-cord stromal (n=1)	1	Benign	-	-	-	1	-	-	1
Secondary (n=2)	2	Malignant	-	-	1	-	-	1	2
Functional cyst (n=18)	18	Benign	2	6	9	1	-	-	18
Total(n=107)	107		14	32	27	17	10	7	107

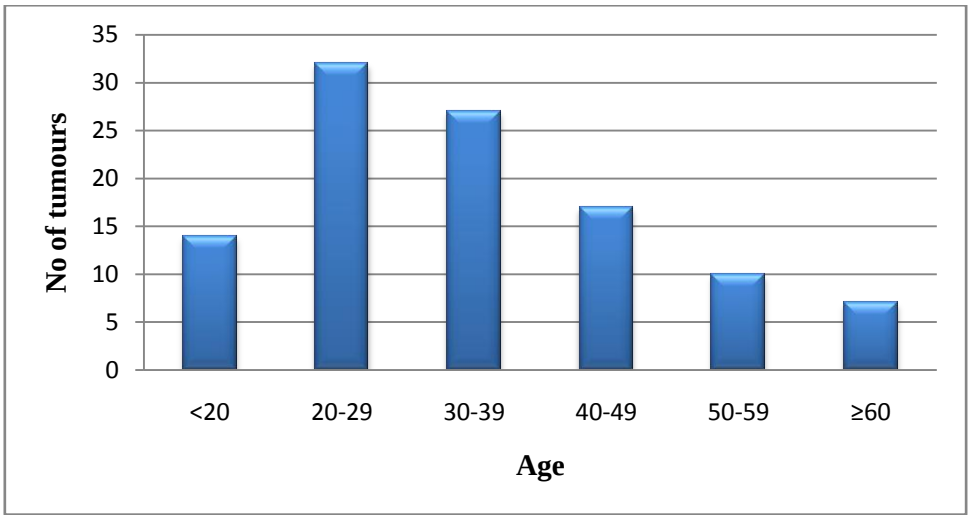

Figure 3: showing frequency of ovarian tumours in different age group

Gross examination of the specimens revealed that majority of the tumours were cystic (44.5%) followed by solid (13.2%) and mixed (42%). In the benign group majority of the cases (42.1%) were cystic, 4.8% solid and 32.5% were mixed . The borderline tumour was cystic grossly. In malignant group both solid and mixed tumours were almost equal .Unilateral tumours were observed in 84 (78.5%) cases. Involvement of left ovary (65%) was more common than the right (35%). Bilaterality was seen in 23 cases (21.50%).

IV. Discussion

Ovarian tumours has become increasingly important because of its large variety of histomorphological patterns and a high mortality rate **(1).** The incidence, clinical appearance and the behaviour is extremely variable. It is impossible to diagnose the nature of the ovarian tumour preoperatively just by clinical examination, ultrasound & even by FNAC and hence an early exploration followed by staging & optimal debulking & biopsy of the excised tissue is the gold standard of management **(6)**.

A total of 107 cases were documented, out of which 77.57% were benign tumours, 0.93% was borderline and 21.50% were malignant tumours. Similar results were seen in studies by Pilli et al and Nowak et al where incidence of benign , borderline and malignant ovarian tumour comprised of 75.2% , 2.8% , 21.9% and 79.5% , 2.1% , 18.4% respectively **(7,8)**.

Epithelial tumours were predominant (50.60%) among the benign group followed by germ cell tumours (26.51%). Serous cyst adenoma were found to be more common than mucinous cyst adenoma in our study. This compares well with studies by Swamy GG and Prabhakar et al **(9,10)**. In our study, mature cystic teratoma (95.45%) was the commonest type of germ cell tumour. In a study by Yasmin et al mature cystic teratomas were the 2nd commonest after serous cystadenoma **(11)**.

The commonest malignant tumour in this series were of surface epithelial tumour (78.26%). This finding is similar to findings of Shy et al and Di et al **(12,13)**. In this study Serous Cystadenocarcinoma constituted the most common malignant variety (43.48%) as shown by various other studies **(14,15,16)**.

In agreement with other studies, most ovarian tumours were seen in the reproductive age group, between 20-40 years **(17,18).** Benign tumours were found in all age groups. Malignant surface epithelial tumours occurred mostly in the 4th decade onwards. Similar observations were also made in other studies **(19,20).** In patients under the age of 30 years, approximately 21/46(45.65%) of the ovarian tumours are of germ cell origin, and accounting for two third of ovarian cancers (3 out of 5) **(21).**

Unilateral (78.5%) involvement was more common than bilateral (21.5%) coinciding with the findings of other studies **(12,22)** .

Majority were grossly cystic 44.5% followed by solid and mixed tumours. Majority of benign groups were cystic 42.1%. In malignant group solid and mixed tumours were common. This goes in agreement with findings of Fusey et al who reported that most of the cystic swellings were either benign or non neoplastic while almost all solid and mixed tumours were malignant **(23)**. Chhanda et al in a 10 years study of ovarian tumours revealed that in the benign group majority of the cases were cystic (86.7%).While in malignant group majority cases (69.2%) were solid **(24)**.

The most common presentation was abdominal mass with or without distension and pain. This is in agreement with majority of studies **(6**,**23,25,26)**.

V. Conclusion:

Though ovarian cyst and tumour can be diagnosed clinically, origin and nature of the tumours cannot be determined clinically. Histopathological examination of the ovarian tumour is a must to find out the origin and the nature of the tumour. Different types of tumour markers (CA 125, CEA, hCG, AFP, LDH) are available in screening, diagnosis and management of the ovarian tumour. Tumour markers are also used to monitor the response of the therapy and for follow up. Regular and periodic clinical evaluation (by bimanual pelvic examination), radiological evaluation (by transvaginal sonography with colour Doppler study), ultrasonographic scoring i.e "Risk of Malignancy Index" (RMI), "Risk of Ovarian Malignancy Algorithm"(ROMA) test (a qualitative serum test that combines the results of serum HE4 , CA 125 level and menopausal status into a numerical score), measurement of tumour markers and histopathological examination are important in the management of the ovarian tumours. The combined efforts of Gynaecologist , Radiologist , Oncologist and Pathologist will not only hit the right diagnosis but also track the patient to the right path of management. Benign tumours can be safely removed by surgery and malignant tumours are managed according to the type, grading and stage of the tumour.

This study has shown occurrence of younger age groups in the primary malignant ovarian tumours and the metastatic tumours also. Hence this study emphasizes that in young women with ovarian mass, possibility of malignancy and metastatic tumours should not be underestimated. The final message of this study is that every woman with ovarian tumour should be followed up regularly irrespective of their age and symptom.

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