Original Research Article

Study of histomorphological pattern of ovarian neoplastic and non-neoplastic lesions

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ABSTRACT

Background: The ovary is a striking exception to the Virchow's dictum that organs that are frequently the site of primary cancer are rarely involved in secondary malignancy, and vice versa. Both primary and secondary carcinomas of the ovary are relatively frequent and show an astounding variety of pathologic patterns. The objectives were to study the histomorphological diversity of various neoplasms and non neoplastic lesions of ovary. To provide a specific diagnosis based upon the histomorphological study which is of paramount clinical significance in further management of the patient.
Methods: The present study is based on histomorphological evaluation of 100 cases of ovarian neoplastic and non neoplastic lesions received at the department of Pathology, tertiary care hospital from June 2008 to Aug 2010.
Results: A wide variation of age was noted. Among neoplastic lesions, majority of the cases were seen in age group of 20-39 years i.e., 50.6%. Non neoplastic lesion occurred in all age group, but majority of the incidences were seen in the age group of 20 to 40 years of age, accounting for 60% of total occurrence. the commonest ovarian tumor was serous cyst adenoma constituting 54.1% (46 cases) of all ovarian neoplasm. Mucinous cyst adenoma was the second most common tumor. There were 72 cases (85%) of benign, 2 cases (2%) of borderline and 11 cases (13%) of malignant tumors in the present study.
Conclusions: The diversity of neoplasms makes it mandatory to classify the tumors accurately by histopathological features following universally accepted classification.

Keywords: Histomorphological diversity, Neoplasm, Ovary

INTRODUCTION

Ovary is unique in the variety of lesions that can arise from it.[1] The ovary consists of a variety of cells. This variety of cells can give rise to benign, malignant or borderline tumors. This is due to the complex structure of ovary as well as its typical functions. These occur with the cyclical changes that take place monthly constantly.[2] This morphological diversity of ovarian tumors poses many challenges in diagnosis for both gynecologists and pathologists.

The ovary is a striking exception to the Virchow's dictum that organs that are frequently the site of primary cancer are rarely involved in secondary malignancy, and vice versa. Both primary and secondary carcinomas of the ovary are relatively frequent and show an astounding variety of pathologic patterns.[3]

In the female genital tract, among all the organs, ovary is the site of primary cancer. This takes ovary to the third spot in the females.[1] But mortality rate exceeds the combined mortality of both endometrium and cervical

neoplasm. This is because malignant potential of primary ovarian tumor is inversely proportional to symptomatology. Menstrual disturbance are infrequent and acute pain is rare unless torsion occurs. Consequently many of the malignant ovarian tumors have had variable periods of time to grow and often involve the adjacent organs before any symptoms develop or recognition takes place.

No age group is safe from these tumors, different tumors tending to involve different age groups preferentially.[3]

The main aim lies in distinguishing ovarian neoplasms from the wide spectrum of non-neoplastic lesions which frequently form a pelvic mass and are often associated with abnormal hormonal manifestation, thus potentially mimicking ovarian neoplasm. Their proper recognition is therefore important in guiding therapy.[1]

Despite the new techniques in imaging and genetics, the diagnosis of ovarian tumors is primarily dependent upon histopathological examination.

The present study is undertaken to study the diverse histomorphological patterns of ovarian lesions in this part of region and thus offering a specific diagnosis which is paramount clinical significance.

METHODS

The present study is based on histomorphological evaluation of 100 cases of Ovarian neoplastic and non neoplastic lesions received at the department of Pathology, tertiary care hospital from June 2008 to Aug 2010. Institutional Ethics Committee permission was taken before the start of the study adopting the standard Institutional procedures.

After consultation with senior faculty, a pre-designed, semi structured questionnaire was prepared. Due importance were paid to record a brief clinical history with age, Inpatient number , biopsy number , presenting symptoms and signs .Thorough gross examination was carried out and salient features were noted down. The gross specimens received were fixed in 10 percent formalin for 24 hours and from every specimen multiple sections were taken from representative sites for histopathological examination. Sections were processed for one day and later embedded in paraffin which was cut at five micron thickness.

Sections were stained with conventional Haemotoxylin and Eosin (H&E) stain. Special stains like Periodic Acid Schiff (PAS), reticulin stains were done whenever necessary.

The lesions were classified and studied as per the W.H.O. classification of ovarian tumors.

Data was entered in the Microsoft Excel worksheet and analyzed using proportions.

RESULTS

The present study was done from June 2008 to August 2010. A total number of 100 cases were studied. Of these, 85cases were neoplastic lesions and 15 were non neoplastic lesions.

Age distribution among neoplastic lesion is shown in Table 1. A wide variation of age was noted. Among neoplastic lesions, majority of the cases were seen in age group of 20-39 years i.e., 50.6%. The youngest patient was 14 years old and the oldest patient was 73 years old.

Table 1: Age distribution among neoplastic lesions

Age (years)	Number	Percentage
< 19	03	3.5
20-39	43	50.6
40-59	32	37.6
≥60	07	8.2

Non neoplastic lesion occurred in all age group, but majority of the incidences were seen in the age group of 20 to 40 years of age, accounting for 60% of total occurrence.

Table 2: Age distribution in non neoplastic lesions.

Age (years)	Number	Percentage
< 19	01	6.7
20-39	09	60
40-59	05	33.3
≥ 60	0	0

Table 3: Histological types of neoplastic lesion.

Tumors	Number	Percentage
Serous cystadenoma	46	54.1
Borderline serous cystadenoma	2	2.4
Serous cystadenocarcinoma	1	1.2
Papillary cystadenocarcinoma	3	3.5
Mucinous cystadenoma	15	17.6
Mucinous cystadenocarcinoma	1	1.2
Endometrioid adenofibroma	1	1.2
Endometrioid carcinoma	2	2.4
Epidermoid cyst	1	1.2
Granulosa cell tumor	1	1.2
Mature cystic teratoma	7	8.2
Malignant mixed germ cell tumor	1	1.2
Dysgerminoma	2	2.4
Krukenberg tumor	1	1.2
Mucinous cystadenoma with mature cystic teratoma	1	1.2

Table 3 shows that the commonest ovarian tumor was serous cyst adenoma constituting 54.1% (46 cases) of all ovarian neoplasm. Mucinous cyst adenoma was the second most common tumor.

Frequency of non neoplastic lesions was shown in the Table 4. Corpus luteal cysts formed the largest group (53.3%); followed by follicular cysts (33.3%) and endometriosis (13 .3%).

Table 4: Histological types of non neoplastic lesions.

Neoplastic lesions	Number of cases	Percentage
Follicular cysts	5	33.3
Copus leuteal cysts	8	53.3
Endometriosis	2	13.3
Total	15	100

There were 72 cases (85%) of benign, 2 cases (2%) of borderline and 11 cases (13%) of malignant tumors in the present study.

Table 5: Benign/malignant tumors.

Type of tumor	Number	Percentage
Benign	72	85
Malignant	11	13
Borderline	02	02
Total	85	100

DISCUSSION

A wide variation of age was noted. Among neoplastic lesions, majority of the cases were seen in age group of 20-39 years i.e., 50.6%. Non neoplastic lesion occurred in all age group, but majority of the incidences were seen in the age group of 20 to 40 years of age, accounting for 60% of total occurrence. The commonest ovarian tumor was serous cyst adenoma constituting 54.1% (46 cases) of all ovarian neoplasm. Mucinous cyst adenoma was the second most common tumor. There were 72 cases (85%) of benign, 2 cases (2%) of borderline and 11 cases (13%) of malignant tumors in the present study.
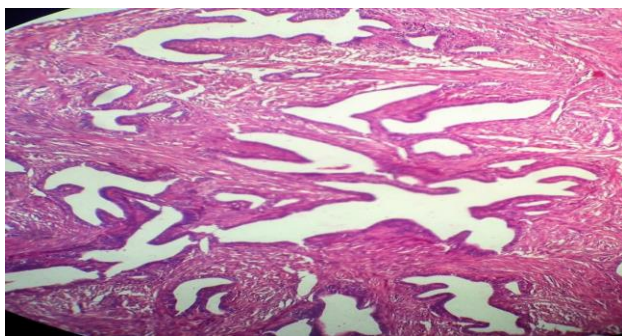

Figure 1: Serous cystadenocarcinoma, H&E.

Of the 100 cases of ovarian lesions studied in the present study, 85 cases were Neoplastic and 15 cases were non neoplastic lesions. Out of 85 cases of neoplastic lesions, 84.7% were benign lesions, 2.4% were borderline lesions and 12.9% were malignant lesions. Similar findings of more proportion of benign tumors compared to malignant tumors were reported by Couto et al and Pilli et al.[4,5]
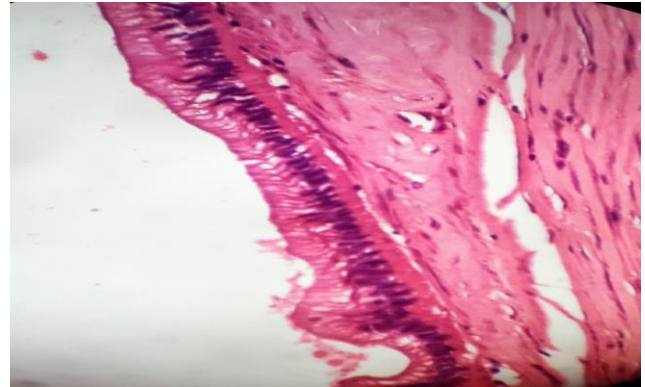

Figure 2: Mucinous cystadenoma, H&E, 400X.

The tumors of the ovary can occur at any age even in children and in old age. In this study we got maximum number of cases in 2nd to 4th decade of life. Pilli et al also found highest incidence of tumors of ovary in the age group of 20-39 years followed by incidence of 37.6% in the age group of 40-59 years in their study.[5] Ramachandran et al also observed similar results. They found an incidence of 53% in the age group of 20-39 years followed by an incidence of 30% in the age group of 40-59 years.[6]

Histologically, 85 neoplastic ovarian lesions were classified according to WHO classification. Our study results correlated with studies by Kar et al and Pilli et al but not with Gupta et al which showed more number of germ cell tumors.[5,7,8]
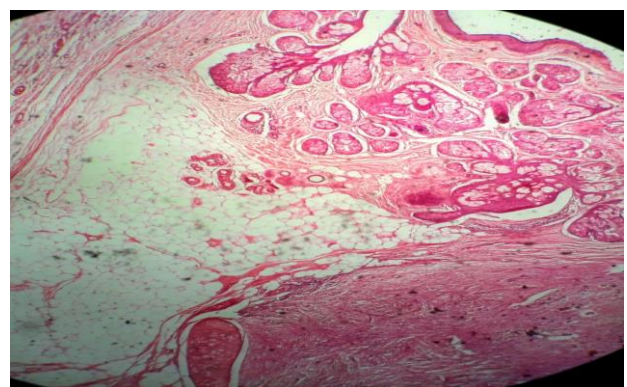

Figure 3: Mature cystic teratoma, H&E, 100X.

Among the individual tumors, the commonest benign epithelial tumors were serous cyst adenoma (54.1%), followed by mucinous cyst adenoma (17.6%). Among malignant tumors serous cystadenocarcinoma (4.7%) was the commonest, followed by endometrioid carcinoma (2.4%). Mucinous cystadenocarcinoma was the third

most common malignant epithelial tumor. Similar findings were seen in studies by Maheshwari V et al and Gupta et al.[7,9] However, the incidence of mucinous cystadenocarcinoma was more compared our study. Germ cell tumor was second most common group of ovarian tumor. Among 10 cases of germ cell tumor, commonest one was mature cystic teratoma accounting for 8.2% of total neoplastic lesions. Among malignant lesions dysgerminoma was commonest accounting 2.4% of total tumors. This result correlated with studies by Misra RK et al, Prabakar BR et al, Gupta SC et al.[2,7,10]

In our study, one case of malignant mixed germ cell tumor has been studied having a rare combination of immature teratoma with yolk sac tumor. Incidence of sex cord stromal tumor was less in the present study, composed of one case of granulosa cell tumor accounting for only 1.2% of total tumors which was low compared to studies by Gupta N et al, Misra RK, Prabhakar BR.[1,2,10] This small number may be because of low sample size. Incidence of metastatic tumor was less accounting for 1.2% of total neoplastic lesions having one case of Krukenberg tumor. Incidence of Krukenberg tumor is consistent with studies by Couto F et al, Prabhakar BR [2]and Misra RK.[2,4,10] There was a single case of mixed tumor (1.2%) having mucinous cystadenocarcinoma with mature cystic teratoma.

CONCLUSION

The ovary is a frequent site for primary and metastatic tumors. Due to its complex structure, primary ovarian neoplasms are of diverse histological types. The diversity of neoplasms makes it mandatory to classify the tumors accurately by histopathological features following universally accepted classification. Effective therapeutic management of ovarian malignant tumors continues to be a challenge to the oncologist. An accurate histopathological diagnosis combined with clinical staging will help in rendering prompt and appropriate treatment to the patient.

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