Original Research Article

Clinicomorphological study of ovarian tumours: two year study

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ABSTRACT

Background: The ovarian tumors manifest a wide spectrum of clinical, morphological and histological features. The aim of the study was to study the histopathological patterns of 597 ovarian tumors received in Government Medical College, Thiruvananthapuram, Kerala for a period of 2 years and to correlate with variousclinical parameters like age, nature of presentation, laterality of tumors.
Methods: This is a retrospective study of 597 ovarian tumors at Government Medical College, Thiruvananthapuram for a period of 2 years. The clinical data of the patients was obtained from their respective files.
Results: Study included 597 cases removed from 570 patients. Total 543 cases were unilateral and 27 cases were bilateral. The predominant age group of ovarian tumors was 4th to 5th decade. The most common clinical presentation was pain abdomen followed by mass abdomen. In the present study, 85% cases were benign tumors, 3.34% were borderline and 11.6% were malignant. Surface epithelial tumors were the most common ovarian neoplasm (79%), followed by germ cell tumor (25%), sex cord stromal tumors (4.2%) and metastasis (0.34%). The most common benign tumor was serous cystadenoma and the most common malignant tumor was serous carcinoma. Mucinous borderline tumor was the most common borderline tumor in this study.
Conclusions: Majority of ovarian tumors in this study were benign. Surface epithelial tumor was the most common ovarian tumor in the present study. Most common age group was 40-49 years.

Keywords: Benign, Histopathology, Surface epithelial tumors

INTRODUCTION

Ovarian neoplasms with diverse histopathology are common forms of neoplasms in women and is the most lethal gynaecological malignancy. Ovarian tumors account for 30% of all cancers of female genital tract.[1]

Most of the population-based cancer registries in India show that ovarian cancer in the third leading site of cancer in women.[2] The poor survival is due to the fact that they do not clinically manifest early and approximately 60-70% of patients present with stage III or stage IV.[3-5]

Diversity in histological patterns is important in the diagnosis of ovarian tumors. Since there are no definite screening tests for ovarian tumors and due to the difficulty in definite distinguishing features of ovarian tumors based on clinical, radiological or gross appearances, it is important to achieve the optimum treatment response.[6]

In this present study, authors tried to find out frequency of histopathology of ovarian tumors in our institution and their correlation with various clinical parameters like age, nature of presentation, laterality of tumors.

METHODS

This retrospective study was conducted for a period of 2 years from January 2015 to December 2016 at Pathology department, Government Medical College, Thiruvananthapuram. The study was started after approval from IRC and Human Ethics Committee.

The study included 597 ovarian tumors removed from 570 patients, 27 of them had bilateral ovarian tumors. Specimens were received in 10% formalin, routinely processed with paraffin embedding after adequate fixation. Paraffin sections and slides from retrieved blocks were stained with H and E. Special stains like PAS and reticulin were done using standard procedures whenever required. IHC were carried out in relevant cases. The clinical presentation and required data of the patients were recorded from archived case sheets.

The data was analysed using Microsoft excel and tumors were classified according to the WHO classification of ovarian tumors, 4th edition.

Inclusion criteria

All histopathologically proven cases of ovarian tumors received during the study period.

Exclusion criteria

Non neoplastic lesions like endometriotic cyst, corpus luteal cyst and follicular cysts were excluded from the study.

RESULTS

A total of 597 neoplastic ovarian tumors were studied. Of these, 570 cases were unilateral and 27 were bilateral. Maximum tumors were seen in the age group of 40-49 years (24%) and least below 10 years (0.3%) (Table 1).

Table 1: Distribution of ovarian tumors in different age groups.

Age	Total	Percentage
<10	2	0.3%
10-19	47	7.9%
20-29	128	21.4%
30-39	118	19.8%
40-49	143	24.0%
50-59	78	13.1%
60-69	54	9.0%
70-79	22	3.7%
80-90	5	0.8%
Grand total	597	100.0%
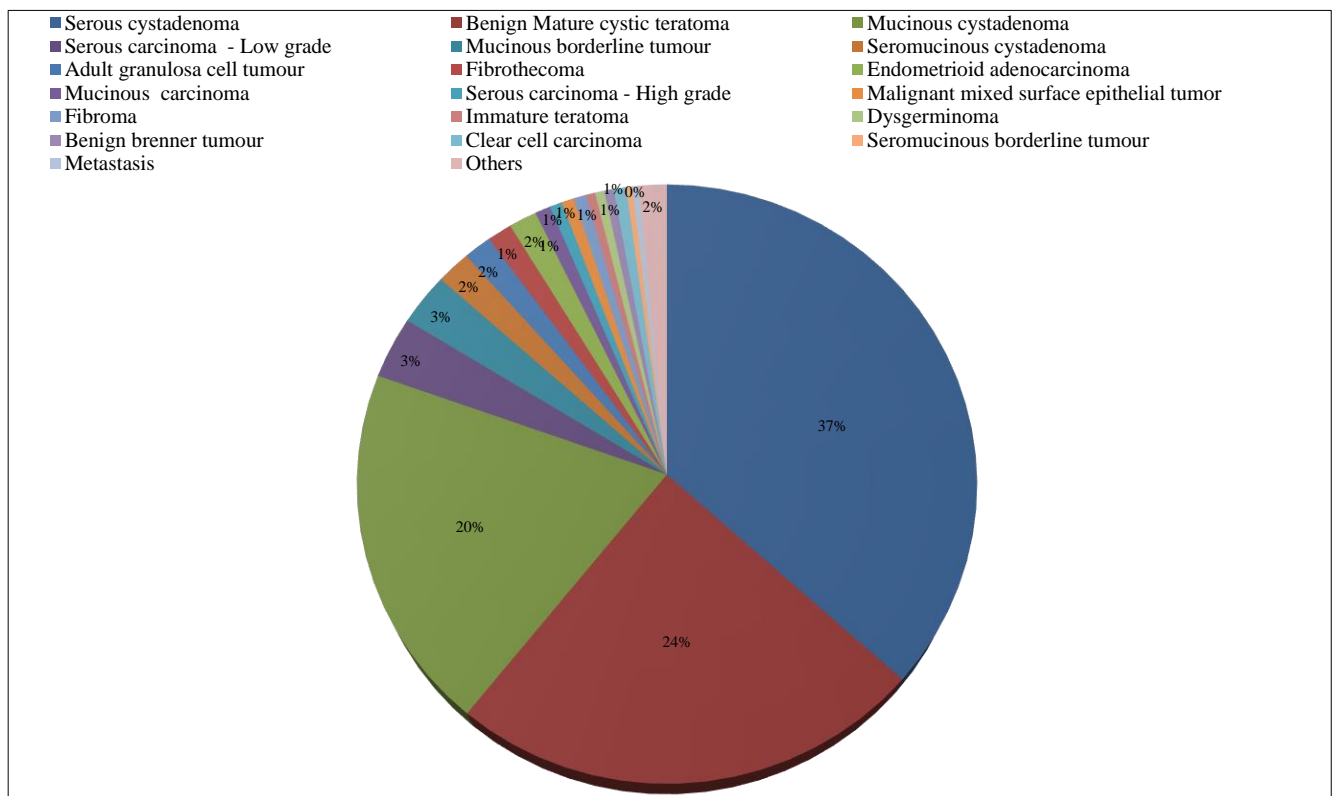
Figure 1: Lesion distribution in the present study.

The most common presenting complaint was abdominal pain in 242 cases (40.8%) followed by mass abdomen in 100 cases (16.9%) (Table 3).

A 5-year-old girl with benign mature cystic teratoma was the youngest patient in this study and the oldest was an 83-year-old patient with mucinous cystadenoma. The ovarian tumors were categorized into benign, borderline and malignant tumors. Benign tumors constituted 506 cases (84.5%), borderline tumors constituted 20 cases (3.35%) and malignant 69 cases (11.6%).
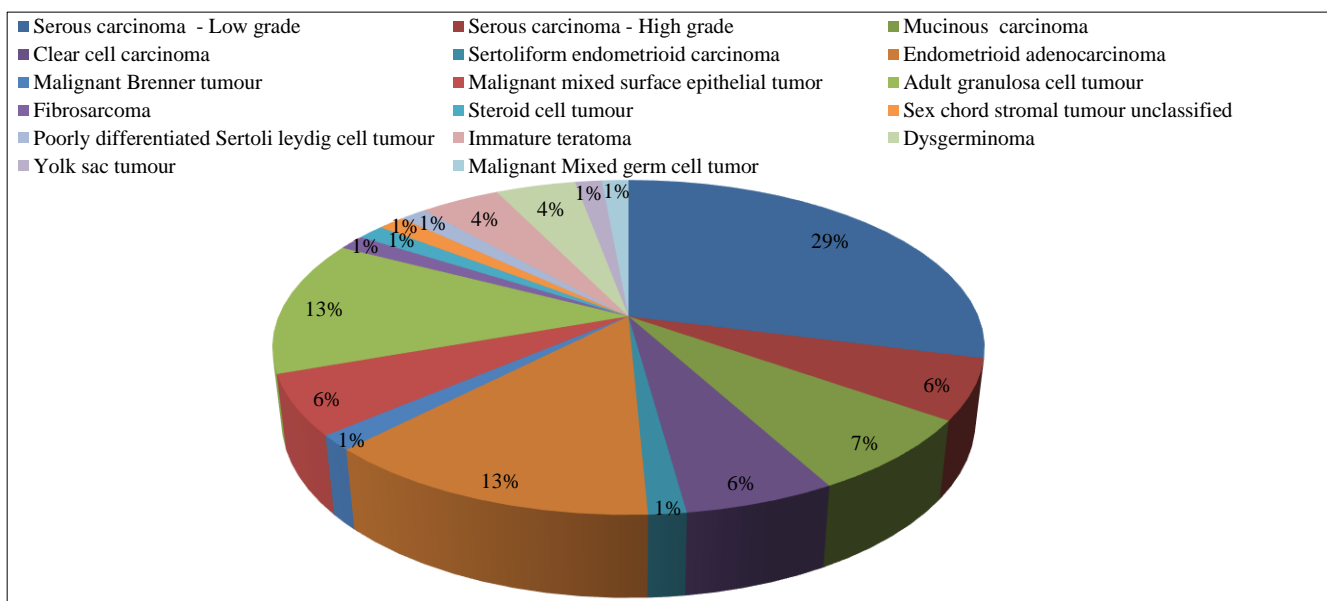
Among benign tumor cases, most common was the serous cystadenoma (43%), followed by seromucinous cystadenoma (28%), mucinous cystadenoma (23%) and rest constitute less than 10 % (Figure 2).

There was 20 borderline cases and mucinous borderline tumor (85%) was the commonest, followed by seromucinous borderline (10%) and endometrioid adenofibroma borderline tumor (5%) (Table 4).
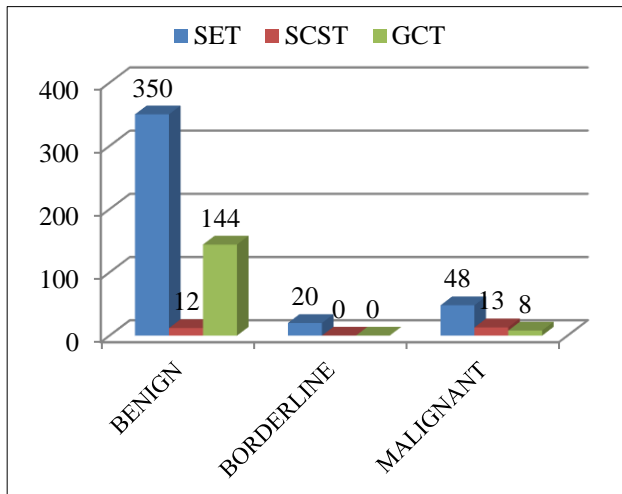
Figure 4: Frequency of benign, borderline and malignant tumors in the three major tumor histological groups.
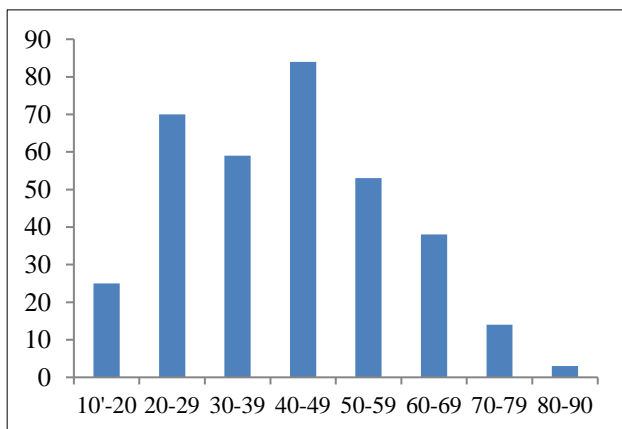

Figure 5: Age distribution of benign surface epithelial tumors.
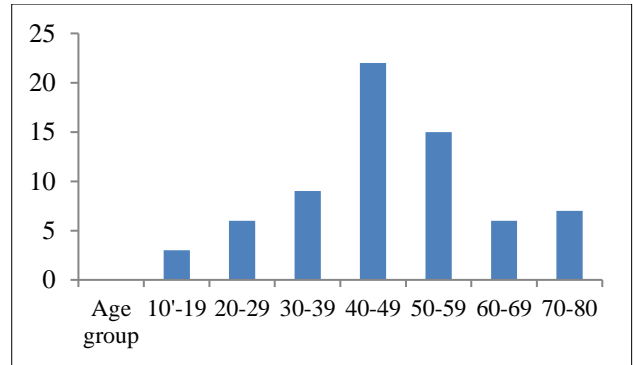

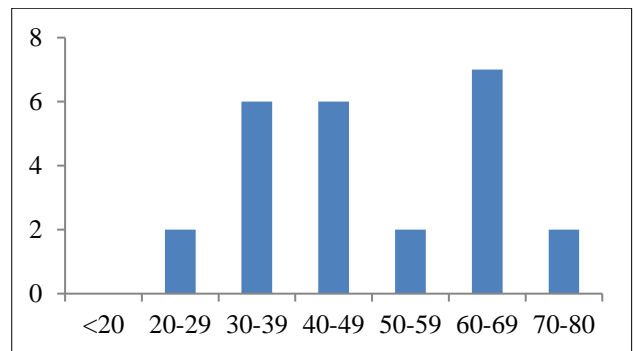**Figure 6: Age distribution of borderline and malignant surface epithelial tumors.**

Figure 7: Age distribution of sex cord stromal tumors.
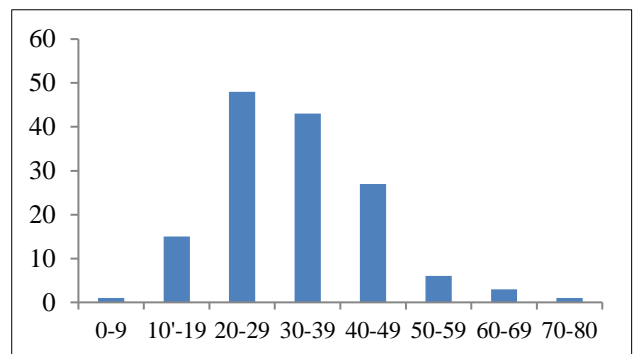

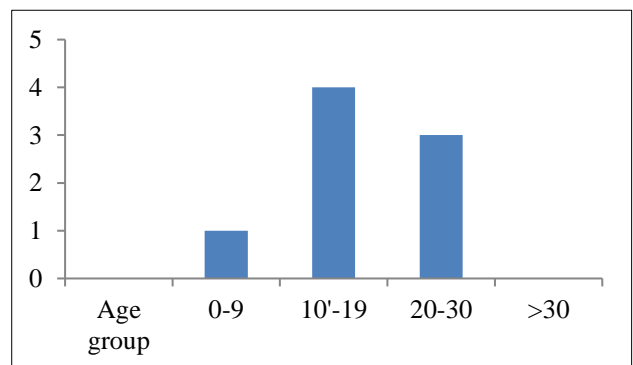**Figure 8: Age distribution of benign mature cystic teratoma.**

Figure 9: Age distribution of malignant germ cell tumors.

In this study, among all benign, borderline and malignant cases which authors considered, most common was the surface epithelial tumors. Second most common benign tumor was the germ cell tumor followed by sex cord stromal tumors. Among malignant cases, second most common was the sex cord stromal tumors followed by germ cell tumors (Figure 4). In this present study, benign surface epithelial tumors were more frequent in the 2nd to 4th decade (Figure 5). Malignant and borderline tumors are commoner towards 4th to 5th decades (Figure 6). Sex cord germ cell tumors were most frequent in the sixth decades (Figure 7). Benign mature cystic teratomas were most frequent in the second and third decades while malignant germ cell tumors were all seen in first three decades (Figure 8 and 9).

Figure 10: Gross-malignant mixed germ cell tumor.

Figure 11: Gross - fibroma.

Grossly, malignant mixed germ cell tumors appeared as solid and cystic with fleshy, necrotic areas (Figure 10). Gross appearance of fibroma on cut section was solid, homogenously white fibrous (Figure 11). Microscopic appearance of adult granulosa cell tumor showing tumor cells predominantly arranged in macrofollicular patterns (Figure 12).
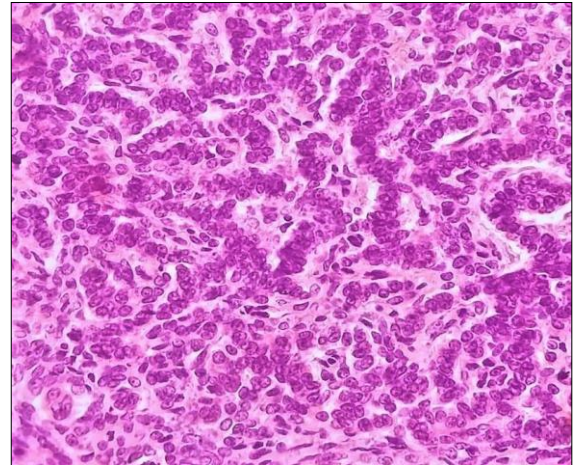

Figure 12: Age distribution of sex cord stromal tumors.

DISCUSSION

Ovarian cancer is the second leading cause of mortality among all gynaecological cancers.[7] Both primary and secondary tumors of ovary are relatively frequent with a variety of histological patterns.[8] Family history of cancer, genetic mutations and multiparity are some of the risk factors associated with the development of ovarian neoplasms.[9] In this study, authors analysed the histopathological patterns of 597 ovarian tumors in this institution and their correlation with various clinical parameters like age, nature of presentation, laterality of tumors.

Histopathological findings of these tumors were analysed and correlated with different studies. Ovarian tumors may occur at any age including infancy and childhood. In the present study, ovarian tumors were common in the age group of 40-49 years. 5-year-old girl with benign mature cystic teratoma was the youngest patient and an 83-year-old patient with mucinous cystadenoma was the oldest one.

Table 5: Comparative analysis of frequency of ovarian neoplasms based on their cell of origin.

Study	Epithelial tumors %	Germ cell tumors %	Sexcord stromal tumors %	Metastatic tumors %
Jha and Karki et al	52.2	42.2	3.1	2.4
Badge S et al	77	16	6	1
Krishna M and Maurya G	77.7	15.5	6.1	2
Present study	79	25.5	4.2	0.34

In the present study, 85% of cases were benign, 3.34% were borderline tumors and 11.6% were malignant tumors. In the present study, comprising 597 ovarian tumors, most common ovarian tumors encountered were surface epithelial tumors (70%), followed by germ cell tumors (25.5%), sex cord stromal tumors (4.2%) and metastatic tumors (0.34%) (Figure 4). This was comparable with the studies conducted by Jhar and Karki S et al, Badge et al, Krishna M and Maurya G et al (Table 5).[10-12]

It is globally seen that surface epithelial tumors are the most common ovarian tumors. In the present study, also authors encountered surface epithelial tumors as the most common tumors followed by germ cell tumors (Figure 1). In this study, 506 cases (85%) were benign, 20 cases (3.34%) were borderline tumors and 69 cases (11.6%) were malignant.

Surface epithelial tumors were common in the age group of 4th to 5th decades, sex cord stromal tumors in the age group of 6th to 7th decades and germ cell tumors in the 3rd to 4th decades (Figure 4). Among the benign tumors, surface epithelial tumors (69.1%) were the most common tumors encountered. Serous cystadenoma was the most common tumor (43.28%) in this study which was similar to the findings of Shah et al and Thanika Salam et al, who also reported serous cystadenoma as the most common benign ovarian tumor.[13,14] Other benign tumors were mucinous cystadenoma (23.1%), seromucinous cystadenoma (2.1%) and benign Brenner tumor (0.59%). Benign sex cord stromal tumors constituted 2.37% which included fibrothecoma (1.58%) and fibroma (0.79%). Benign mature cystic teratoma was the benign germ cell tumor in this study (28.45%) (Figure 2).

Mucinous borderline tumor (85%) was the most common borderline tumor in this study followed by seromucinous borderline tumors (10%) and borderline endometrioid adenofibroma (5%) (Figure 4). In this study, surface epithelial tumors were the most common malignant tumor encountered (69.7%).

Among those, serous carcinoma outnumbered other malignant tumors. The group included serous carcinoma low grade (29%) and serous carcinoma high grade (58%), mucinous carcinoma (7.2%), clear cell carcinoma (5.8%), sertoliform endometrioid carcinoma (1.4%), endometrioid adenocarcinoma (13%), malignant brenner tumor (1.4%) and malignant mixed surface epithelial tumors (5.8%) (Figure 3). Malignant sex cord stromal tumors constituted 18.8%. Among those were adult granulosa cell tumors (13%), fibrosarcoma (1.4%), steroid cell tumors (1.4%), sex cord stromal tumors unclassified (1.4%) and poorly differentiated Sertoli Leydig cell tumors (1.4%) (Figure 3). In this study, malignant germ cell tumors constituted 11.6% which included immature teratoma (4.3%), dysgerminoma (4.3%), yolk sac tumors (1.4%) and malignant mixed germ cell tumors (1.4%) (Figure 3).

Common clinical presentation in this study for both benign and malignant tumors was pain abdomen (40.1%) followed by mass abdomen (16.9%). Other common presentations were bleeding PV, menstrual abnormalities, postmenopausal bleeding, backache and abdominal distention (Table 3). These studies were similar to other studies by Ashraf et al, Sharada et al, Mondal et al, and Iyobec et al.[15-18] Out of 597 cases of ovarian tumors in this study, 27 cases were bilateral. Out of these, 20 cases both were benign tumors, both malignant in 2 cases and combined benign and malignant in 5 cases (Table 2). Prognosis is strongly associated with the stage at diagnosis, but histologic grade also is equally important in predicting recurrences.[19] Histopathological study of the tumors is still the gold standard method in diagnosing ovarian tumors.

These observation and results helped in providing a baseline information regarding frequency and pattern of ovarian tumors in our institution.

CONCLUSION

This study of 597 ovarian tumors in Government medical college, Thiruvananthapuram aimed to study the histopathological patterns of ovarian tumors in our institutions, correlate it with clinical parameters like age, nature of presentation and laterality of tumors.

Majority of ovarian tumors were found in the 4th to 5th decades. Pain abdomen was the most common clinical presentation followed by mass abdomen. In the present study, 85% cases were benign tumors, 3.34% were borderline tumors and 11.6% were malignant tumors. Surface epithelial tumors were the most common ovarian neoplasm followed by germ cell tumors, sex cord stromal tumors. Serous cystadenoma was the most common benign tumors whereas serous carcinoma was the most common malignant tumors. An accurate histopathological diagnosis with correct clinical staging help in rendering prompt and appropriate treatment to the patient.

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