

**HISTOPATHOLOGICAL SPECTRUM OF OVARIAN NEOPLASMS DIAGNOSED IN A
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ABSTRACT

Purpose: Ovarian neoplasms are the seventh most common malignant tumours diagnosed worldwide in women.^[1] Histopathological examination being mainstay of diagnosis determines the prognosis and behavior of tumour. We have conducted this study to explore more about the diversity of the primary ovarian tumours and correlate histomorphological features with immunohistochemistry (IHC) profile. **Methods:** A total of 53 cases of ovarian masses were studied. Histopathological features for each haematoxylin and eosin stained section were studied and further evaluation with immunohistochemistry was done. **Results:** A total of 53 specimens of ovarian masses were obtained from patients. On histopathological examination, majority of tumours were malignant with surface epithelial tumours being the most common histological type. In them High grade serous carcinoma was the most common subtype. The next common histological types were germ cell tumours and sex cord stromal tumours. Immunohistochemistry was done for all the cases. PAX8, WT1, p53 were positive in all cases of High grade serous carcinomas. **Conclusion:** Histopathological examination being the mainstay of diagnosis helps in early diagnosis, staging and determination of prognosis. Thus in our study we have tried to increase the understanding about the histopathological spectrum of ovarian neoplasms and their distribution according to the histological subtype.

KEYWORDS: Ovary, Ovarian Neoplasms, Surface epithelial tumours, Serous carcinoma.**INTRODUCTION**

Ovarian neoplasms are the seventh most common malignant tumours diagnosed worldwide in women.^[1] In India it accounts for 8.7 % of total malignancies.^[2,3] It is also considered to be the most fatal gynaecologic malignancy.^[4] There are various risk factors responsible for ovarian cancers like nulliparity, heritable mutation, hormone replacement therapy, endometriosis and various environmental and lifestyle factors.^[1] Early diagnosis is an important way to decrease the morbidity and mortality. Histopathological examination being mainstay of diagnosis determines the prognosis and behaviour of tumour. We have conducted this study in a tertiary care oncology institution to explore more about the diversity of the primary ovarian tumours and correlate histomorphological features with the clinical and immunohistochemistry profile.

METHODS

The study includes analysis of surgically removed ovarian masses during oophorectomy, salpingo-oophorectomy or along with hysterectomy. It was a

retrospective type of study done over a period of one year. A total of 53 cases of ovarian masses were studied. Age for each patient was recorded. The ovarian tumours were fixed in 10% buffered formalin and kept overnight for fixation. Gross examination was done noting their laterality, size, external surface and cut surface. Adequate sectioning was done from the tumour. Histopathological features for each haematoxylin and eosin stained section were studied and further evaluation with IHC was done. All the data was collected, analysed and the tumours were sub-classified. Metastatic tumours with secondary ovarian involvement were excluded from the study.

RESULTS

A total of 53 specimens of ovarian masses were obtained from patients in department of pathology who underwent surgery in Chittaranjan national cancer institute, Kolkata from January 2022 to December 2022. Out of the total 53 cases majority of the cases were between the age group of 41-50 years. [Table I]

Table I: Distribution of cases according to age group.

Age group	Number of cases
<20	2
21-30	4
31-40	7
41-50	22
51-60	8
61-70	8
71-80	1
81-90	1

On histopathological examination majority of tumours were malignant with surface epithelial tumours being the most common histological type. In them High grade serous carcinoma (Fig.1 & 2) was the most common subtype accounting for 22 cases. This was followed by 8 cases of Low grade serous carcinoma, 4 cases of Mucinous carcinoma, 2 cases were diagnosed as Clear

cell carcinoma and 1 case each as Endometrioid carcinoma and Carcinosarcoma. In the Borderline tumour category 2 cases were diagnosed as Serous borderline tumours. Benign surface epithelial tumour comprised of 2 cases of Serous cystadenoma and 1 case of Brenner tumour. The other subtypes were 6 cases of Germ cell tumours comprising predominantly of Yolk sac tumour and Dysgerminoma, 1 case of Germ cell tumour also had squamous cell carcinoma arising in a background of Teratoma. Four (4) cases were also seen of Sex cord stromal tumours. [Table 2]

Immunohistochemistry was done for all the cases. PAX8, WT1, p53 (fig. 3) were positive in all cases of High grade serous carcinomas. Primary ovarian Mucinous carcinoma were usually immunopositive for PAX8, CK7.

Table II – Distribution of cases according to histological subtype.

Serial number	Histological subtype	Number of cases (percentage)
1.	High grade serous carcinoma	22 (41.6%)
2.	Low grade serous carcinoma	8 (15.1%)
3.	Mucinous cystadenocarcinoma	4(7.5%)
4.	Endometrioid carcinoma	1(1.9%)
5.	Clear cell carcinoma	2(3.7%)
6.	Carcinosarcoma	1 (1.9%)
7.	Germ cell tumour	6(11.3%)
8.	Squamous cell carcinoma in the background of teratoma	1 (1.9%)
9.	Sex cord stromal tumour	4(7.5%)
10.	Serous borderline tumour	1(1.9%)
11.	Simple serous cyst	2(3.8%)
12.	Brenner tumour	1 (1.9%)

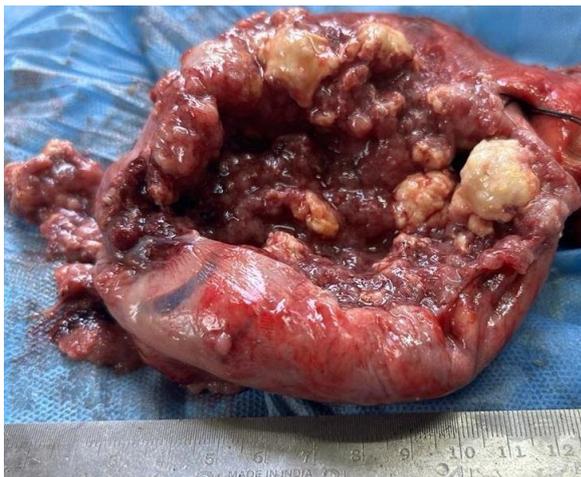


Figure 1: Gross photograph of Serous carcinoma showing multiple papillary excrescences.

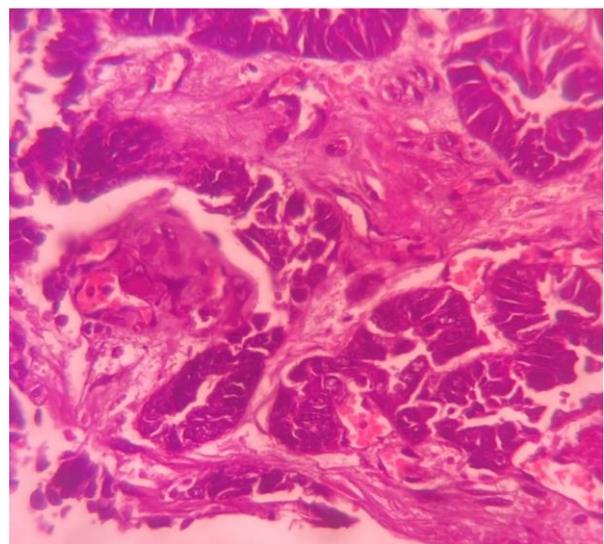


Figure 2: Hematoxylin and eosin stained microphotograph of High grade serous carcinoma showing tumour cells arranged in nested and glandular pattern (10X).

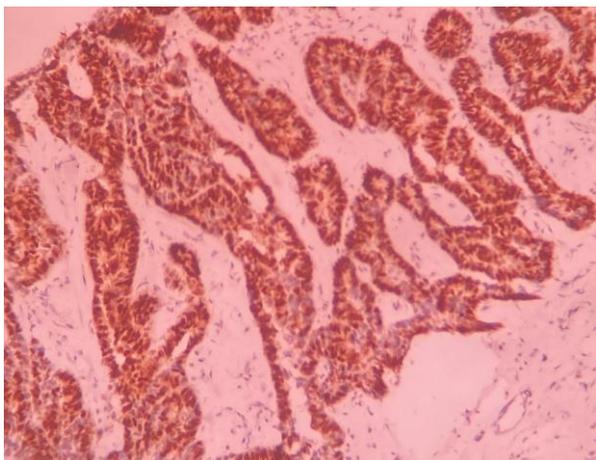


Figure 3: Microphotograph of High grade serous carcinoma showing immunopositivity for PAX8.

DISCUSSION

In females, ovary is the second most common site of cancer after breast. Due its late stage of presentation it is also considered to be having high mortality.^[5] Histopathological examination being mainstay of diagnosis helps in determining the prognosis and behaviour of tumour.

Findings of our study correlated with many studies conducted worldwide. In our study out of the total 53 cases most of the cases were between the age group of 41-50 years. This was in concordance with the study done by Sharma *et al.*^[6] The youngest patient was 16 years old while the eldest patient was 86 years old. The age group for the germ cell tumours was 20-30 years. This was similar to the study done by Dutta *et al.*^[5]

In our study, most of tumours were unilateral that is 96%. Similar findings were studied by Ibrahim Khil *et al.*^[7]

On histopathological examination in our study majority of tumours were malignant with surface epithelial tumours being the most common histological type (77%). In them Serous carcinoma was the most common subtype accounting for 57 % of the cases. This was followed by 13% cases of germ cell tumours. These findings were in concordance with study done by Chakrabarti PR *et al.*^[8] and HM Yousuf *et al.*^[9] The proportion of mucinous tumours in our study was 7.5%. This was in concordance with study done by Matz *et al.*^[10]

In the Germ cell tumours, yolk sac tumours was the most common histological subtype whereas in study done by Chakrabarti *et al.*^[8] Mature teratoma was the most common subtype of Germ cell tumour. This might be due to the fact that ours being a national cancer institute received more of malignant tumour cases than benign counterparts.

The non-epithelial tumours in our cohort were less accounting for total of 34%. This was in concordance with the study done by Matz *et al.*^[10]

Immunohistochemistry was done for all the cases. PAX8, WT1, p53 were positive in all cases of High grade serous carcinomas. This was in line with study done by Matz *et al.*^[10] where majority of High grade serous carcinoma were positive for Tp53.

CONCLUSION

Ovarian cancers have become one of the leading cause of morbidity and mortality in females. Histopathological examination being the mainstay of diagnosis helps in early diagnosis, staging and determination of prognosis. Thus in our study we have tried to increase the understanding about the histopathological spectrum of ovarian neoplasms and their distribution according to the histological subtype.

On behalf of all authors, the corresponding author states that there is no conflict of interest.

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