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Original Research Article

Histopathological study of ovarian tumours in a tertiary healthcare centre of southern Rajasthan

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ABSTRACT

Aims and Objectives: Ovarian tumors are an increasing cause for morbidity and mortality worldwide. The present study was conducted in a tertiary healthcare centre of southern Rajasthan to determine the incidence of various histological and morphological variants of ovarian tumour, their clinical presentation and age distribution.

Material and Methods: The study was performed in two tertiary healthcare centre of southern Rajasthan and included 130 specimens of ovary received in the pathology department of two centers. The specimens were subjected to critical gross as well as histopathological study. Routine paraffin sections with H & E staining were seen. The clinical as well as histological findings were compiled on proforma and then subjected to analysis.

Results: Total 130 patients were included in the study with the age range from 10 years to 90 years. Maximum patients were from age group 41-50 years (24.61%). In the present study, abdominal pain (46.1%) was the most common presenting complaint followed by mass per abdomen with irregular periods (10.7%). Majority of the ovarian tumours belonged to benign tumours (66.92%) followed by malignant tumours (28.46%). As per WHO classification, surface epithelium tumours were found to be the commonest variety (76.12%), followed by Germ cell tumour (18.46%). Three cases of metastatic tumours to ovaries were also diagnosed in the present study. Among the various known subtypes of ovarian tumours, serous cystadenoma (30.77%) was found to be the most common subtype followed by benign cystic teratoma (16.92%) and then serous cystadenocarcinoma (13.85%).

Conclusion: Benign ovarian tumours are more common than malignant or borderline tumours. Among the histopathological subtypes of ovarian tumours, surface epithelial tumours are the commonest type followed by germ cell tumours. Differentiation between benign and malignant tumours is important to assure proper management and recovery. Similar studies with greater sample size are advisable in future.

1. Introduction

The ovaries are paired intra-pelvic organ of female reproductive system involved with many important functions in the body. The main function of the ovary is to produce ova to implant after fertilization in the endometrium. It also functions as an endocrine gland in the development of secondary sexual characters as well as their maintenance. Thus ovary is always in a dynamic state.[1]

Ovary being a complex and unique organ has been described to be involved by wide varieties of neoplasms. This has been due to the presence of many cell types in this organ under normal conditions, including some cells which are multipotent to totipotent. No organ of the body except ovary gives rise to such a galaxy of neoplasms. Ovarian tumours have been rightly termed as complex wide spectrum of diseases rather than a single entity.[2]

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In general, benign ovarian tumours are more common than malignant and account for almost 80% of all ovarian neoplasm. Ovary is a common site of primary malignancy, yet metastasis lesions may occur in ovary.[3] Among Indian women, ovary is the third most common site of primary malignancies of female genital tract. Benign neoplasms are more common in age group of 20 to 45 years of age while malignant tumours are more common in women of age group 40 to 65 years.[4]

Various risk factors responsible for ovarian cancers are nulliparity, family history, and heritable mutation. Generally, ovarian tumour occurs in perimenopausal and postmenopausal women and are infrequent in children.[5] Women between 40 to 59 years of age who have taken oral contraceptives for long duration or undergone tubal ligation have reduced risk of developing ovarian cancer comparatively.[2]

Early diagnosis of ovarian cancer is important to decrease morbidity and mortality associated with it. Histopathological examination of the biopsy material is the mainstay of diagnosis which determines the prognosis and behavior of neoplasm. The WHO classification of ovarian tumour is based on their tissue of origin and it reflects the embryogenesis of this complex organ.

The complex nature, unpredictable behaviour and prognosis make ovarian tumour a difficult problem for the gynaecologist. The histogenesis of many tumours is interrelated and accurate histopathological diagnosis is needed for affective treatment.[6]

The present study was conducted to determine various histological and morphological variant of ovarian tumour, their clinical presentation and age distribution in southern part of Rajasthan.

2. Material and Methods

The present study was a prospective study carried out in the department of pathology of two tertiary healthcare centers of southern part of Rajasthan. (1) Geetanjali Medical College and Hospital, Udaipur, Rajasthan (100 cases were selected during the duration of one year from January 2017 to June 2017) and (2) Ananta Institute of Medical Sciences, Rajsamand, Rajasthan (30 cases were selected during the duration of 6 months from August 2018 to January 2019). Thus the study included a total of 130 cases of ovarian neoplasm received at the histopathology section of pathology department.

2.1. Method of collection of data

All ovarian specimens including incisional and excisional biopsies as well as hysterectomy with unilateral /bilateral salpingoopherectomy specimens from clinically suspected ovarian neoplastic lesions were included in the study.

A concise clinical history regarding age, parity, presenting complaints including pain in lower abdomen, mass per abdomen, menorrhagia, post menopausal bleeding and distension with duration of symptoms were taken in the present study along with the physical findings.

2.2. Inclusion criteria

All the histological proved cases of ovarian tumours were included in the present study during the given period.

2.3. Exclusion criteria

The normal ovaries and ovaries with non specific finding like follicular cyst, cystic follicles, surface inclusion cysts, hemorrhagic inclusion cysts, endometriosis, tumour like lesions such as luteoma of pregnancy, stromal hyperthecosis, stromal hyperplasia, fibromatosis and massive oedema of ovary were excluded from the study.

2.4. Method of histopathological examination

Specimens were fixed in 10% formalin, grossly examined; paraffin sections & slides were prepared and stained with haematoxylin and eosin & some special stains. After this sections were examined under light microscope and correlated with histopathological findings.

2.5. Microscopic interpretation

The ovarian tumours were diagnosed as per WHO criteria (2016) into surface epithelial tumours (Benign, Borderline and Malignant) Germ cell tumour, Sex Cord stromal tumours and metastatic tumours.

Pathological staging was done wherever the complete specimens were received.

Immunohistochemistry was advised in poorly defined malignant neoplasms or when difficulty was experienced in typing the malignant tumours correctly.

3. Results

Total 130 patients were included in the study with the age range from 10 years to 90 years. Maximum patients were from age group 41-50 years (32 cases) followed by 29 cases in 21-30 years and 27 cases in range of 31-40 cases. (Table 1)

In the present study, abdominal pain (46.1%) was the most common presenting complaint followed by mass per abdomen with irregular periods (10.7%), lump abdomen, distention of abdomen, and infertility. (Table 2)

Ovarian tissues were received in the form of Trucut incisional biopsies, Unilateral or Bilateral salpingoopherectomy samples and as Total abdominal hysterectomy specimens (Table 3).

Ovarian tumours were diagnosed into benign, borderline and malignant types on the basis of morphological

features. Majority of the ovarian tumours belonged to benign tumours (66.92%) followed by malignant tumours (28.46%). (Table 4).

Based on the microscopic features, the tumour were broadly classified into various groups as per WHO classification and surface epithelium tumours were found to be the commonest variety (76.12%), followed by Germ cell tumour (18.46%). Three cases of metastatic tumours to ovaries were also diagnosed in the present study. Various subtypes along with their frequency of occurrence are also enumerated in Table 5.

Table 1: Age distribution of cases in the present study

Age group (yrs)	Number of cases	% of cases
11-20	9	6.92%
21-30	29	22.31%
31-40	27	20.77%
41-50	32	24.62%
51-60	14	10.77%
61-70	16	12.31%
71-80	2	1.54%
81-90	1	0.77%
Grand Total	130	100.00%

Table 2: Clinical presentation of various ovarian tumours

S. No	Clinical presentation	Number of cases	Percentage of cases
1	Pain abdomen	84	46.1%
2	Profuse periods	12	5.31%
3	Pain in abdomen with mass per abdomen	10	3.8%
4	Distension of abdomen, ascitis	8	6.1%
5	Mass per abdomen with irregular periods	14	10.7%
6	Infertility	2	1.5%

Table 3: Types of Biopsies received in present study

S.No.	Types	Number of cases	Percentage
1	Total abdominal Hysterectomy	61	46.92%
2	Unilateral salpingo-opherectomy	54	41.54%
3	Bilateral salpingo-opherectomy	10	7.69%
4	Incisional biopsies	5	3.85%
	Total	130	100%

4. Discussion

The peak incidence of the ovarian tumors in the present study was in the fifth decade (24.62%) which was very

Table 4: Morphologic type of ovarian tumors

S.No.	Type	No. of cases	% of cases
1	Benign	87	66.92%
2	Borderline	6	4.61%
3	Malignant	37	28.46%
4	Total	130	100%

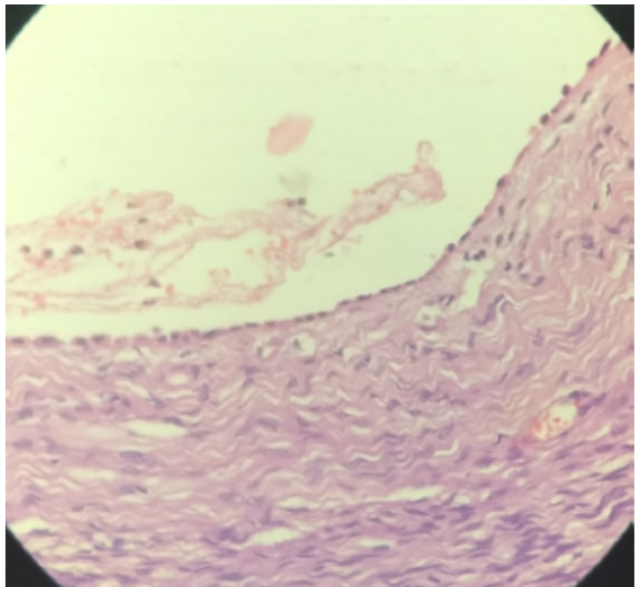

Fig. 1: Serous cystadenoma

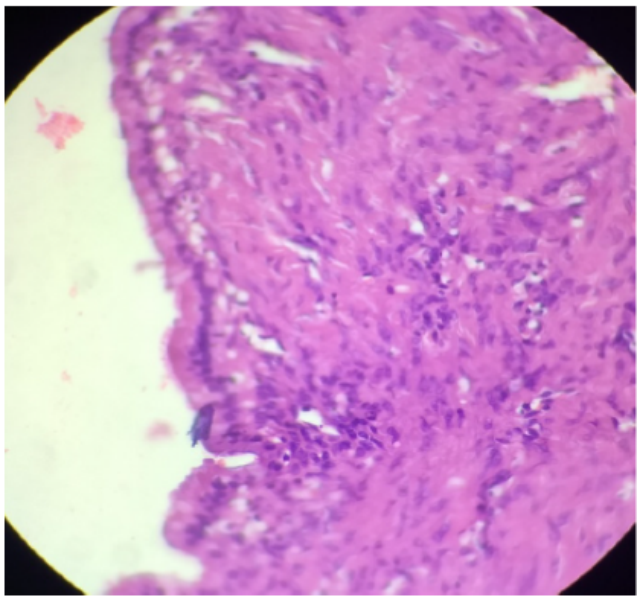

Fig. 2: Mucinous cystadenoma

Table 5: The distribution of the cases according to the World Health Organization Classification

S.No		Histopathological type	No.	%
1		Surface epithelial tumors	99	76.12%
	a	Serous cystadenoma (Figure 1)	40	30.77%
		Serous cystadenoma of borderline malignancy	03	2.31%
	c	Serous cystadenofibroma	05	3.85%
	d	Serous cystadenocarcinoma	18	13.85%
	e	Mucinous cystadenoma (Figure 2)	15	11.54%
	f	Mucinous cystadenoma of borderline malignancy	03	2.31%
	g	Mucinous cystadenofibroma	01	0.77%
	h	Mucinous cystadenocarcinoma (Figure 3)	12	9.23%
	i	Benign Brenner tumor	03	2.31%
	j	Borderline Brenner tumor	1	1.00%
2		Germ cell tumor	24	18.46%
	a	Benign (mature) cystic teratoma (Figure 4)	22	16.92%
		Malignant (Immature) teratoma (Figure 5)	01	0.77%
	c	Dysgerminoma	01	0.77%
3		Sex – cord stromal tumors	04	3.31%
	a	Thecoma leuteinised	01	0.77%
		Granulosa cell tumor (Figure 6)	02	1.54%
	c	Sertoli cell tumour	01	1.00%
4		Metastatic tumours	03	2.31%
		Total	130	100%

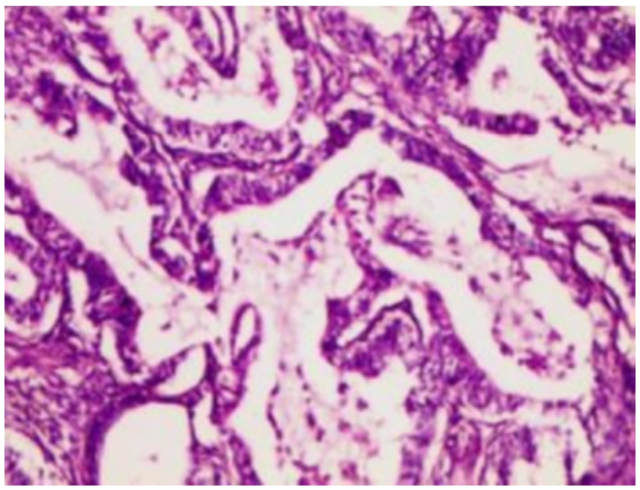

Fig. 3: Mucinous cystadenocarcinoma

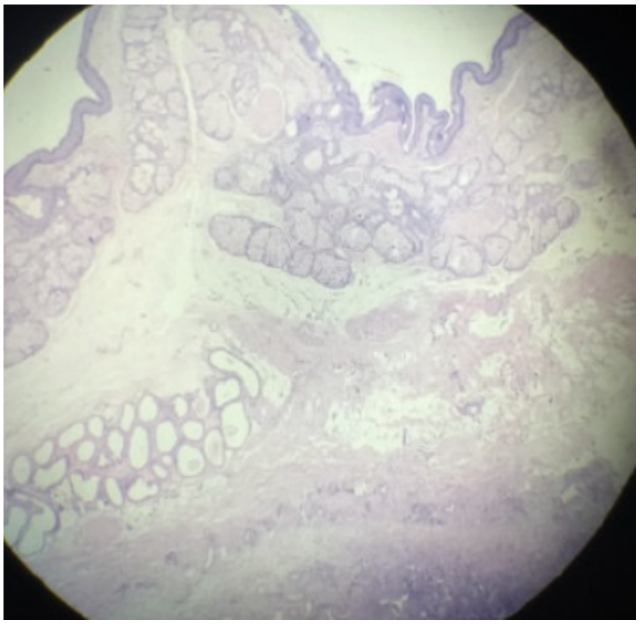

Fig. 4: Mature cystic Teratoma

much similar to the observations of Valson et al in their study in the year 2017 who reported 30.85% cases in the 5^{th} decade.[7] Jha and Karki et al in 2008 and Kuldeepa et al in 2011 reported maximum number of cases in third decade of life with 26.7% cases and 36.7% cases in third decade respectively.[8,9]

The most common presenting symptom in the present study was abdominal pain followed by menstrual irregularities & mass abdomen. It was similar with studies done by Mankar et al in 2015 (33.48%) and Kanthikar et al (53.33%) where pain in abdomen was the commonest symptom.[10,11] In a study done by Bodal et al, the commonest presenting feature was abdominal mass (in 69.33% cases).[12]

In present study, most of the cases were benign (66.91%) followed by malignant (28.4%) and borderline (4.6%). A similar pattern of benign, borderline and malignant tumours tumours have been reportedin in most of the studies performed in the past. In the study by Bodal et al, there were 75% benign, 1.66% borderline and 14%

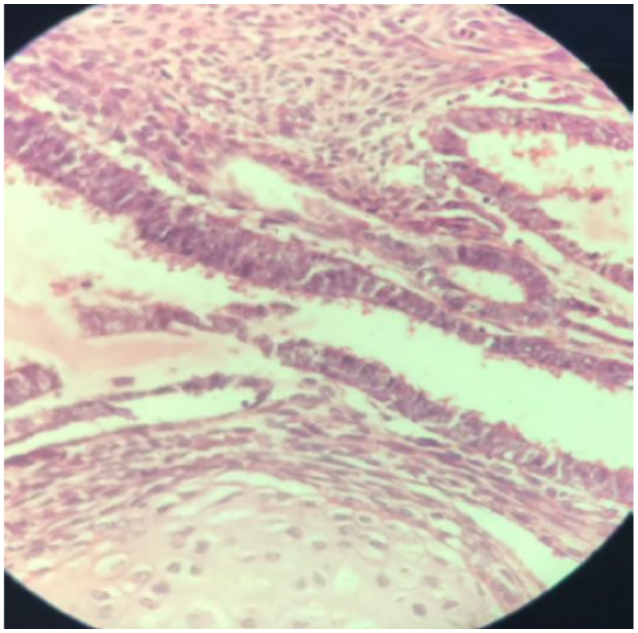

Fig. 5: Immature cystic Teratoma

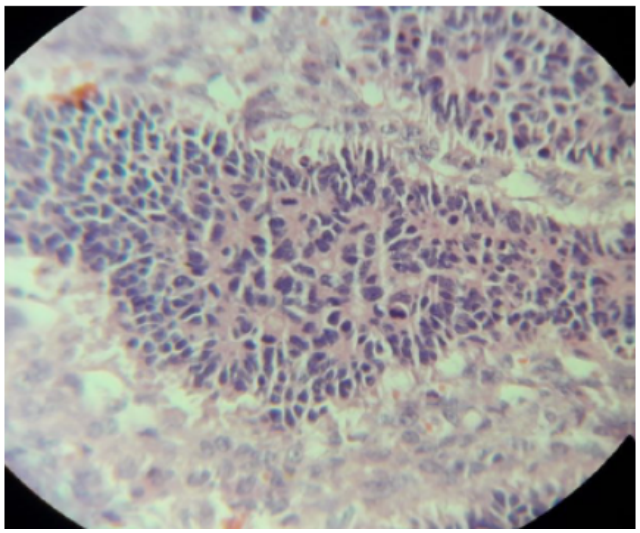

Fig. 6: Granulosa cell tumour

malignant tumours.[12] Similarly, in another study performed by Bhagyalaxmi et al in 2014, there were 78.3% benign, 18% malignant and 3.7% borderline tumours.[13]

In present study, surface epithelial tumours were 76.92%, germ cell tumours were 18.46% cases and sex cord stromal tumours were 3.07% cases. The results of surface epithelial tumours were close to Bodal et al 2014 (71.67%), Willis et al 2016(71.6%) and Neha et al 2017 (70.6%).[12,14,15]

The results of germ cell tumours in present study were similar to the results with Neha et al 2017(18.8%) while other authors were in concordant with our study.[15]

The results of Sex cord stromal tumours were similar to the Jha and Karki 2008 (3% cases) and Bodal et al 2014 (3.33% cases).[8,12] Kayastha et al 2009 didn't report a single case of Sex cord stromal tumours in their study.[16]

The majority of epithelial tumours were serous tumours accounting 50.78% then followed mucinous tumours accounting for 22.28% cases. The results were similar to studies done by Ahmad et al and Modepalli et al in 2016.[17,18]

Serous cystadenocarcinoma was the most common malignant surface epithelium tumour (13.85%) which was in concordance with the results of Ahmad et al (19.81%).[17] when compare with other studies done by Pilli et al in 2002, Jha et al in 2004 and Mankar et al in 2015, the incidence of malignant tumours in our study was low.[8,10,19]

In present study germ cell tumor were 24(18.46%) in which Benign cystic teratoma comprised maximum number of cases 22(91.6%). Akakpo et al in 2017 reported similar incidence of mature cystic teratomas (93.5% cases) in their study while other authors Ahmad et al 2011 and Sharma et al 2014 reported 76.72% and 87.09% respectively.[17,20,21] Malignant counterpart dysgerminoma comprised maximum number of cases 4.41% which were close to the observations of Sharma et al 2014 (6.46%).[21]

In present study sex-cord stromal tumors were 3.31% in which granulosa cell tumor were maximum cases (50%). The results were in agreement with the observations of Jha et al in 2004, Bhagyalaxmi et al in 2014, and Wills et al in 2016.[8,13,14]

In present study metastatic ovarian tumors were 2.31% which were close to the observations of Jha et al 2004 (3.67%). Bodal et al in 2014 reported 1.7% cases of metastatic ovarian tumours in their study.[12,20]

5. Conclusions

Ovarian tumour is usually presented as pain abdomen and menstrual abnormality in females of third to fifth decade of age group. The study was conducted in southern part of Rajasthan and the results concluded that most of the ovarian tumours are benign tumours followed by malignant and then borderline tumours. Surface epithelium tumours were found to be the most common variety followed by germ cell tumours and then sex cord stromal tumours in present study. Among the subtypes of ovarian tumours, serous cystadeno, ma is the most common subtype followed by benign cystic teratoma and then mucinous cystadenoma. Despite the limitations like relatively small sample size and short study period. The major limitation of this study includes the small sample size and short study period, a tentative conclusion can be drawn from the results about prevalence of various subtypes of ovarian tumour in southern Rajasthan. Differentiation of a benign tumor from a malignant one is important for determining better management and prognosis; hence further similar studies

are warranted.

6. Source of Funding

None.

7. Conflict of Interest

No conflicts of interest exist for these authors. No relevant financial relationship exists between the authors and procedures or products used in this manuscript.

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