

Diversity of Ovarian Tumors: An Institutional StudyRoopali Jandial¹, Ritu Bhagat^{2*}¹*Demonstrator, Department of Pathology, Government Medical College, Jammu, India*^{2*}*Demonstrator, Department of Pathology, Government Medical College, Jammu, India*

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Abstract

Introduction: Ovarian tumors are classified into three primary classes based on the type of the ovarian tissue where the neoplasm develops: Epithelial tumors 90%, germ cell tumors 3% and sex cord/stromal tumors 6%. About 80% of ovarian tumors are benign and occur in young women between the ages of 20 and 45 whereas 20% are malignant tumors common in older women between ages of 40 and 65 having poor prognosis. **Method and Material:** The present study was a prospective study carried out in the Department of Pathology, Government Medical College, Jammu. The samples included the specimens from the Department of Gynecology at our institute along with specimens from outside. A total 71 ovarian specimens were studied. **Results:** Out of 71 tumors 83.09% were benign tumors, 7.04% were borderline and 9.8% were malignant tumors. The age range of patients was 9 years to 62 years. Majority of patients were between the age range of 31–40 years. Most common ovarian tumors were surface epithelial tumors comprising of 60.5% followed by germ cell tumors 33.8% and sex cord stromal tumor 5.6% (4/43). Based on site, most of the ovarian tumors were right sided comprising of 49.3% (35/71) and 21% were bilateral. On gross examination, majority of ovarian tumors were cystic comprising of 75% cases. **Conclusion:** Histopathology is the best method to differentiate between benign and malignant tumors and it also helps in predicting the prognosis of ovarian tumors.

Keywords: Benign, Histopathology, Ovarian.**Introduction**

Ovarian cancer is the sixth most common cancer (age standardized incidence rate: 6.6/100,000) and the seventh leading cause of cancer deaths (age standardized mortality rate: 4.0/100,000) among women worldwide.[1,2] Main etiology behind ovarian tumors is risk factors that are increasing age, positive family history, age of reproduction, high socioeconomic classes, and nulliparity.[3] The most common presentation is abdominal pain, a lump, or menstrual irregularities.[4]

Ovarian tumors are classified into three primary classes based on the type of the ovarian tissue where the neoplasm develops: Epithelial tumors 90%, germ cell tumors 3% and sex cord/stromal tumors 6%. [5,6] About 80% of ovarian tumors are benign and occur in young women between the ages of 20 and 45 years whereas 20% are malignant tumors common in older women between ages of 40 and 65 having poor prognosis. [7,8] Identification of various histological patterns of ovarian tumors is important for diagnosis, treatment as well as prognosis. [9] The purpose of this study was to assess the incidence, gross, histopathological pattern, and incidence of the age distribution of ovarian tumors in Jammu region.

Method and Material

The present study was a prospective study carried out in the Department of Pathology, Government Medical College, Jammu. The samples included the specimens from the Department of Gynecology at our institute

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along with specimens from outside. A total 71 ovarian specimens were studied, which were received either as solitary specimens, or as a part of total abdominal hysterectomy specimens. Only the specimens of ovarian tumors under WHO classification were considered in this study. The normal ovaries and the ovaries with other findings like follicular cyst, cystic follicles, surface inclusion cysts, hemorrhagic inclusion cysts, ectopic pregnancy and endometriosis were excluded from the study.

Detailed case history was taken with clinical examination data and correlation of histopathological patterns with age, morphology and metastatic spread. The specimens were fixed in 10% buffered formalin for 24–28 hours. The tumors were weighed, measured and grossly examined. After fixation multiple bits were taken from representative areas of the tumor and the

accompanying tissue. Special attention was given to solid areas adjacent to the ovarian surface and papillary projections. They were processed for histopathological examination and paraffin blocks were made. The blocks were cut at 3–5 μ m thickness and stained with hematoxylin and eosin stain. The histopathological diagnosis was based on morphologic features and the tumors were classified according to WHO classification.

Results

A one year prospective study was done in the Department of Pathology on ovarian tumors. A total of 71 ovarian tumors were studied. Out of 71 tumors 83.09% (59/71) were benign tumors, 7.04% (05/71) were borderline and 9.8% (07/71) were malignant tumors. Table 1

Table 1: Type of ovarian tumors

Tumor	No. of cases	Percentage
Benign	59	83.09%
Boderline	05	7.04%
Malignant	07	9.8%

The age range of patients was 9 years to 62 years. Youngest patient was 9 years old which was diagnosed as mature cystic teratoma on histopathology and the oldest patient was 62 years old diagnosed as serous cystadenoma. Majority of patients were between the age range of 31–40 years. Table 2

Table 2: Age distribution of patients

Age group (years)	No. of cases	Percentage
0-10	01	1.4%
11-20	09	12.7%
21-30	18	25.35%
31-40	25	35.2%
41-50	11	15.5%
51-60	04	5.6%
61-70	03	4.2%
Total	71	100

Most common ovarian tumors were surface epithelial tumors comprising of 60.5% (43/71) followed by germ cell tumors 33.8% (24/71) and sex cord stromal tumor 5.6% (4/43). Table 3

Table 3: Histological types of ovarian tumors

Type of tumor	No. of cases	Percentage
Surface epithelial tumor	43	60.5%
Sex cord stromal tumor	04	5.6%
Germ cell tumor	24	33.8%
Total	71	100

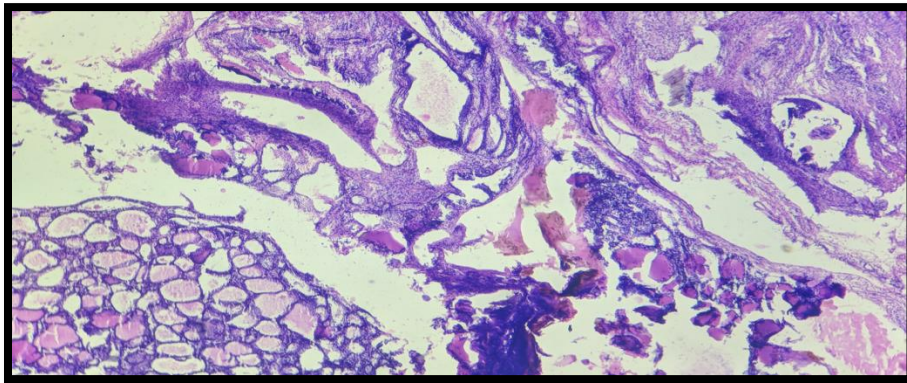
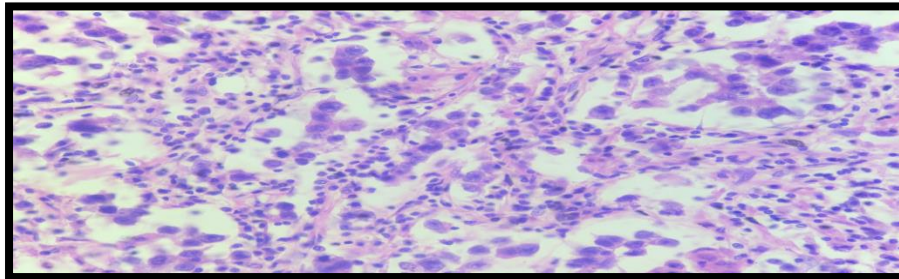
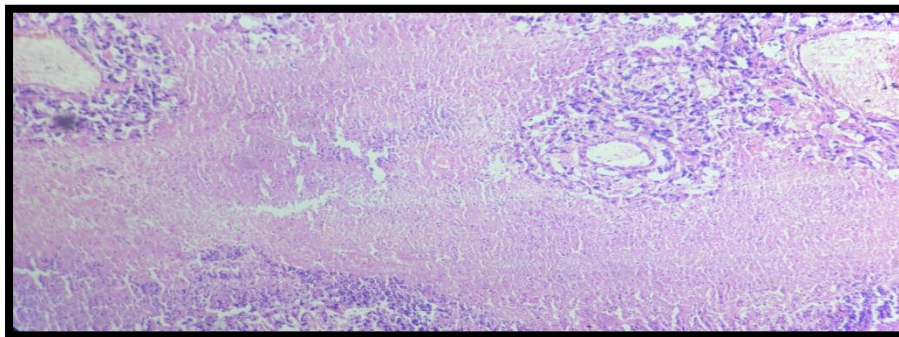
Out of 43 cases of surface epithelial tumors serous tumors comprises of 65% and mucinous tumors 35%. Table 4

Table 4: Types of surface epithelial tumors

Type	No. of cases	Percentage
Serous	28	65%
Mucinous	15	35%
Total	43	100

Out of 24 cases of germ cell tumors majority of them were mature cystic teratoma consisting of 20 cases followed by dysgerminoma, immature teratoma, struma ovarii and mixed germ cell tumor one case each. Sex cord stromal tumor comprised of 04 cases, out of which 02 cases were of thecoma fibroma, 01 case each of granulosa cell tumor and fibroma.

Based on site, most of the ovarian tumors were right sided comprising of 49.3% (35/71), left sided were 29.6% (21/71) and 21% (15/71) were bilateral. On gross examination, majority of ovarian tumors were cystic comprising of 75% cases, 14 % cases were solid and 11 % tumors had both solid and cystic areas.

**Figure 1:** Struma ovarii showing thyroid follicular tissue in ovary (H&E; 10X)**Figure 2:** Mixed germ cell tumor showing pleomorphic tumor cells (H&E; 40X)**Figure 3:** Mixed germ cell tumor showing tumor cells arranged around blood vessels (H&E; 10X)

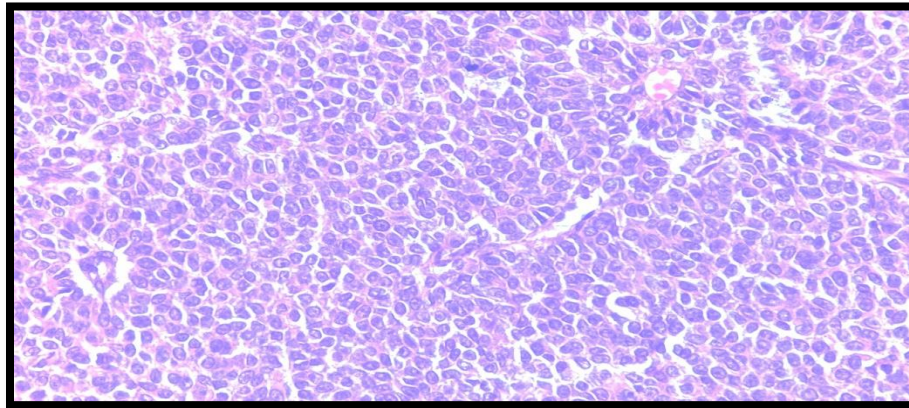


Figure 4: Granulosa cell tumor showing call-exner bodies (H&E; 40X)

Discussion

Ovarian tumours may remain unnoticed for a long period of time because of their anatomical location. These tumours cause abdominal pain and abdominal distension in majority of the cases.[10] Ninety percent of adnexal masses are detected by pelvic ultrasound.[11] This provides the clinician information about the origin of the adnexal mass. Further, details of the tumor like its complexity, its vascularity and consistency are made out on ultrasound imaging. The definitive diagnosis of the tumor however is by histopathological study.[12,13]

Ovarian tumors show histological heterogeneity. The WHO classification of ovarian tumors is based on the tissue of origin - epithelial, germ cell tumors and sex cord stromal tumors.[14]

In our study age range of patients was 9 years to 62 years, with maximum patients in the age group of 31-40 years i.e 35.2%. Similar results were seen in study conducted by Jha and Karki [15]which showed majority of the ovarian tumors in the age group of 31-40 years age group, 43 (26.7%) cases.

Ovarian tumors were unilateral in 78.9 % cases with right sided predominance 49.3%, bilateral tumors were seen in 21% cases in the present study. Panchal and Parikh[16] study also showed unilateral tumors in 65 (78.3%) cases and bilateral tumors in 18 cases (22%). Study by Janaki et al[17] showed most of the tumors were unilateral with right side predominance (66.42%). Benign tumors constituted 89.09% cases, borderline were 7.04% and malignant were 9.8% cases in the present study. Similar results were also observed in studies by Puttaveerachary A et al[18], Wills V et al[19]and Badge A et al.[20]Out of 71 ovarian tumors surface epithelial tumors were most common comprising 60.5% cases followed by germ cell tumors 33.8% cases and sex cord stromal tumor 5.6% cases.

These results were in concordance with the studies conducted by Gupta N et al[21], Pilli et al[22]and Singh S et al.[7]The most common surface epithelial tumors were serous cystadenoma followed by mucinous cystadenoma and the most common germ cell tumor was benign cystic teratoma (20 cases), similar results were reported by Yasmin et al.[23]

Sex cord-stromal tumors comprises of only 5.6% of total ovarian tumors, out of which fibroma thecoma constitute 2.8%, granulosa cell and fibroma constitute 1.4% each. This incidence was very similar to the finding of Thakkar N et al.[8]Grossly majority of ovarian tumors were cystic comprising of 75% cases, 14 % cases were solid and 11 % tumors had both solid and cystic areas. Most of the benign tumors were cystic. Mixed consistency was seen in malignant tumor, similar findings seen in studies done by Thakkar N et al[8]and Misra RK et al.[24]

Conclusion

From our study it was concluded that benign tumors were most common ovarian tumors occurring mostly in the age group of 31-40 years. Based on histopathology surface epithelium tumors were the most common one. Histopathology is the best method to differentiate between benign and malignant tumors and it also helps in predicting the prognosis of ovarian tumors.

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Conflict of Interest: None

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