Original Research Article

Histopathological pattern of neoplastic ovarian lesions

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Abstract

Introduction: Ovarian neoplasm is the most fascinating tumor of women in terms of its histogenesis, clinical behavior and malignant potential. The ovary is the third most common site of primary malignancy in female genital tract after cervix and endometrium accounting for 30% of all cancers of female genital tract.

Aim and objectives: To study frequency and distribution of different histological types of ovarian tumors and to analyse age distribution of these tumors and to find out frequency of benign and malignant neoplasms of ovary.

Material and methods: The present study was based on histopathological evaluation of 97 cases of ovarian neoplastic lesions received at the Department of Histopathology, B.J. Medical College, Ahmedabad during October 2012 to October 2013. The gross specimens received were fixed in 10 percent formalin for 24 hours and multiple sections from each specimen were taken to include the representative area for histological examination. Sections were processed by routine paraffin method, blocks were cut at five micron thickness and the sections were stained with conventional Haematoxylin and Eosin (H&E) stain. The lesions were then classified and studied according to WHO Classification of ovarian tumors. (ICD - 9th edition).

Results: A total number of 97 cases were studied. Among these, 82 cases (84.5%) were benign, 2 cases (2.1%) were borderline and 13 cases (13.4%) were malignant tumors. Benign neoplasms were most commonly seen in 3rd to 5th decade, whereas malignant neoplasms were commonly seen in 5th decade. Serous cystadenoma (52.7%) was the commonest benign tumor followed by Mucinous

cystadenoma (28.4%). Among the malignant surface epithelial tumors, serous cystadenocarcinomas (8.1%) were most common followed by Mucinous cystadenocarcinomas (4.1%).

Conclusion: Benign ovarian tumors were more common than malignant ones for all age groups. Surface epithelial tumors were the most common class of tumors. Serous cystadenoma was the most common ovarian tumor overall as well as the most common benign tumor, whereas serous cystadenocarcinoma was the most common ovarian malignancy. Malignant ovarian tumors were more common above 40 years.

Key words

Ovarian lesions, Histopathology, Neoplasm, Serous cystadenoma, Surface epithelial tumors.

Introduction

Ovarian neoplasm is the most fascinating tumor of women in terms of its histogenesis, clinical behavior and malignant potential. The ovary is the third most common site of primary malignancy in female genital tract after cervix and endometrium accounting for 30% of all cancers of female genital tract. These tumors behave in diverse way and generally escape the detection until they attain a larger size. This is primarily due to the reason that either the symptoms are vague or most of these are asymptomatic therefore they manifest over a time period due to no definite screening program. Diagnosis of various histological patterns of ovarian tumors is very important in the treatment and prognosis [1-3].

Aim and objectives

- To study frequency and distribution of different histological types of ovarian tumors and to analyse age distribution of these tumors.
- To find out frequency of benign and malignant neoplasms of ovary.

Material and methods

The present study was based on histopathological evaluation of 97 cases of ovarian neoplastic lesions received at the Department of Histopathology, B.J. Medical College, Ahmedabad during October 2012 to October 2013.

The gross specimens received were fixed in 10 percent formalin for 24 hours and multiple sections from each specimen were taken to include the representative area for histological examination. Sections were processed by routine paraffin method, blocks were cut at five micron thickness and the sections were stained with conventional Haematoxylin and Eosin (H&E) stain.

The lesions were then classified and studied according to WHO Classification of ovarian tumors. (ICD - 9th edition). (**Photo – 1 to 11**)

Results

A total number of 97 cases were studied. Among these, 82 cases (84.5%) were benign, 2 cases (2.1%) were borderline and 13 cases (13.4%) were malignant tumors. Benign neoplasms were most commonly seen in 3rd to 5th decade, whereas malignant neoplasms were commonly seen in 5th decade (**Table – 1, 2**).

Out of 74 (76.3%) surface epithelial tumors, 85.1 % were benign, 12.1% were malignant and 2.7% were border line neoplasms as per **Table – 3** and **Graph - 1.**

Serous cystadenoma (52.7%) was the commonest benign tumor followed by Mucinous cystadenoma (28.4%) as per **Table - 1**. Among the malignant surface epithelial tumors, serous cystadenocarcinomas (8.1%) were most common followed by Mucinous cystadenocarcinomas (4.1%).

Germ cell neoplasms constituted 17.6% of all ovarian neoplasms included in this study. Most of the germ cell neoplasms (94.1%) were benign and reported as mature cystic teratomas or Dermoid cysts. One case was reported as Dysgerminoma. 6.1% cases were classified as Sex cord stromal tumors, among those 50% were benign and include fibroma and fibro-thecoma and 50% were malignant which include granulosa cell tumor as per **Table – 3** and **Graph - 1.**

Discussion

Ovarian neoplasm has become increasingly important not only because of its large variety of histomorphological patterns but more because they have gradually increased the mortality rate in female genital cancers. The incidence, clinical appearance and the behavior of the different types of ovarian tumors is extremely variable.

Though certain investigations like peritoneal fluid cytology, estimation of serum lactate dehydrogenase, fibrin degradation products and immunological tests have been reported to be of some help in predicting the nature of the pathology, it is generally impossible to diagnose the nature of the ovarian tumor preoperatively just by clinical examination and exploration. Hence, one has to depend on the microscopic appearance of the tumor for further management of the ovarian tumors [4, 5].

In this study 82 cases (84.5%) were benign, 13 cases (13.4%) were malignant and 2 cases (2.1%) were borderline tumors. This is almost similar to the data from western countries where 75.0-80.0% of ovarian tumors were benign and also in study carried out in India by Pilli, et al. [4]. However this figure was only 59.2% in Ahmad, et al. [6] study in Pakistan as per **Table - 4**.

Benign neoplasms were most commonly seen in 3rd to 5th decade, whereas malignant neoplasms were commonly seen in 5th decade. Similar to this study, other studies also show peak incidence of ovarian tumor in the same age group [7, 8].

Among the major histological classes, the commonest type of ovarian neoplasm seen in our study was surface epithelial tumours. However, Guppey, et al. [9] documented a higher incidence of epithelial tumours than in our study (90%).

In this study, benign serous cyst adenomas were found to be more common than mucinous cyst adenomas. Similar results were reported by Sumaira Yasmin, et al. [10]

Serous cyst adenocarcinoma is the most common primary ovarian epithelial malignancy in this study. Tumors in borderline category are characterized by epithelial proliferation greater than that of the benign tumor but an absence of destructive invasive stroma. In this study only 2.1% (2/97) tumors were classified as borderline or tumors of low malignant potential.

Some molecular and histological evidences suggest that mucinous epithelial ovarian cancers develop via a sequence from benign tumor, through borderline tumor to invasive cancer which suggests that borderline and invasive mucinous ovarian cancer can be prevented by surgical excision of identifiable precursor lesions.

The data available from this study can help in recognizing the pattern of ovarian tumors. Whether the malignant tumor arises de novo or the benign tumor transforms into malignant is the subject of ongoing debate and research.

Germ cell tumors comprised 17.6% of all ovarian neoplasms. This is similar to findings reported by Tyagi, et al. (23.58%). [8] 95% of ovarian germ cell tumors are mature cystic teratomas in the western world which was also observed similarly in our study. The frequency of sex – cord – stromal tumours (SCST) in our study was 6.1%. This value is comparable with Ahmad, et al. study in Pakistan. [6]

Conclusion

Benign ovarian tumors were more common than malignant ones for all age groups. Surface epithelial tumors were the most common class of tumors, similar to the Western and local data from other medical institutions. Considering individual tumors, serous cystadenoma was the most common ovarian tumor overall as well as the most common benign tumor, whereas serous cystadenocarcinoma was the most common ovarian malignancy. Malignant ovarian tumors were more common above 40 years. Based on the results of this study it was evident that early diagnosis is crucial to help in decreasing morbidity and mortality among these patients.

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Table - 1: Frequency of individual benign tumors in different age groups.

Histological type	Age in years							
	0-20	**21-30**	**31-40**	**41-50**	**51-60**	**61-70**	**>70**	**Total**
Serous cystadenoma	2	6	20	6	3	1	1	39
Mucinous cystadenoma	2	4	7	3	3	1	1	21
Cystadeno-fibroma			1					1
Benign mature teratoma	1	5	1	7	2			16
Fibroma			1		1			2
Fibro-thecoma			1					1
Borderline tumors		1				1		2
Total	5	**16**	**31**	**16**	9	3	2	82

Table - 2: Frequency of individual malignant tumors in different age groups.

Histological type	Age in years							
	0-20	21-30	31-40	41-50	51-60	61-70	>70	Total
Serous cystadeno-carcinoma			2	3	1			6
Mucinous cystadeno-carcinoma			1	2				3
Granulosa cell tumor			2	1				3
Dysgerminoma	1							1
Total	1		5	**6**	1			13

Table - 3: Distribution of ovarian neoplasms according to histological type.

Type	No.	%
Surface epithelial tumors	74	76.3
Germ cell tumors	17	17.6
Sex cord stromal tumors	6	6.1

Table - 4: Frequency of benign, malignant and borderline ovarian neoplasms in various studies.

Type of Tumor	Ahmad, et al. [6]	Pilli, et al. [4]	Present study
Benign	59.18	75.2	84.53
Borderline	0.2	2.8	2.07
Malignant	40.18	21.8	13.40

Graph - 1: Distribution of ovarian neoplasms according to histological type.

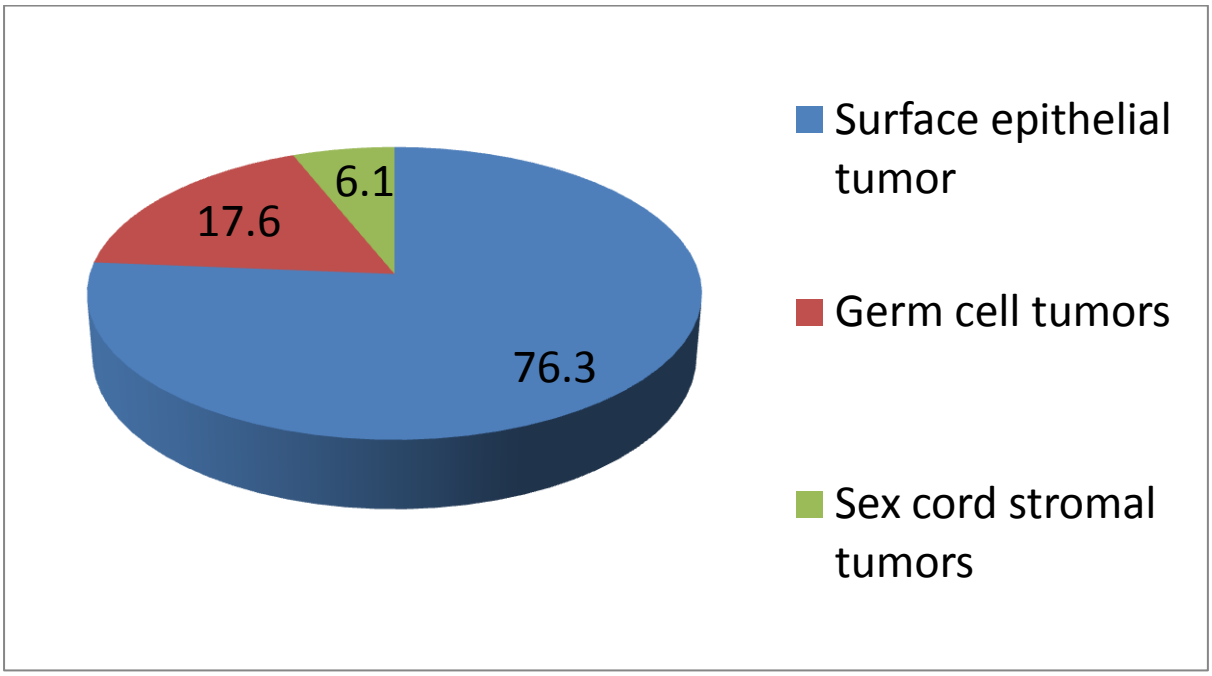


Figure – 1: Serous cystadenoma of the ovary.

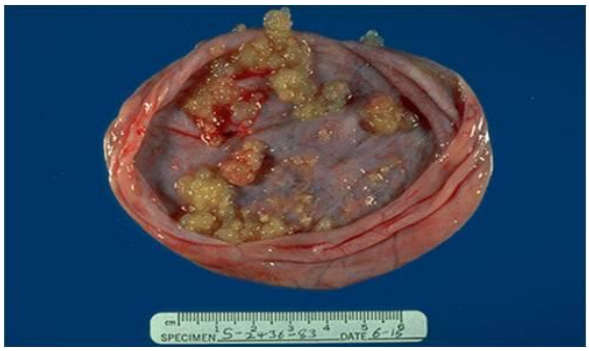


Figure – 2: Serous cystadenoma of the ovary.

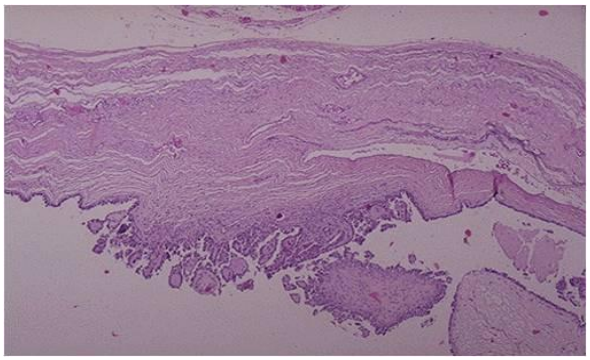


Figure – 3: Serous cystadenocarcinoma of the ovary.

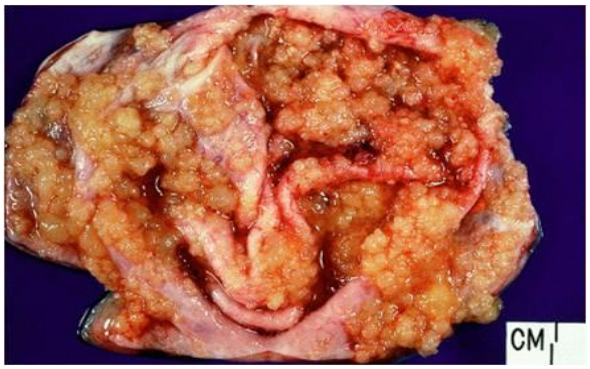


Figure – 4: Serous cystadenocarcinoma in which there is more pronounced papillary growth with more hyper chromatic cells.

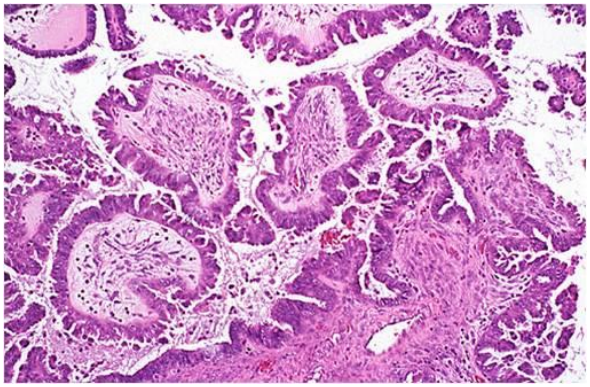


Figure – 5: Mucinous cystadenoma of the ovary.

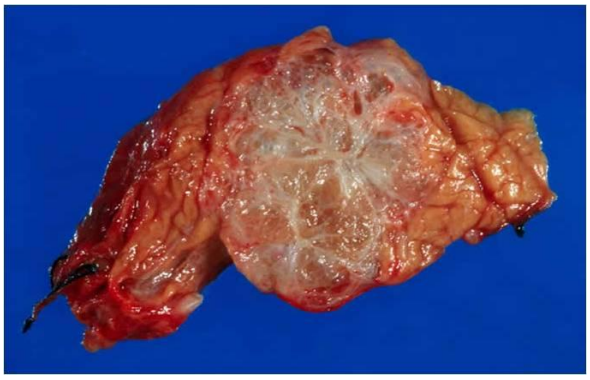
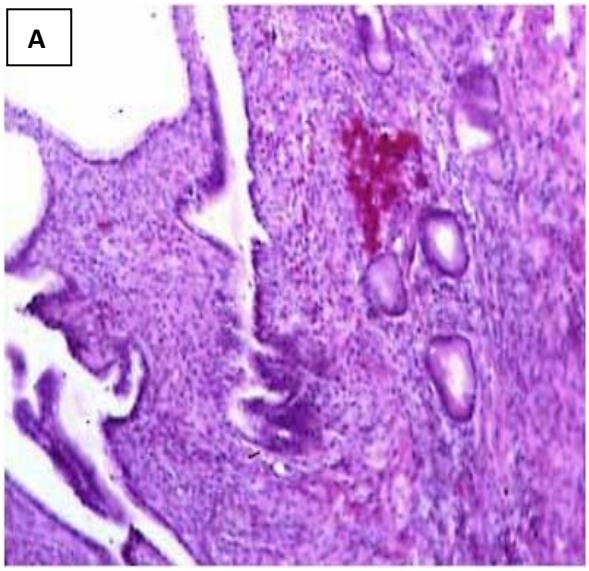


Figure – 6A, 6B: Mucinous cystadenoma of the ovary.



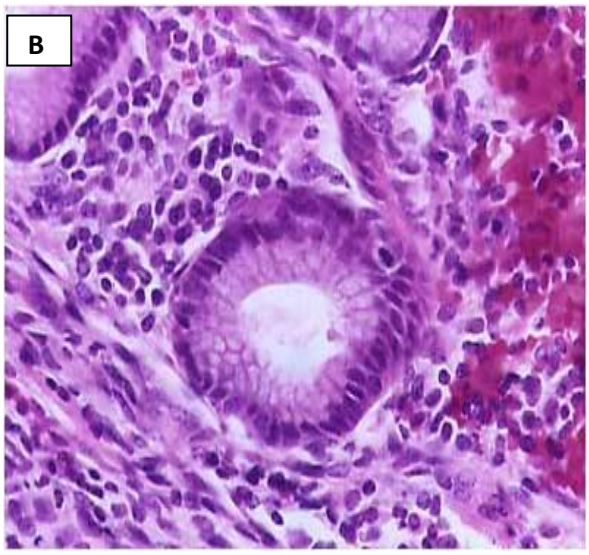


Figure – 7: Mucinous cystadenocarcinoma: The cyst wall showing papillae and cribriform glands lined by highly atypical cells with frequent mitoses. The underlying stroma penetrated by nests of malignant cells with desmoplastic response.

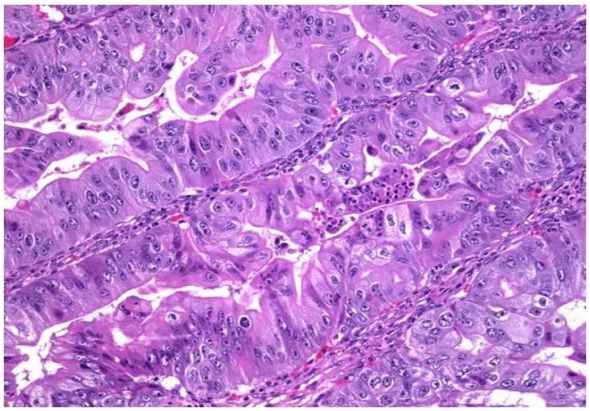


Figure – 8: Granulosa cell tumor.

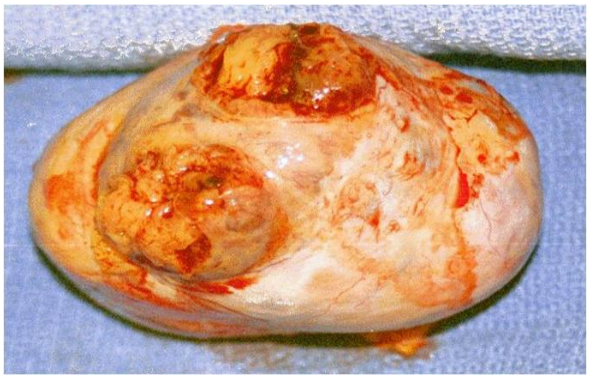


Figure – 9: Granulosa cell tumor has nests of cells which are forming primitive follicles.

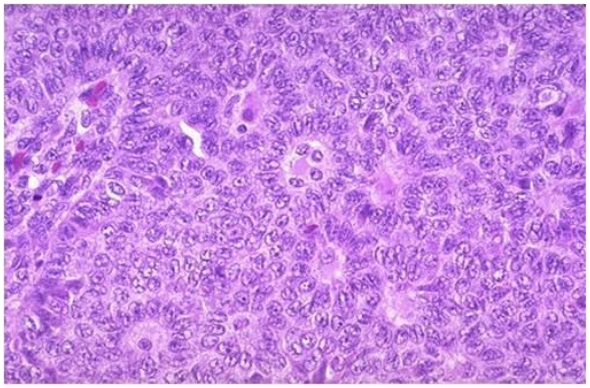


Figure – 10: Dysgerminoma.

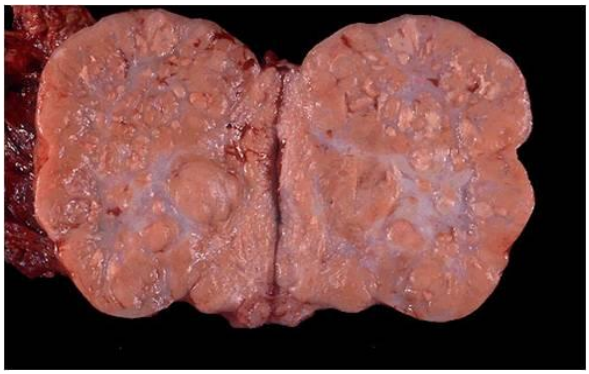


Figure – 11: Dysgerminomas: The tumor cells arranged in sheets. Delicate fibrous bands containing lymphocytes traverse the tumor. Note the resemblance to a seminoma.