

A prospective report on the histopathological study of ovarian tumors in a tertiary care centre

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Introduction: Ovarian tumors (OTs) are the most notorious gynecological lesions in the reproductive age group. With this, a study was conducted to categorize the ovarian lesions into benign, borderline and malignant lesions and also to study their laterality, gross and microscopic patterns. **Settings:** The study was conducted in the Department of Pathology, KIMS, Narketpally, Telangana from January 2017 to December 2019, 36 months. Random sampling was considered. Women aged >18yrs, histologically proven OTs, sized > 5 cm diameter, were included. Abdominal hysterectomy specimen were considered. Gross examination was done. The features such as size, the color of the specimen were noted. The stained sections were examined under a light microscope for histopathological diagnosis. **Results:** Out of 94 participants, 79 were benign tumors (Bet), 5 were borderline tumour (BoT), and 10 were malignant tumor (MIT). Among the BeT, maximum were diagnosed in 21 – 40 years group, 21 – 40 years group in BoT and 41 – 60 years for MIT. In this research, 91% were unilateral, and Seromucinouscystadenoma was the common bilateral tumor. Among the different histological patterns, surface epithelial tumours constituted the majority. **Conclusion:** Maximum number of tumour cases were benign, reported in the reproductive age group, whereas the malignant neoplasms in > 40 yrs. The present study emphasizes the need for proper histopathological evaluation and screening at all ages due to the relative predominance of OTs to rule out malignancies.

Keywords: Ovarian tumors, Histopathology study

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Introduction

Worldwide, the mortality rate for ovarian tumors (OT) is around 4/100,000 and the seventh leading cause of death.[1] Indian reports suggest a rise in OT and the incidence rate ranging between 0.2% to 2.5%.[2] Mass in the ovary is a common complaint in the gynecology outpatient. Nulliparous nature and family history are the two risk factors being recognized to get these OT.[3]

These are notorious, exhibit mild symptoms, asymptomatic and challenging to diagnose until cause pressure such as ascites, abdominal distension due to increase in size. [2].

There is a wide range of histological differentiation, and numerous types were reported in both benign and malignancy. The majority (80%) are benign, and 20 to 45 years is the common age group affected. At the same time, malignant cases are common in older women with poor prognoses [4]. Complete evaluation before surgery form the basis for treatment and follows up.[5] The newer diagnostic tests such as ultrasonography, tumor markers are helpful for early diagnosis as well as for proper clinical evaluation. [6]

But the histological can give us a definitive diagnosis, typing and grading, which can guide the clinician for prognosis and treatment. [5]. A study was conducted to find the overall incidence, pattern and various histopathological types of ovarian neoplasms.

Materials and Methods

Settings: The study was conducted in the Department of Pathology, KIMS, Narketpally, Telangana.

Duration and type of study: Thus was a prospective study conducted from January 2017 to December 2019, 36 months.

Sampling method: Random sampling was considered.

Sample size calculation: All the eligible members who satisfy the inclusion criteria were considered in this study.

Inclusion criteria: Women aged ≥ 18 yrs, those histologically proven OTs, sized ≥ 5 cm diameter were included.

Exclusion criteria: Women with follicular cysts, haemorrhagic inclusion cysts, endometriosis, those who were non-cooperative and didn't submit the consent were not considered.

Data collection, procedure: Specimen received as a solitary specimen, or part of total abdominal hysterectomy specimen were considered. On the receipt of the clinical specimen, the gross examination was done. The features such as size, the color of the specimen were noted. As a part of the study, the external surface features and contents were reported and recorded in the proforma.

After 24 to 48 hrs of fixation, multiple bits were taken from the representative areas, which may be prone to be OT. Tissue was processed, and paraffin blocks were made. The tissue sections of 5 microns were cut and stained using Hematoxylin and Eosin. Sections were cleared by xylene and mounted on a glass slide. Each biopsy was labelled explicitly according to the orientation of the biopsy site and sent for histopathological examination. The stained sections were examined under light microscope for histopathological diagnosis.

Special stains such as periodic acid Schiff and reticulin stains were done whenever necessary. CA 125 levels were measured for clinically and radiologically suspected to have OTs. In the case of Granulosa cell tumour, IHC -Inhibin was done.

Ethical consideration and permission: The institutional ethics committee approved the study protocol. Informed written consent was taken from all the study participants. If required, consent was also taken in the presence of the witness.

Statistical analysis: SPSS21.0 was used for the analysis of the data. Various non-parametric tests were used. The data were presented in percentages.

Results

SETs constituted the majority, and among the individual tumors, serous cystadenoma was the commonest benign epithelial tumors.

During the study period, a total of 94 participants were included. Among these, 79(84%) were benign tumors (Bet), 5(5.31%) were borderline tumor (BoT) and 10(11%) cases were malignant tumor (MIT) (Table 1).

Table 1: Incidence of various OTs among the study participants.

Type of tumour	Number	%
Benign	79	84
Malignant	10	11
Borderline	5	5.3
Total	94	100

Malignant tumors are the second common, followed by borderline.

The age was ranged between 18 – 75 years. Among the BeT, the maximum was diagnosed in the 21 – 40 years group, followed by 41 – 60 and 61 – 80 years. In BoTs also, 21 – 40 years group is the commonly involved. In the MIT category, maximum cases were detected in the 41 – 60 years group (Table 2).

Table 2: Age-wise distribution of OTs among the study participants; n (%).

Age	BeT	BoT	MIT
<20	2 (2.1)	0	0
21 – 40	49 (52.1)	3 (3.2)	0
41 – 60	25 (26.6)	1 (1)	9 (9.6)
61 – 80	3 (3.2)	1 (1)	1 (1)
Total	79 (84)	5 (5.3)	10 (11)
	94 (100)		

Maximum malignant tumours are detected in the 41 – 60 years group.

In this research, 91% were unilateral, and just 8.5% were bilateral, and all these were BeT; Seromucinouscystadenoma was the common bilateral tumor. In the unilateral tumors, the majority were on the right side, and most of the MIT were on the right side (Table 3).

Table 3: Site of involvement of OTs among the study members; n (%).

Type of tumour	Unilateral		Bilateral
	Right	Left	
Benign	41 (43.6)	30 (32)	8 (8.5)
Borderline	1 (1)	4 (4.3)	0
Malignant	9 (9.6)	1 (1)	0
Total	52 (55.3)	35 (37.2)	8 (8.5)
	94 (100)		

MTs are unilateral, most of these on the right side.

In this research, most (71; 75.5%) of the OTs were grossly cystic cases, followed by mixed tumors (20; 21.27%) and solid tumors (3; 3.2%). In the

Benign group, the majority were cystic (61), followed by mixed (16) and solid (2). All the borderline (5) were cystic, and out of 8 MITs, four mixed, three were cystic, and one was solid (Table 4).

Table 4: Consistency of OTs among the study participants; n (%).

Consistency	Benign	Borderline	Malignant	Total
Cystic	61 (65)	5 (5.4)	3 (3.2)	71 (75.5)
Mixed	16 (17)	0	4 (4.3)	20 (21.3)
Solid	2 (2)	0	1 (1)	3 (3.2)
Total	79 (84)	5 (5.4)	8 (8.5)	94 (100)

Cystic cases are the maximum (71; 75.5%) of the OTs

Among the different histological patterns, surface epithelial tumors (SETs) constituted the majority (89.2%; 83), followed by Germ cell tumors (8; 8.5%) and sex cord-stromal tumors (3; 3.2%) (Table 5). Among the individual tumors, serous cystadenoma (57.45%) were the commonest benign epithelial tumor, followed by mucinous cystadenoma (15.96%) (Table 5).

Table 5: Histopathological spectrum of OTs according to the WHO classification.

Histopathological diagnosis	Nature of tumour	Types	Number	%
Surface epithelial tumours	Serous	Benign	54	57.45
		Borderline	2	2.13
		Malignant	6	6.38
	Mucinous	Benign	15	15.96
		Borderline	3	3.19
		Malignant	1	1.06
	Endometrioid	Malignant	1	1.06
	Clear cell tumor	Malignant	1	1.06
Sex -cord-stromal tumour	Granulose theca cell tumour		1	1.06
		Fibroma thecomas	2	2.13
Germ cell tumor	Mature teratoma		8	8.51
Total			94	100

Discussion

OT is the most lethal of all the gynecologic cancers and gained importance in recent years because of the increasing pelvic examinations,sonological screening and measurement of biomarkers like CA125 in cases with symptoms concerning ovarian lesions. [7].In the present study, 94 ovarian tumors were recorded. Pathological findings of these were

Analyzed and correlated with different studies. Our observation showed that 84 cases were benign, and ten were malignant. This is almost similar to the available reports in the literature that reported more common benign lesions than malignant lesions.[5, 8, 9].

Age was ranged between 18 to 75 years. The maximum number of cases were benign, reported in the reproductive age group, 20 – 40yrs. Similar findings were reported by Deepti et al. [10].BoTs were reported in the 31 – 70yrs age group and MITs in > 40yrs.

A higher median age of 60 – 65yrs for MITs was reported from western countries and India. [11].The indication towards an earlier presentation of the malignant lesion in our study compared to western countries mandates a thorough investigation of any vague abdominal complaint in this age group. The present study emphasizes the need for proper histopathological evaluation of OTs at all ages due to relative predominance at reproductive age to rule out malignancy. Screening should start at an early age to detect ovarian malignancy so that the early stage and lower grade can be diagnosed, which may help for the improved survival of women.

OTs were unilateral in 91.25% of cases and bilateral in 8.5%. Among all, most BeTs and most of the MITs were also unilateral. In this research, right side OTs (52; 55.31%) were common than left-sided. These findings were correlated with Manoja et al. [12], where most of the bilateral tumors (8) were benign. Chandanwale SS et al. Mondal SK et al. reported that most malignant lesions are bilateral.[13, 14].The most common bilateral tumor was Seromucinous cystadenoma, one case of mucinous cystadenoma. It was suggested that bilaterality of a mucinous tumour should always suggest the possibility of a metastatic tumor to the ovaries from the appendix, pancreas, endocervix rather than primary ovarian neoplasms, so thorough investigation of such neoplasms to be done.

The external surface of the benign serous tumors was smooth as the majority of them are unilocular, nodular in mucinous as they are multilocular. The capsule was intact in all BeTs, microscopy of the capsule of all the borderline tumors was reassessed for microscopic invasion. At the same time, the malignant lesions grossly showed a variegated appearance with haemorrhage

And necrosis. This was also observed in the studies done by Modepalli et al. [15].

Most of the OTs (71; 75.5%) were grossly cystic cases, followed by mixed (20; 21.27%) and solid tumors (3: 3.2%). In the benign group, the majority were cystic (61), followed by mixed (16) and solid (2). All the borderline (5) were cystic, and out of 8 MITs, four mixed, three were cystic, and one was solid (Table 4).Saha et al. reported that 70% were SET, 26% were germ cell, and 4% were sex cord-stromal tumors. [5]. Sudha et al. reported that 64% were SET, 26% were germ cell and 8% were sex cord-stromal tumors. [4].

The SETs in the present study comprised 70.25% of all tumors. Among the individual tumors, the epithelial tumors the commonest was serous cystadenoma (68.05%) followed by mucinous cystadenoma (20.21%), one clear cell carcinoma, one endometrioid carcinoma (Table 5). This was in contrast to Deepti et al., where mucinous cystadenoma was reported to be the commonest. [10]. Among primary malignant tumors, Serous cystadenocarcinoma was the commonest in this study, accounting for 6.3%. Whereas Deepti et al. reported this to be 6%. [10]. Germ cell tumors (8.4%) were the second major group of tumors in the present study; these were seen between 20 – 40yrs. In the present study, the incidence of germ cell tumors was relatively less than in other studies. Madhumita et al. reported 17.46 % of germ cell tumors. [16]. Whereas it was said to be 21% by Ranjana et al. [17]. In this, 1.7% were immature teratoma and dysgerminoma each. These findings may contribute significantly to the understanding of the distribution of different ovarian neoplasms among the local population, which may lead to the development of some strategic planning to investigate and treat the underlying causes of concerning neoplasms and may suggest preventive strategies.

Sex cord-stromal tumors constituted 3.19 % in this report. This was similar to the study reported by Buelaprescilla et al., Madhumita et al., 4.6% and 7.93 %, respectively. [16,17]. Similar to this research, Ranjana hawaldar et al. [18]. Also didn't report Sertoli leydig cell tumor. Ancillary techniques like immunohistochemistry are rarely used in the diagnosis of OTs. These can differentiate the primary ovarian mucinous tumors from malignant metastatic colorectal carcinomas. [15].

Conclusion

The maximum number of tumor cases were benign, reported in the reproductive age group, whereas the malignant neoplasms in > 40 yrs. The present study emphasizes the need for proper histopathological evaluation and screening at all ages due to the relative predominance of OTs to rule out malignancies. Surface epithelial tumors and Serouscystadenocarcinoma was the commonest primary malignant tumor.

Limitation: Genetic testing was not done in our study due to financial constraints. This is the major limitation of this research.

What this study adds to the existing knowledge?

The incidence of malignant tumors is less when compared to the benign and sexually active age is commonly affected.

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