

Histopathological analysis of neoplastic and non neoplastic lesions of ovary: A study of one hundred cases

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ABSTRACT

Background: The study was done to know the various histopathological variants in ovarian lesions, the age incidence of various ovarian lesions and to assess the frequency of unilateral and bilateral lesions.

Materials and Methods: A retrospective and prospective analysis of all the samples sent for histopathology for a period of three years during June 2008–May 2011 was done to assess the trend of ovarian lesions. Cases were analyzed in detail regarding complete history, clinical examination and other findings.

Results: Out of one hundred ovarian lesions, 45 were non neoplastic lesions and 55 were neoplastic lesions. Out of the neoplastic lesions 46 were benign

and 9 were malignant. Among non neoplastic lesions follicular cyst was the most common lesion and predominantly they were bilateral followed by cortical stromal hyperplasia. The majority of the cases were seen in the age group of 31-60 years

Conclusion: Majority of the ovarian tumors has been observed between 3rd to 6th decades. Their proper recognition is therefore important to allow appropriate, usually conservative therapy. Histopathological study plays a major role by which we can assess the staging and grading of the lesion which will be greatly helpful in the management of the disease thereby reducing the morbidity and burden associated with it.

Keywords: Ovarian neoplasms, Surface epithelial tumor, Malignancy

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INTRODUCTION

The ovaries, which together measures only 14 grams in the adult, are the source of variety of neoplasms which is unequalled in any other organ. Such a variety of neoplasms are attributed to the multiple hormonal stimuli and alterations it undergoes from the neonatal period to the menopause. In addition, the proliferation of the constituent totipotent germ cells, the multipotential mesenchymal cells and the more frequent metaplastic transformation of the peritoneal covering of the ovary which account for the remarkable variety of neoplasms, which poses a diagnostic difficulty. Ovarian tumors are common forms of neoplasia in women and it accounts for about 30.0% of female genital cancers.¹ The rate of ovarian tumors is 2-6 new cases per 1,00,000 women

per year in Asian countries.² Ovarian carcinoma is the fourth most common female cancer and the fourth leading cause of death among cancer deaths in female.³⁻⁵ These tumors behave in diverse ways and usually they are detected after attaining a larger size. Diagnosis of various patterns of ovarian tumors is very important in the treatment and prognosis. The ovarian lesion constitutes the major burden in gynecology practices not only because of the anatomical location of the tumor, but also these tumors may remain asymptomatic for a longer period of time. Not only primary, the ovary is also the favorite site to get metastatic deposits from other abdominal cancers. In this study, we tried to find out the histopathological patterns, which are more prevalent in the population, and also to know the incidence of ovarian lesions in different age groups

and to know the frequency of unilateral and bilateral lesions.

MATERIALS AND METHODS

In our retrospective and prospective study, one hundred cases of ovarian lesions were analyzed for a period of three years during year June 2008 –May 2011. In the retrospective study, all the materials like blocks and slides available in the department were studied. In the prospective study, all the new cases admitted in the department of obstetrics and gynecology of the same institute were studied. The samples included the specimens from those patients who were treated and operated at the institute along with specimens from outside. The data was obtained which consists of the relevant information about age, clinical presentation, size of tumor, bilaterality, provisional diagnosis and operative findings. Data

were presented as frequencies and percentages, chi square test was used to analyze the association of tumor and age of the patients.

RESULTS

Table 1: Spectrum of various ovarian lesions

Type of lesion	Numbers	Percentage
Non-neoplastic	45	45%
Benign	46	46%
Malignant	9	9%
Total	100	100%

Table 1 describes the spectrum of various ovarian lesions. Out of 100 ovarian lesions, 45 were non neoplastic lesions and 55 were neoplastic lesions. Among the total 55 neoplastic lesions 46 were benign and 9 were malignant lesions.

Table 2: Unilateral and bilateral distribution of non- neoplastic lesions

Type of Lesion	Unilateral	Bilateral	Total Number	Percentage
Follicular cysts	7	9	16	35.5%
Cortical stromal hyperplasia	00	15	15	33.3%
Stromal hyperthecosis	1	00	1	2.2%
Hilar cell hyperplasia	1	00	1	2.2%
Twisted ovarian cysts	4	00	4	8.8%
Theca lutein cysts	1	00	1	2.2%
Ovarian pregnancy	4	00	4	8.8%
Koch's tuboovarian mass	2	00	2	4.4%
Testicular tissue in ovary	1	00	1	2.2%
Total number of lesions	21	24	45	100%

Table 2 shows the distribution of non-neoplastic lesions. Follicular cysts are predominantly seen in bilateral ovaries (9) as compared to 7 unilaterally. Cortical stromal hyperplasia is

purely a bilateral lesion and rest of lesions are seen in unilateral ovaries. Among various unilateral lesions twisted ovarian cysts and ovarian pregnancy was observed in 4 cases each.

Table 3: Unilateral and bilateral distribution of neoplastic lesions

Type of Lesion	Unilateral	Bilateral	Total Number	Percentage
Serous type	33	5	38	69.09%
Mucinous type	6	2	8	14.5%
Benign cystic teratoma	5	00	5	9.09%
Granulosa theca cell tumor	1	00	1	1.81%
Dysgerminoma	1	00	1	1.81%
Embryonal carcinoma	1	00	1	1.81%
Others (leiomyoma)	1	00	1	1.81%
Total no of tumors	48	7	55	100%

Table 3 shows the distribution of various neoplastic lesions. Serous tumors are the most common neoplasms seen in 38 cases and are predominantly seen in unilateral ovaries 33. In our study, mucinous

tumors are also predominantly unilateral and observed in 6 cases. Other common neoplastic lesions seen in unilateral ovaries were benign cystic teratomas (5).

Table 4: Frequency distribution of benign and malignant ovarian tumors

	Name of tumor	Number	Percentage
Benign lesions	Serous tumors	34	73.91%
	Mucinous cystadenoma	6	13.04%
	Benign cystic teratoma	5	10.86%
	Leiomyoma	1	2.17%
	Total	46	100.00
Malignant lesions	Serous cystadenocarcinoma	4	44.44%
	Mucinous cystadenocarcinoma	2	22.22%
	Granulosa cell tumor	1	11.11%
	Dysgerminoma	1	11.11%
	Embryonal carcinoma	1	11.11%
	Total	9	100.00%

Table 4 shows the frequency distribution of various benign and malignant lesions. Of all benign tumors serous tumors were the commonest accounting for 34 cases (73.9%) followed by mucinous cystadenoma 6 (13.04%) and benign cystic teratoma 5(10.86%).

Among the total 9 malignant lesions, serous cystadenocarcinoma was the commonest malignant tumors observed among 4 cases (44.44%) followed by mucinous cystadenocarcinoma seen in 2 cases (22.22%).

Table 5: Distribution of non-neoplastic and neoplastic ovarian lesions in the context of age

Type of lesion	< 30 years	31-60 Years	>60 years	Total	Significance 0.418
Non-neoplastic	10	33	02	45	
Neoplastic	14	35	06	55	
Total	24	68	08	100	

Table 5 showed the distribution of non-neoplastic and neoplastic ovarian lesions in the context of the age. It has been observed that the majority of the cases (33 non-neoplastic and 35 neoplastic) are seen

in the age group of 31-60 years. There was no statistically significant difference of distribution of tumors and age ($p=0.418$).



Figure-1

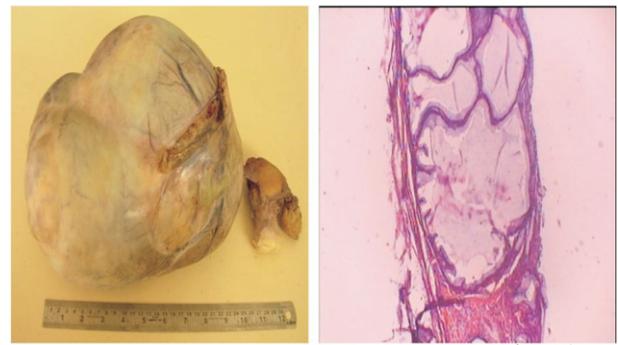


Figure-2

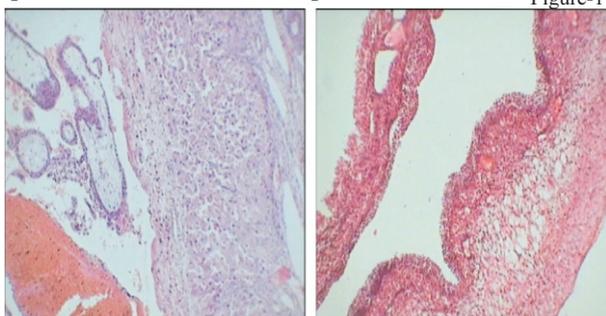


Figure-3

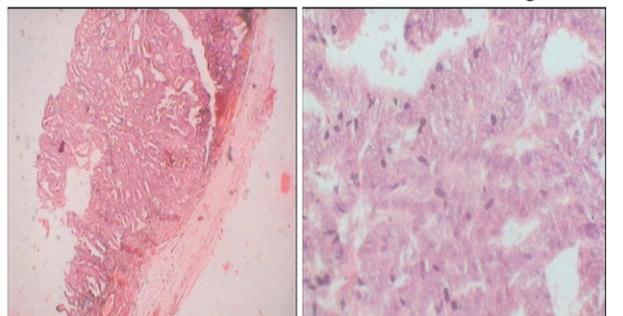


Figure-4

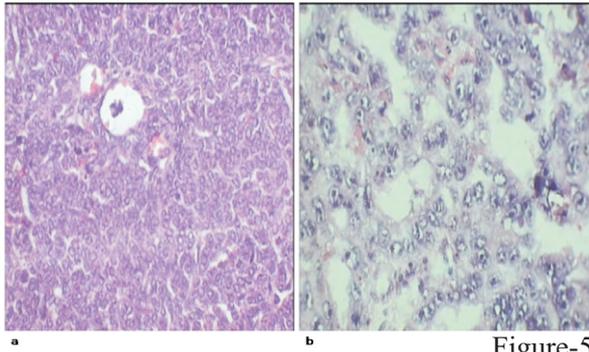


Figure-5

Figure 1: Gross photograph of serous cystadenoma (Figure a). Section showing ovarian tissue lined by flattened to cuboidal epithelium (H&E,x10).

Figure 2: Gross photograph of mucinous cystadenoma (Figure a). Section showing mucinous cystadenoma of ovary (H&E,x10).

Figure 3: Section showing villi with adjacent corpus luteum (Figure a, H&E, x40). Section showing theca lutein cysts (Figure b, H&E, x10).

Figure 4: Section showing papillary serous cystadenocarcinoma (Figure a, H&E, x10). Section showing nuclear stratification (Figure b, H&E, x40).

Figure 5: Section showing adult granulosa cell tumor (figure a, h&e x40) and embryonal cell carcinoma showing sheets of anaplastic cells. (Figure b, H&E, x40).

DISCUSSION

The ovary is a complex structure from an embryological, anatomical and functional standpoint. A detailed morphological study of ovarian lesions is of utmost importance in order to have a systematic diagnosis and planning the various treatment modalities as well as assessing the prognosis of the lesion. The ovary is the second most common site for cancer in the female pelvic reproductive organs, but it is associated with the highest mortality rate.⁶ These cases do not clinically manifest early and delayed presentation in either stage III or stage IV often leads to poor survival.

Sometimes the non-neoplastic lesions of the ovary can simulate neoplasms clinically. So it becomes mandatory to rely on its histopathological picture to differentiate between functional enlargement and neoplasia. Further the lesions in the paraovarian regions also mimic ovarian neoplasms and some of the secondary ovarian neoplasms are of greatest concern as they masquerade as primary ovarian tumors.

The most common sites of involvement of ovarian serous tumors are the contralateral ovary, peritoneal

cavity, para aortic and pelvic lymph nodes and liver. With intra abdominal spread there is often ascites and involvement of the omentum. Lung, and pleura are the most common sites of extra abdominal spread. The spread of borderline serous tumors is mainly in the form of invasive or non invasive peritoneal implants, but they can also involve lymph nodes of the neck and other sites, lung and pleura. The sites of involvement of metastatic mucinous and endometrial, ovarian carcinoma are similar to those of the serous tumors, but there is less tendency to early and widespread peritoneal involvement.

In spite of significant advances in the imaging modalities, sometimes they are also misleading cytological interpretation of aspirates from an ovary represents one of the most challenging and difficult fields in diagnostic cytology and immunohistochemistry provides a functional correlation for the traditional morphological classification. However, as in all other organs, all these modalities can be used as adjuncts in the proper diagnosis of the tumors histologically.

We have observed an increased incidence of malignancy in our set up but to confirm this observation further exploratory research with large sample size is needed. In the present study out of 100 ovarian lesions, 45 were non neoplastic lesions and 55 were neoplastic lesions. Among the total 55 neoplastic lesions 46 were benign and 9 were malignant lesions. In a study done by Kanthikar et al out of 145 cases, 75 were non-neoplastic and remaining 70 were neoplastic whereas a study conducted by Vaidya et al revealed 80.72% cases as benign, and only 15.70% were malignant. The difference may be because of geographical diversity and pattern of cases reporting to the hospitals. Hence it is imperative to analyze such pattern in order to plan a preventive and therapeutic interventions in a specified geographical region.^{7,8}

In the present study among the various non-neoplastic lesions, follicular cysts are predominantly seen in bilateral ovaries followed by cortical stromal hyperplasia. In a study conducted by Kanthikar et al the most common non-neoplastic lesion observed was solitary follicular cysts among 74.66% of cases followed by corpus luteal cysts in 20% of cases.⁷

Among the various neoplastic lesions, serous tumors are the most common neoplasms and are predominantly unilateral in nature followed by

mucinous tumors. Other common neoplastic lesions seen in unilateral ovaries were benign cystic teratomas. Our findings are consistent with the findings of the study done by Vaidya et al where most of the tumors were of serous and mucinous origin and were seen in 58.23% and 36.08% cases.⁸

Of all benign tumors, serous tumors were the commonest followed by mucinous cystadenoma and benign cystic teratoma in the present study. Also among the malignant lesions, serous cystadenocarcinoma was the commonest malignant tumor observed followed by mucinous cystadenocarcinoma. In a study done by Jha et al surface epithelial tumors were more common (52.2%) followed by germ cell tumors (42.2%).⁹ Similarly serous carcinoma was the most common malignancy observed in a study conducted by Vaidya et al.⁸

It has been observed that the majority of the cases was seen in the age group of 31-60 years however there was no statistically significant difference of distribution of tumors and age in the present study. In a study done by Vaidya et al most benign tumors (68.60%) were diagnosed in the 3rd and 4th decades of life and most malignant tumors (50.88%) were seen after the 4th decade, similarly most malignant tumors (73.1%) were seen above 40 years in Jha et al study.^{8,9}

Natural history and response to treatment vary considerably from one group of tumors to others, especially in the area of chemotherapy and radiotherapy. The best therapeutic approach may be highly specific, for instance the dysgerminoma is extremely radiosensitive and curable with radiotherapy, even in the presence of metastasis. Whereas in case of a malignant teratomas, a combination of chemotherapy has produced remarkable results. Accordingly, accurate histology has been often a critical factor in achieving an optimum treatment response. A detailed study of the histopathological patterns of ovarian tumors was done, in order to obtain some meaningful relationship between incidence and distribution of various types of ovarian cancers, the ultimate goal being better management.

The data available from this study can help in identifying the pattern of ovarian tumors prevalent in this part of the region thereby suggesting the appropriate prevention and management strategies.

CONCLUSION

The majority of the ovarian tumors has been observed between 4th to 6th decades. Their proper recognition is therefore important to allow appropriate, usually conservative therapy. The present study is done to analyze the various ovarian lesion and we observed that neoplastic lesions contributed a higher number of cases than non neoplastic. Histopathological studies play a major role by which we can assess the staging and grading of the lesion which will be greatly helpful in the management of the disease thereby reducing the morbidity and burden associated with it.

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