



Histopathological Patterns of Ovarian Tumours: A Hospital Based Study (Research Paper)

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ABSTRACT

Background: - Ovary is the site for more than two dozen different tumours with its varied histopathological patterns. Relative frequency of these histopathological patterns is different for Western and Asian countries. Ovarian cancer is one of the most frequent causes of death from gynaecological malignancies.

Aims and Objectives: - A hospital based study to determine the histopathological patterns of ovarian tumours.

Material and Methods: - The present study is based on the histopathological analysis of 70 specimens of clinically and radiologically diagnosed ovarian tumours presented at Patholgy department of Tezpur Medical College and Hospital, Tezpur, Assam for histopatholcical examination in the period of two years from June 1, 2014 to May 31, 2016.

Result and observations: - Out of 70 ovarian tumours, 46 (65.71%) were benign tumour, 2 (2.86%) were borderline and 22 (31.43%) were malignant tumour. Among benign tumours, benign cystic teratoma (30.00%) was the commonest followed by serous cystadenoma (22.86%) and mucinous cystadenoma (8.57%). Among the malignant tumours, the most common type was serous cystadenocarcinoma. Surface epithelial tumour (57.14%) was the commonest tumour according to the histogenesis followed by germ cell tumour (34.29%), sex cord tumours (7.14%) and metastatic tumour (1.43%). The mean age of the subjects was 35.2 years, ranging from 8 to 70 years. Abdominal mass was the most predominant clinical presentation.

Conclusion:- Ovarian tumours need histopathological examination for proper diagnosis and follow up of patients. This study gives the histopathological pattern of ovarian tumours of the cases that attended our institute with different clinical presentations. As it is a hospital based study, it might not reflect the exact scenario of the population at large.

Key Words: Surface epithelial tumour, Dermoid cyst, Cystadenocarcinoma Dysgerminoma, Sex cord stromal tumour, kruckenberg tumour.

Introduction

Ovary is the site for more than two dozens different tumours with its varied histopathological patterns. The normal ovary is composed of three

cell types- the multipotential surface (coelomic) covering epithelium, the totipotential germ cells and the multipotential sex cord/ stromal cells. Each of these cell types gives rise to a variety of ovarian tumours ⁽¹⁾. They are rare in young age

group and commonly present with abdominal pain, an abdominal lump or menstrual irregularities. Each of these tumours morphologically can present as cystic, adenofibromatous or solid tumour. Depending on the tumour cell morphology, proliferative pattern and other associated findings (haemorrhage, necrosis, calcification & others), it may be graded as benign, borderline and malignant tumours ⁽²⁾. Tumours of surface epithelial origin account for the great majority of primary ovarian tumours, and in their malignant forms account for almost 90% of ovarian cancers. Germ-cell and sex cord /stromal cell tumours are much less frequent and, although they constitute 20% to 30% of ovarian tumours, are collectively responsible for fewer than 10% of malignant tumours of the ovary ⁽²⁾.

Ovary is an important site of cancer in women. Indian cancer Registry data project that ovarian cancer comprises upto 8.7% of cancers in different parts of India ⁽³⁾. In Assam, relative proportion of ovarian cancer is almost 4.9%. It is one of the most frequent causes of death from gynaecological malignancies ^(4,5).

Aims and Objectives

The present study is carried out with an aim to evaluate the histopathological patterns of the ovarian tumours.

Material and Methods

The study was carried out on 70 specimens of clinically and radiologically diagnosed ovarian tumours received in the Department of Pathology, Tezpur Medical College and Hospital, Tezpur, Assam for histopathological examination in the period of two years from June 1, 2014 to May 31, 2016. Data regarding their clinical profile was collected from the gynaecology department of the institute.

A total of 70 specimens of ovarian tumours underwent biopsy interpretation. The Nature of specimens was either in the form of simple oophorectomy or hysterectomy with unilateral /bilateral salpingo-oophorectomy. The specimens

collected for the study was sent by the gynaecology department of the institute fixed in 10% formalin. The specimens were observed grossly in the Pathology department as per guideline described by standard text book of surgical pathology ⁽¹⁾ and findings were noted in the note sheet. Omentum was looked for any nodularity. Lymph nodes were also dissected out along with biopsy tissue. The biopsy tissue were then sectioned and processed in the conventional manner as described by J D Bancroft and Marilyn Gamble ⁽⁶⁾. After completion of processing, they were made in paraffin blocks and cut in rotatory microtome of about 3- 5 μ thickness. The sections were stained by conventional Haematoxylin and Eosin, mounted in DPX and examined under microscope. The microscopic slides were viewed under low power field and high power field. The findings were noted and interpreted according to WHO classification.

Result and observation

The study included a total of 70 specimens of clinically and radiologically diagnosed ovarian tumours for histopathological evaluation. The age of the patients ranged from 8 to 70 years with a mean age of 35.2 years. Majority of the patients were in the age groups 31-40 years (Cite Table1). Bilateralism was detected in 10.00% of the total cases.

Table 1: Age Distribution of Patients with ovarian tumours (N=70).

Age (Years)	No. of Cases	Percentage
1-10	1	1.43%
11-20	6	8.57%
21-30	15	21.43%
31-40	22	31.43%
41-50	18	25.71%
51-60	6	8.57%
61-70	2	2.86%

Out of the 70 ovarian tumours, 37 cases (52.86%) were cystic, 24 cases (34.28%) were solid/cystic and 9 cases (12.86%) were predominantly solid tumours (Cite Table-2).

Table 2: Consistency of the Ovarian Tumour (N=70)

Consistency	No. of cases	Percentage
Cystic	37	52.86%
Cystic/Solid	24	34.28%
Solid	09	12.86%

Out of the 70 ovarian tumours, 46 cases (65.71%) were benign tumour, 2 cases (2.86%) were borderline and 22 (31.43%) cases were malignant tumour (Cite Figure 1).

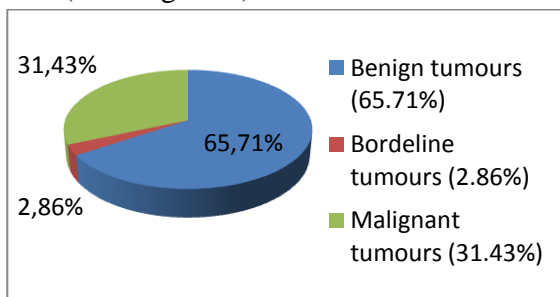


Figure-1- Frequency of benign and malignant ovarian tumours

Most of the benign ovarian tumours presented as cystic masses. Surface epithelial tumour (40 cases- 57.14%) was the commonest tumour according to the histogenesis followed by germ cell tumours (24 cases- 34.29%), sex cord tumours (5 cases-7.14%) and metastatic tumours (1 cases- 1.43%).

In the surface epithelial benign tumour category, serous cystadenoma constituted highest numbers (22.86%) followed by mucinous cystadenoma (8.57%). The borderline tumours were mucinous type. Among the malignant surface epithelial tumours, the incidence of mucinous cystadenocarcinoma was 8.57%, papillary cystadenocarcinoma was 7.14%, serous cystadenocarcinoma was 4.28%, endometrioid adenocarcinoma was 1.43% and clear cell carcinoma was 1.43%. In the germ cell tumour category, benign cystic teratoma constituted highest numbers (30.00%), followed by dysgerminoma (1.43%), yolk sac tumour (1.43%) and choriocarcinoma was 1.43%. Germ cell tumour was found in age group-1 to 40 years. Out of 5 cases of sex cord stromal tumour, 4.28% was benign tumour as fibroma, 1.43% granulosa

cell tumour and 1.43% Sertoli Leydig cell tumour. One case (1.43%) of metastatic tumour (kruckenberg tumour) was also detected in the study (Cite Table 3).

Table 3: Showing break-up of different ovarian tumours (Total- 70)

Tumours	Number	Percentage
(A)Surface Epithelial tumours	40	57.14%
(1) Benign-	22	31.43%
(i) Serous cyst adenoma	16	22.86%
(iii)Mucinous cyst adenoma	6	8.57%
(2) Borderline	2	2.86%
(i) Mucinous borderline	2	2.86%
(3) Malignant-	16	22.85%
(i)Mucinous cystadenocarcinoma	6	8.57%
(ii)Papillary serous cystadenocarcinoma	5	7.14%
(ii)Serous cystadenocarcinoma	3	4.28%
(iii)Endometrioid carcinoma	1	1.43%
(iv) Clear cell carcinoma	1	1.43%
(B) Germ Cell tumours	24	34.29%
(i) Benign cystic teratoma	21	30.00%
(ii) Choriocarcinoma	1	1.43%
(iii) Dysgerminoma	1	1.43%
(iv) Yolk sac tumour	1	1.43%
(C) Sex cord stromal tumours	5	7.14%
(i) Fibroma	3	4.28%
(ii) Granulosa cell tumour	1	1.43%
(iii) Sertoli Leydig cell tumour	1	1.43%
(D) Metastatic tumour (Kruckenberg tumour)	1	1.43%



Fig 2- Gross picture of benign cystic teratoma.

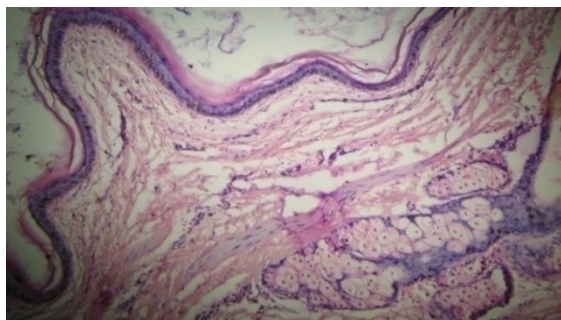


Fig 3- Microscopy of benign cystic teratoma, H&E (High power view)



Fig 4- Gross picture of mucinous cystadenocarcinoma.

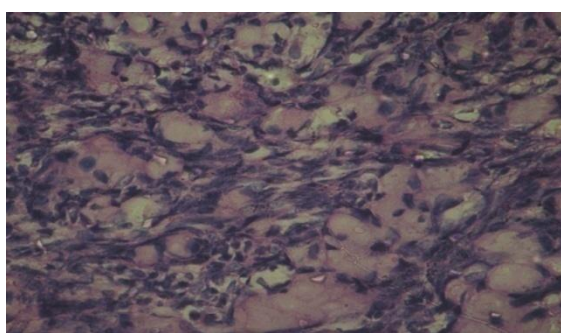


Fig 5- Microscopy of Krukenberg tumour, H&E (High power view)

Discussion

Ovarian tumours may occur at any age. In our study the age of the patients ranged from 8 to 70 years with a mean age of 35.2 years, majority of the patients were in the age groups 31-40 years, which is concordance with Couto F et al 2006 ⁽⁷⁾. Bilateralism was detected in 10.00% of the total cases in our study, which most comparable with the study of Madan et al 1978 and Verma et al 1981 (8, 9), reported a low incidence of 11% and 11.91 % bilaterism.

In our study most of the benign tumour was cystic as comparable to malignant, which was solid in

consistency followed by partly cystic and partly solid. We found 52.86% cystic, 12.86% solid and 34.28% semisolid or partly cystic. The result is concordance with Gupta et al 2007, Madan et al 1978, Prabhakar et al 1989, and Mishra et al 1992. (3, 8,10,11)

The ovarian tumour is diagnosed as benign, borderline and malignant depending on the presence of predominant cell type, pattern of growth, amount of fibrous stroma and cellular atypia with invasiveness ⁽²⁾. In our study we found 65.71 % benign, 2.86% borderline and 31.43% malignant. Similar observations were found in other studies also (cite table 4).

Based on histo-morphological features, incidence of surface epithelial tumours were commonest surface epithelial tumour (57.14%) followed by germ cell tumour (34.29%), sex cord tumours (7.14%) and metastatic tumours (1.43%). Similar observations were seen in other studies (cite table-5).

Table 4- Comparison of frequency of ovarian tumours with other study

Studies	Benign	Borde-rline	Malig-nant
Gupta et al.2007	72.9%	4.1%	22.9%
Pilli et al 2007	75.2%	2.8%	21.8%
Mandal SK et al. 2011	63.1%	7.3%	29.6%
Our study	65.71%	2.86%	31.43%

Table 5- Comparative incidence of ovarian tumours according histogenesis

Studies	Surface epithelial	Germ cell	Sex cord /stroma	Metas-tatic
Pilli et al 2007	70.9%	21.2%	6.7%	0.7%
Gupta et al.2007	65.6%	23.9%	8.3%	2.0%
Bhuvanesh et al 1978	78.56%	10.85%	7.14%	1.42%
Couto F et al 1993	68.81%	20.39%	-	1.46%
Our study	57.14%	34.29%	7.14%	1.43%

The proportion of benign cystic teratoma was the commonest benign tumour in our study. Sex cord–stromal tumours, which comprise approximately 5% of all ovarian neoplasms, are tumours that differentiate in the direction of sex cords and/or the specialized ovarian stroma, which is consistent with our finding on sex cord stromal tumour. One cases of Kruckenberg tumours were also detected in which primary tumour was in stomach.

Conclusion

The main strength of this study is that it gives the most comprehensive picture of the current state of ovarian tumours' incidence and histopathological pattern. Surface epithelial tumours are the commonest followed by germ cell tumours. The major limitations of this study include the small sample size and short study period. However A tentative conclusion can be drawn from the present study that ovarian tumours comprise one of the major neoplasms in female detected in this institution.

Acknowledgement

The author acknowledge the help and co operation received from the faculties of O&G and Pathology Deptt, Tezpur Medical College and Hospital, Tezpur, Assam while conducting the present study.

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