

Histopathological study of ovarian tumors in Ajmer region

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Abstract

Background: Ovarian tumor is the seventh leading cause of cancer death (age standardized mortality rate: 4/100,000) among women worldwide, and in India, it is comprising up to 8.7% of cancers in different parts of the country. There are numerous types of ovarian tumors; both benign and malignant. About 80% are benign and these occur mostly in young women aged between 20 and 45 years. The malignant tumors are more common in older women aged between 40 and 65 years.

Objective: To study the incidence, morphological and clinicopathological correlation, gross, histological pattern, and incidence of age distribution of ovarian tumors in Ajmer region.

Materials and Methods: The present retrospective and prospective study was carried out in the Department of Pathology, Jawaharlal Nehru Medical College, Ajmer, Rajasthan, India, from June 2008 to May 2013. The diagnosis was confirmed by histopathological examination with hematoxylin and eosin stain. Special stains and immunohistochemistry were carried out whenever needed.

Result: Of the 242 cases of ovarian tumors, 72.3% were benign, 2.4% were borderline, and 25.2% were malignant. Histologically, surface epithelial tumors were the most common (65.2%) followed by germ cell tumors (23.9%), sex cord-stromal tumors (7.4%), and metastatic tumors (3.3%). Age incidence of benign tumor was age group of 21–40 years, borderline 21–40 years, and malignant 41–60 years.

Conclusion: It is concluded from this study that on morphological grounds, tumors originating from surface epithelium are the most common variant. Therefore, suggested that efforts must be made to identify the risk factors for malignancy.

KEY WORDS: Ovarian tumors, benign, malignant

Introduction

Ovarian tumor is the seventh leading cause of cancer death (age standardized mortality rate: 4/100,000) among women worldwide and in India it is comprising up to 8.7% of cancers in different parts of the country.^[1,2] Women between 65 and 84 years of age have ovarian cancer incidence rates

2 to 3 times higher than younger women. Ovarian tumors are notorious for their large size and their frequent association with relatively mild symptoms.^[3] Peak incidence of invasive epithelial ovarian cancer is at 50–60 years of age. About 30% of ovarian neoplasms in postmenopausal women are malignant, whereas only about 7% of ovarian epithelial tumors in the premenopausal women are frankly malignant.^[4] Risk factors for ovarian cancer are not well defined. However, there is general agreement on two: nulliparity and family history.^[5] Ovarian tumors are often difficult to detect until they are advanced in stage or size, as symptoms are vague and insidious. Identification of various histological patterns of ovarian tumors is important for diagnosis as well as prognosis.^[5]

The purpose of this study was to access the incidence, morphological and clinicopathological correlation, gross, histological pattern, and incidence of age distribution of ovarian tumors in Ajmer region.

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Materials and Methods

The present retrospective and prospective 5-year study was carried out in the Department of Pathology, Jawaharlal Nehru Medical College, Ajmer, Rajasthan, India, from June 2008 to May 2013.

In the retrospective study, all the materials such as blocks and slides available in the department were studied. Also, all the new cases admitted in the JLN Medical College and Associated Group of Hospitals in Ajmer were studied. The samples included the specimens from those patients who were treated and operated at our institute along with specimens from outside.

The specimens were allowed to fix in 10% buffered formalin for 24–28 hours. After fixation multiple bits were taken from representative areas of the tumor and the accompanying tissue. Special attention was given to solid areas adjacent to the ovarian surface and papillary projections. They were processed for histopathological examination and paraffin blocks were made. The blocks were cut at 3–5 μ m thickness and stained with hematoxylin and eosin stain. Special stains and immunohistochemistry were carried out whenever needed.

Result

A total of 242 cases of ovarian tumors were studied at the Department of Pathology, Jawaharlal Nehru Medical College, Ajmer from June 2008 to May 2013.

In this study, 175 (72.31%) were benign, 61 (25.21%) were malignant, and 6 (2.48%) were borderline tumors [Table 1].

About two-third of all benign neoplasms were seen between the age group of 20 and 40 years, whereas two-third of all malignant ovarian neoplasms were seen after the age of 40 years. The youngest patient was of 2-year old girl and the oldest was 80 years old and peak incidence occurring in 21–40 years age group.

Right-sided tumors of ovary, 134 cases (55.37%), were more common than the left-sided tumors, 94 cases (38.84%). Of 14 (5.79%) bilateral cases, 9 were benign and 5 were malignant.

Histologically, surface epithelial tumors were the most common (65.2%) followed by germ cell tumors (23.9%) sex cord–stromal tumors (7.4%) and metastatic tumors (3.3%) [Table 2].

The most common epithelial tumors were serous (115 cases, 47.52%), mucinous (36 cases, 14.88%), Brenner tumor (6 cases, 2.48%), and endometrioid tumor (1 case, 0.41%). Of 58 germ cell tumors, benign cystic teratoma was the most common comprised of 17.77%, and 18 cases of sex cord–stromal tumor. Among sex cord–stromal tumors the most common tumor was granulosa cell tumor in 10 cases (4.13%) and 8 cases (3.31%) were metastatic tumors.

The most common presenting symptom was pain in lower abdomen in 185 cases (76.45%) and mass per abdomen in 98 cases (40.50%).

Of 242 cases, 221 patients were married and among them 195 cases were parous with 2 or more pregnancies, 26 cases were nulliparous, and 21 cases were unmarried, all were below 21 years.

Most of the tumors were cystic (179, 73.97%). Among them, 148 were benign, 25 were malignant, and 6 were borderline.

Serous cystadenoma was the most common benign tumor comprised of 31.4% of cases and papillary serous cystadenocarcinoma (7.02%) was the most common among malignant tumors.

Discussion

Of the 242 cases of ovarian tumors, 72.3% were benign, 2.4% were borderline, and 25.2% were malignant. Histologically, surface epithelial tumors were the most common (65.2%) followed by germ cell tumors (23.9%), sex cord–stromal tumors (7.4%), and metastatic tumors (3.3%). Age incidence of benign tumor was age group of 21–40 years, borderline 21–40 years, and malignant 41–60 years.

In this study, the most common ovarian tumors were surface epithelial tumors (65.29%), followed by germ cell tumors (23.97%) and sex cord–stromal tumors (7.44%). Metastatic tumors were found to occur in 3.31% of the cases. Similar observations were made by Swamy and Satyanarayana^[6], Gupta *et al.*^[7] and Pilli *et al.*^[8] The most common epithelial tumors were serous cystadenoma followed by mucinous cystadenoma and the most common germ cell tumor was benign cystic teratoma (43 cases), similar results reported by Yasmin *et al.*^[9] In this study, 14 cases (5.79%) of bilateral ovarian tumors were seen. This incidence is lower than 21.8% and 13.04% reported by Kanthikar *et al.*^[10] and Jha and Karki.^[11] The largest tumor encountered in the present study was a mucinous cystadenoma measuring 35 × 24 × 15 cm in size. Similar observation was made by Zaman *et al.*^[12] who reported a mucinous cystadenoma with a maximum diameter of 27 cm. The majority of the benign tumors occurred in the 21–40 years age group in the present study, and overall the carcinoma was more common at an older age than the benign tumors, present findings concurred with the similar observation made by Pilli *et al.*,^[8] Jha and Karki^[11] and Shah and Hishikar.^[13] Menstrual irregularities were seen in 25.62% of the patients in the present study, which is lower than 36% as reported by Kanthikar *et al.*^[10] Benign tumors were more often cystic in consistency in this study, which was comparable to the results of Kanthikar *et al.*^[10] and malignant tumors were solid consistency which was also comparable to the study of Kanthikar *et al.*^[10] Serous tumors were the most common tumors encountered in the study accounting for 115 cases (47.52%), which is comparable to 50% as reported by Kanthikar *et al.*^[10] Mucinous tumors were seen in 14.87% cases of all ovarian tumors, which is lower than the studies conducted by Kanthikar *et al.*^[10] and Jha and Karki.^[11] One case (0.41%) of endometrioid carcinoma in this study, which was lower than the percentage of

Table 1: Distribution of ovarian tumors

Type of tumors	Number of cases	Percentage
Benign tumor	175	72.31
Borderline tumor	6	2.48
Malignant tumor	61	25.21
Total	242	100

$p = 0.000$ (S)

Table 2: Histological types and percentage distribution of ovarian tumors

S. No.	Type of ovarian tumor	Number of cases (242)	Percentage	Overall %
1	Surface epithelial tumors	158	100	
A	Serous tumors	115	72.78	47.52
	Benign	88	55.70	36.36
	Borderline	2	1.27	0.83
	Malignant	25	15.82	10.33
B	Mucinous tumors	36	22.78	14.88
	Benign	27	17.09	11.16
	Borderline	4	2.53	1.65
	Malignant	5	3.16	2.07
C	Endometrioid tumor	1	0.63	0.41
D	Brenner tumor	6	3.80	2.48
2	Sex cord–stromal tumor	18	100	7.44
	Granulosa cell tumor	10	55.56	4.13
	Fibroma	3	16.67	1.24
	Thecoma fibroma	4	22.22	1.65
	Androblastoma	1	5.55	0.41
3	Germ cell tumors	58	100	23.96
	Dysgerminoma	6	10.34	2.48
	Yolk sac tumor	3	5.17	1.24
	Mature cystic teratoma	43	74.14	17.77
	Immature teratoma	2	3.45	0.82
	Struma ovarii	3	5.17	1.24
	Mixed germ cell tumor	1	1.72	0.41
4	Metastatic tumor	8	100	3.31

Ahmad Z *et al.*^[3] and Zaman *et al.*^[12] studies 12.03% and 3.87%, respectively. In this study, 10 cases (4.13%) of granulosa cell tumors were seen, which was comparable to the study conducted by Zaman *et al.*^[12] Fibroma were encountered in 1.24% of cases in this study as observed in the study which were lower than the results found by Kanthikar *et al.*^[10] Yolk sac tumors were seen in three patients, between 40 and 50 years of age, constituting 1.24% of all the ovarian tumors with a median age of 37.2 years, comparable to the results observed by Ahmad *et al.*^[3] and Zaman *et al.*^[12] Teratoma was the most common germ cell tumor found in this study constituting 19.83% of all ovarian tumors, which is comparable to the results observed by Ahmad *et al.*^[3]

The main strength of this study is that it gives the most comprehensive picture of the current state of ovarian tumor incidence and histopathological pattern. The limitation of this

study is that it did not reveal the status of tumor markers and gene at the time of presentation in the ovarian cancer patient.

Conclusion

It is concluded from this study that on morphological grounds, tumors originating from surface epithelium are the most common variant. Therefore, suggested that efforts must be made to identify the risk factors for malignancy.

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