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Original Research Article

Histopathological spectrum of ovarian tumors: an institutional perspective

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ABSTRACT

Background: Globally ovarian tumor is one of the leading causes of cancer death among women. Ovarian tumor has varied histiogenesis, clinical behavior and malignant potential. The aims and objectives of the present study is to study the histopathological pattern and age distribution of the ovarian tumors.
Methods: A total of 84 cases were studied from January 2016 to December 2016. They were reviewed and analyzed for age, histopathological findings and clinical presentations. Classification was done according to WHO histologic classification of ovarian tumors.
Results: Of the 84 cases, 75% were benign, 3.6% cases were borderline and 21.4% cases were malignant. Among the histological subtypes surface epithelial tumors comprised of 66.7% followed by germ cell tumors (23.9%). Serous cystadenoma (36.9%) was the most common benign tumor followed by mature cystic teratoma (17.9%). Serous cyst adenocarcinoma (10.7%) was the most common malignant tumour. Tumors were seen over age range of 10-78 years and maximum number of cases were in the 4th to 6th decade. Younger age group primarily presented with benign tumors whereas malignant tumors were common in elderly age group.
Conclusions: Surface epithelial tumors were the commonest ovarian tumor. Maximum numbers of ovarian tumors were in the age range 40-59years and malignant tumors were common in >40 years of age.

Keywords: Histopathology, Mature cystic teratoma, Ovarian tumors, Serous cystadenoma

INTRODUCTION

Ovarian tumor is the seventh leading cause of cancer death (age standardized mortality rate: 4/100,000) among women worldwide and in India it is comprising up to 8.7% of cancers in different parts of the country.[1,2] About 80% are benign and occur in younger age group comprising of 20-45 years and malignant tumours are more common in 40-65years. Important etiological risk factors are increasing age, positive family history, increase age of reproduction, high socio-economic classes, nulliparity.[3]

Diagnosis of ovarian tumor depends on signs and symptoms, abdominal and vaginal ultrasound, doppler study of tumor vasculature, biochemical study (tumor markers) which are proteins associated with malignant tumors like CA125, B-hCG, alphafetoprotien.[4-6] However, the definitive diagnosis and staging is done by surgery and histopathology.

The purpose of this study was to assess the histopathological pattern and age distribution of ovarian tumours in a tertiary care hospital of North East India.

METHODS

Study design

Retrospective hospital-based study conducted in the Department of Pathology, Silchar Medical College and Hospital from January 2016 to December 2016.

Data collection and analysis

Inclusion criteria

All cases of ovarian tumors that were received either as solitary specimens, or as a part of total abdominal hysterectomy specimens, in the Department of Pathology, SMCH, Silchar during the above mentioned period were included in the study.

Exclusion criteria

The normal ovaries and ovaries with other findings such as follicular cyst, cystic follicles, hemorrhagic inclusion cyst, endometriosis, ectopic pregnancy etc. were excluded from the study. The cases were reviewed and analysed for age and histopathological findings. Record of other investigations and clinical presentations were collected from the clinical records and analysed.

The specimens that were received were examined and gross findings noted, followed by overnight fixation in 10% formalin. Grossing was done thereafter and sections were taken depending on the size of the tumor, at least 1section/cm of the mass. Sections were taken from areas with papillary appearance, areas with hemorrhage, necrosis or calcification. One section from non-neoplastic ovary was taken wherever identifiable. Minimum 3 sections were taken from the cystic swelling. Tissue processing was done as per the standard procedure and paraffin blocks were made. Tissue sections of 4-5µ thick were cut using microtome, stained by hematoxylin and Eosin stain, mounted on a glass slide and examined. The tumors were then classified according to the WHO classification of ovarian tumors.

RESULTS

A total of 84 cases of ovarian tumors were studied. The clinical presentation, symptoms and ovarian parameters were recorded. Out of 84 cases of ovarian lesions, 63 cases (75%) were benign, 3 cases (3.6%) were borderline and 18 cases (21.4%) were malignant. Age distribution among ovarian tumors according to their morphological pattern is shown in Table 1.

Among all the lesions, majority of the cases of malignant, benign and borderline lesions were seen in age group of 40-59 years i.e. 60.7%. The youngest patient was 10 years old and the oldest was 78 years. The youngest patient was a case of mature cystic teratoma and the oldest case was serous cystadenocarcinoma. In the younger age group benign lesions were more common whereas malignant tumours were mainly found in the age >40 years.

Table 1: Distribution of ovarian tumors according to age group.

Age range	Benign lesions	Borderline lesions	Malignant lesions
<19	3 (3.6%)	0 (0)	2 (2.4%)
20-39	13 (15.5%)	0 (0)	1 (1.2%)
40-59	37 (44.0%)	3 (3.6%)	11 (13.1%)
>60	10 (11.9%)	0 (0)	4 (4.7%)
Total	63 (75%)	3 (3.6%)	18 (21.4%)

In the present study, the tumours ranged in size from 4-30cm with an average of 9.54cm.

Majority of the benign lesions were cystic in consistency (48 cases; 57.1% of total lesions) while few cases had both solid and cystic consistency whereas majority of borderline and malignant lesions were solid and both solid and cystic in consistency (Table 2).

Table 2: Distribution of ovarian tumors according to gross appearance.

Lesion	Solid	Cystic	Solid+Cystic
Benign	5	48	10
Borderline	0	2	1
Malignant	6	0	12
Total	11	50	23

Table 3: Histological types of ovarian tumours.

Type of ovarian tumour	No of cases (84)	%
Surface epithelial tumours	56	66.7
Serous tumours	41	48.8
Benign	31	36.8
Borderline	1	1.2
Malignant	9	10.7
Mucinous tumours	12	14.3
Benign	9	10.7
Borderline	1	1.2
Malignant	2	2.4
Endometroid tumour	1	1.2
Brenner tumour	2	2.4
Sex cord stromal tumours	6	7.1
Granulosa cell tumour	1	1.2
Fibroma	3	3.5
Theco fibroma	2	2.4
Germ cell tumours	20	23.9
Dysgerminoma	2	2.4
Yolk sac tumour	1	1.2
Mature cystic teratoma	15	17.9
Immature teratoma	2	2.4
Metastatic tumours	2	2.4

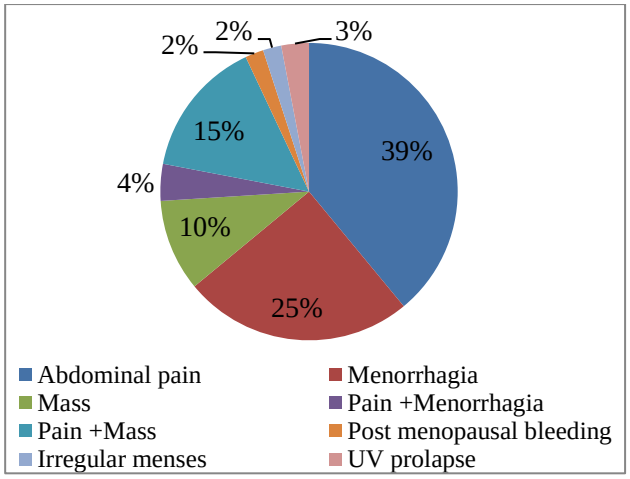

Figure 1: Mode of presentation of neoplastic lesions of ovary.

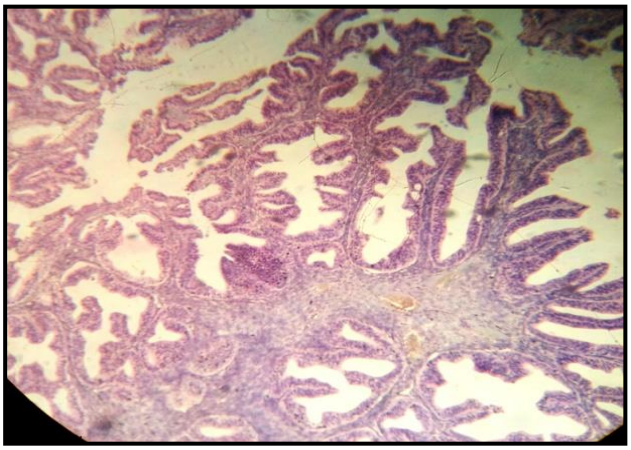

Figure 2: Serous cystadenocarcinoma with confluent papillary growth (H&E-400X).

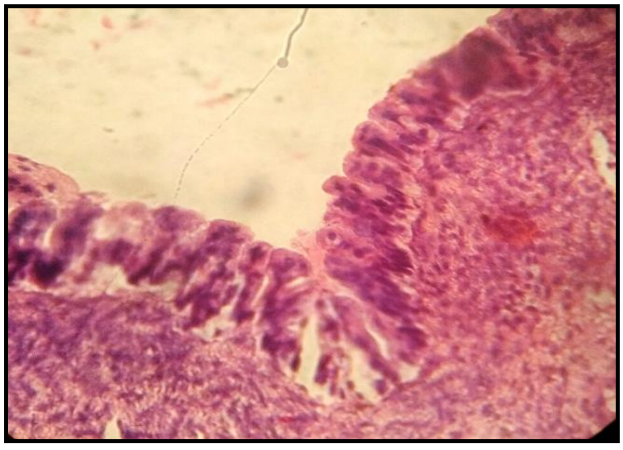

Figure 3: Borderline mucinous tumour. cyst wall lined by stratified columnar cells with mucin and hyperchromatic nuclei (H&E-400X).

Histologically, surface epithelial tumors were the most common (66.7%), followed by germ cell tumors (23.8%), sex cord-stromal tumors (7.2%) and metastatic tumors (2.4%). The most common epithelial tumors were serous (41 cases, 48.8%), mucinous (12 cases, 14.3%), brenner tumor (2 cases, 2.4%), and endometrioid tumor (1 case, 1.2%). Of 20 cases of germ cell tumors, benign cystic teratoma was the most common comprised of 17.9%, and 6 cases of sex cord-stromal tumor. Among sex cord-stromal tumors the most common tumor was fibroma, 3 cases (3.6%). Metastatic tumors comprised of 2 cases (2.4%) (Table 3).

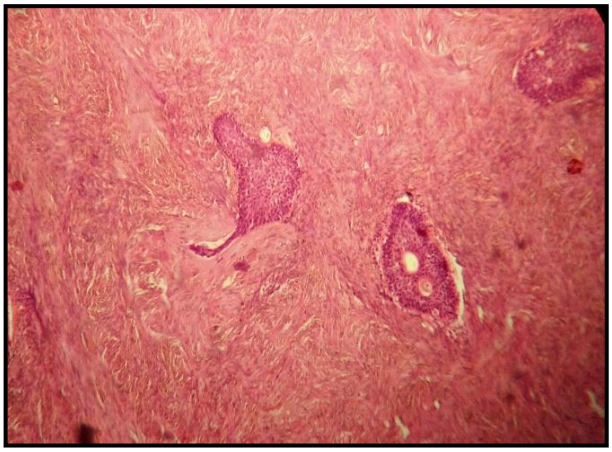

Figure 4: Benign brenner tumour. Nests of transitional epithelial cells surrounded by fibrous stroma (H&E-100X).

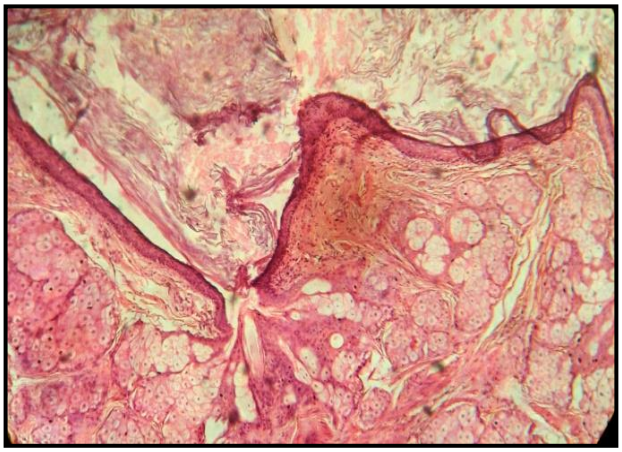

Figure 5: Mature cystic teratoma. Cyst lined by stratified squamous epithelium and underlying sebaceous glands (H&E-400X).

Abdominal pain was the single most common presenting symptom followed by menorrhagia and pain abdomen and palpable mass. The patients who presented with uterovaginal prolapse, ovarian tumour was an incidental finding.

DISCUSSION

Ovarian neoplasms have a varied histiogenesis, clinical behaviour and malignant potential. Due to the inability to detect ovarian tumours in the early stage, they account for

a disproportionate number of fatal cancers, being responsible for almost half of deaths from cancer of female genital tract.[7] The present study was conducted to study the frequency of various histological types of ovarian tumors and their age distribution. A total of 84 cases of ovarian tumors in a 1-year period were studied. Of the 84 cases of ovarian lesions studied 63 cases were benign, 18 cases were malignant and 3 were borderline tumors.

Table 4: Comparison of percentage incidence of benign, borderline and malignant tumours in different studies and present study.

Authors	Benign	Malignant	Borderline
Couto et al[8]	80.76%	16.91%	2.33%
Maheshwari V et al[9]	71.7%	23.7%	4.4%
Pilli et al[10]	76%	21.2%	2.8%
Gupta N et al[11]	72.9%	4.2%	22.9%
Present study	75%	21.4%	3.6%

The result was similar to the findings by other workers where benign tumours were more common than malignant tumours. In the present study >92.8% cases were unilateral and 7.2% cases were bilateral. Among the bilateral tumors, 1 was metastatic and 5 cases were surface epithelial tumors. Thus, around 83.4 % bilateral tumors were surface epithelial tumors. The results were comparable with study done by Pilli GS et al and Prabhakar and Maingi et al.[10,12]

Table 5: Percentage distribution of cases in various age groups in comparison with present study.

Authors	0-19 years	20-39 years	40-59 years	>60 years
Pilli et al[10]	7%	58%	30%	5%
Kar et al[13]	7.4%	41.79%	46.28%	4.47%
Ramachandran et al[14]	7.9%	53%	30%	9.10%
Present study	5.9%	16.7%	60.7%	16.7%

In the present study, maximum number of cases were in 4th to 6th decade of life. Present study is in concordance with Kar et al, where the incidence of ovarian neoplasm was more common in 40-59years of age whereas Pilli et al and Ramachandran et al reported higher incidence in 20-39years of age.[13,10,14]

Table 6: Relative percentage of different histological types of ovarian tumours in different studies and present study.

Authors	Epithelial	Sex cord	Germ cell tumour	Metastatic
Pilli et al[10]	71%	7%	21%	0.70%
Gupta N et al[11]	54.70%	7.06%	31%	6.18%
Kar et al[13]	79%	1.50%	16%	1.20%
Present study	66.7%	7.2%	23.9%	2.4%

In the present study, half of the patients presented with combination of abdominal pain, palpable mass per abdomen and menstrual irregularities (Table 5).

Present study concorded well with studies by Pilli et al where pain abdomen was the commonest symptom.[10] Study by Couto et al and Maheshwari V et al showed more cases with mass per abdomen.[8,9]

Histologically, 84 ovarian lesions were classified according to WHO classification. Present study results correlated with studies by Pilli et al, Gupta N et al and Kar et al but Gupta N et al showed relatively more number of germ cell tumors.[10,11,13] In the present study sex cord stromal tumors comprised of fibroma, thecofibroma and granulosa cell tumor. Fibroma and thecofibroma behave in a benign manner whereas granulosa cell tumor has uncertain malignant potential.

Serous cystadenoma was the commonest benign tumor in our study followed by mature cystic teratoma which is similar to studies done by Gupta N et al, Bukhari U et al and Momtahen S et al.[11,15,16]

Majority of the benign lesions (57.1%) in the present study were cystic in consistency. And majority of malignant lesions (14.3%) were having both solid and cystic consistency. Present study is concordant with studies by Couto F et al, Gupta N et al and Misra RK et al which showed high incidence of malignant tumor having both solid and cystic consistency.[8,11,17]

CONCLUSION

Our study of 84 ovarian tumors aimed to classify the ovarian tumours according to WHO classification (2005). The results of present study are comparable to other series of studies regarding occurrence with respect to age, gross features and microscopy. Surface epithelial tumours are the commonest ovarian tumours followed by germ cell tumours as observed in other studies. Majority of the cases occurred in 40 -59 years of age.

Effective therapeutic management of ovarian malignant tumours continues to be a challenge to the oncologist. An accurate histopathological diagnosis combine with clinical staging will help in rendering prompt and appropriate treatment to the patient.

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Ethical approval: Not required

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