Histopathological spectrum of ovarian tumours- A two year retrospective study

Ranjana Hawaldar[1,*], Sadhna Sodani[2], Ekta Patidar[3]

[1,3]Consultant Pathologist, Sampurna Sodani Diagnostic Clinic, Indore, Madhya Pradesh, [2]Assistant Professor, MGM Medical College, Indore, Madhya Pradesh

***Corresponding Author:**
Email: drranjana@sampurnadiagnostics.com

Abstract

Introduction: Almost 80% of the ovarian neoplasms are benign and it is also a common site for primary malignancy, although metastasis to ovaries can also occur. Benign ovarian neoplasms are common in 20-45 years age group. Nulliparity, family history of cancer and genetic mutations are some of the risk factors associated with the development of ovarian neoplasms. Sex cord stromal tumours(SCST) are almost always unilateral while metastatic tumours tend to be bilateral. Most of the benign surface epithelial tumours are cystic while solid tumours with papillary projections seen on gross examination make a diagnosis of malignancy likely. However, microscopic features exhibited by these tumours help in making an accurate diagnosis.

Objective: The present two year retrospective study was carried out in the histopathology department of our diagnostic centre from January 2015 to December 2016 to analyse the frequency and histopathological spectrum of ovarian tumours in our setting.

Materials and Method: This was a two year retrospective study carried out between January 2015 to December 2016.A total of 146 cases of ovarian specimens were received in formalin in the histopatholgy department .The gross findings were noted and the sections were subjected to paraffin embedding and Hand E staining using standard protocols. The tumours were classified as surface epithelial tumours(SET), sex cord stromal tumours (SST) and germ cell tumours(GCT). The data so obtained was analysed for frequency of these tumours in different age groups.

Results: Of the 119 ovarian tumors, 109(91.5%) were benign and 10(8.5%) were malignant. Surface epithelial tumors were most common i.e., 83/ 119(69.7%) followed by germ cell tumors which were 29 out of 119(24.4%), while sex cord stromal tumour were 7 / 119(5.4%). Out of all ovarian neoplasms, serous surface epithelial tumors were the most commonly occurring tumour followed by mature cystic teratomas.

Conclusion: Benign ovarian tumours are far more common than their malignant counterparts with surface epithelial tumours being the commonest followed by germ cell tumours, majority presenting in 31-40 years age group. A proper histological diagnosis provides help to the gynaecologist in initiating proper and timely treatment.

Keywords: Ovarian tumours, Surface epithelial tumours (SET), Germ cell tumour(GCT), Sex cord stromal tumour(SST)

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Introduction

Ovaries are complex intrapelvic organs of the female reproductive system and are a common site for both benign and malignant neoplasms in all age groups right from intrauterine period to post menopausal age group.(1) Almost 80% of the ovarian neoplasms are benign and it is also a common site for primary malignancy, although metastasis to ovaries can also occur.(2)

Benign ovarian neoplasms are common in 20-45 years age group. Nulliparity, family history of cancer and genetic mutations are some of the risk factors associated with the development of ovarian neoplasms although not much is clear about the risk factors involved in these neoplasms as compared to other genital tumours.(3,4) Ovary is the second most common site for female cancers next only to breast and is associated with highest mortality rate.(5) This is mainly due to the fact that these neoplasia manifest at a very late stage either stage III or IV and so carry a poor prognosis.(6) Imaging modalities like USG,CT Scan and MRI can be misleading sometimes and cytology has also its own limitations and challenges. Hence, histopathological diagnosis remains the mainstay in achieving an optimum treatment response.(7) The increased risk of ovarian surface epithelial tumours(SET) is linked to the use of hormone replacement therapy, use of tobacco and a family history of breast and ovarian cancers.(8)

Diagnosing ovarian tumours on the basis of clinical or gross characters may be confusing but provides important diagnostic clues to arrive at a differential diagnosis. Sex cord stromal tumours(SCST) are almost always unilateral while metastatic tumours tend to be bilateral. Most of the benign surface epithelial tumours are cystic while solid tumours with papillary projections seen on gross examination make a diagnosis of malignancy likely. However, microscopic features exhibited by these tumours help in making an accurate diagnosis.(9)

The present two year retrospective study was carried out in the histopathology department of our diagnostic centre from January 2015 to December 2016 to analyse the frequency and histopathological spectrum of ovarian tumours in our setting.

Materials and Method

This was a two year retrospective study carried out between January 2015 to December 2016. A total of 146 cases of ovarian specimens were received in formalin in the histopatholgy department. The gross findings were noted and the sections were subjected to paraffin embedding and Hand E staining using standard protocols. Clinical data like age, clinical features and imaging findings were retrieved from histopatholgy record section. All the ovarian tumours were classified based on the WHO classification of these tumours. The patients were divided into 0-20, 21-30, 31-40, 41-50, 51 to 60 and more than 60 years of age. Further, the tumours were classified as surface epithelial tumours(SET), sex cord stromal tumours(SST) and germ cell tumours(GCT). The data so obtained was analysed for frequency of these tumours in different age groups. Out of the 146 ovarian specimen received, 27 were cystic lesions and remaining 119 were neoplastic. Out of 27 cystic lesions, 16 cases were of haemorrhagic corpus luteum cyst, and 9 cases were endometriotic cysts. So, these cases were excluded from our study.

Results

Of the 119 ovarian tumors, 109(91.5%) were benign and 10(8.5%) were malignant. Surface epithelial tumors were most common i.e., 83/ 119(69.7%) followed by germ cell tumors which were 29 out of 119(24.4%), while sex cord stromal tumour were 7 / 119(5.4%). (Table 1)

Table 1: Demographic data of ovarian tumours

Age (Year)	SET Tumour	GC Tumour	SCST Tumour	Total	Percentage
Up to 20	5	4	0	9	7.6
21 to 30	25	5	0	30	25.2
31 to 40	23	14	3	40	33.6
41 to 50	15	3	2	20	16.8
51 to 60	8	0	2	10	8.4
>60	7	3	0	10	8.4
Total	83	29	7	119	100%
Total %	69.70%	24.40%	5.90%	119	100%

Benign surface epithelial tumors comprised 81 /119(68.0%) whereas their malignant counterpart formed 02 /119 (1.7%). Most benign surface epithelial tumors were serous cyst adenomas i.e., 63 / 119 (52.9%) followed by mucinous cyst adenomas i.e., 20 / 119(16.8%). Whereas amongst the malignant epithelial tumour 02 / 119 cases (1.7%) of serous cystadenocarcinomas were seen. (Table 2)

Table 2: Distribution of surface epithelial tumours

SET	Serous	Mucinous	Brenner	Endometroid	Clear Cell	Total	%
Benign	61	20	0	0	0	81	68
Borderline	0	0	0	0	0	0	0
Malignant	2	0	0	0	0	2	1.7
Total	63	20	0	0	0	83	0
Total %	52.9	16.8	0	0	0		69.7

Germ cell tumors constituted 24.4% (29 / 119) of all ovarian tumors. Most germ cell tumors were benign and composed of Mature cystic teratomas with a percentage of (25 / 119) 21.0% whereas the immature teratomas were relatively fewer that is 02 /119 (1.7%) followed by dysgerminoma that was 02 / 119 (1.7%).(Table 3)

Table 3: Distribution of germ cell tumours

GCT	No. of cases	Percentage
Mature cystic teratoma	25	21
Immature teratoma	2	1.7
Dysgerminoma	2	1.7
Total	29	24.4

Out of all ovarian neoplasms, serous surface epithelial tumors were the most commonly occurring tumor followed by mature cystic teratomas.

Sex cord stromal tumours constituted (5.9%) 7 /119. Out of the 7 SCST, 4 / 119 (3.4%) were malignant cases i.e. Granulosa Cell tumors. While remaining 3 / 119 (2.5%) were benign i.e. fibroma. (Table 4)

Table 4: Distribution of sex cord stromal tumour

SCST	No. of cases	Percentage
Granulosa cell tumour	4	3.4
Fibroma	3	2.5
Total	7	5.9

The age distribution of ovarian tumor were maximum between 31 – 40 age group i.e. 40/ 119 (33.6%) followed by 21-30 age group 30 / 119 i.e. 25.2%.(Table 1)

The age distribution of Surface Epithelial Tumour were found to be maximum between 21-30 age group i.e. 25 / 119 (21.0%) followed by 31-40 age group i.e. 23 /119 (19.3%).15 /119(12.6%) were found to be between 41-50 age group. Serous tumor were found in the 16 to 75 years of life span. Most serous tumors were in the age group 31-40 i.e. 17 / 119(14.3%) while most mucinous tumors were the age group 21 to 30 i.e. 9 / 119(7.6%).(Table 5)

Germ cell tumors were found to be maximum in the age group 31-40 i.e. 14 / 119(11.8%). Of these mature cystic teratoma were maximum between 31-40 i.e. 14 /119(11.8%). (Table 1 & 5). Dysgerminoma were found to be upto 20 years of age i.e. 2 / 119 (1.7%).(Table 5)

Sex cord stromal tumor were found to be maximum in the age group 31-40 i.e. 3 /119(2.5%). Sex cord stromal tumor were not seen in age below 30 years. (Table 5)

Table 5: Agewise distribution of ovarian tumours

	Up to 20	21 to 30	31 to 40	41 to 50	51 to 60	>60	Total
Serous	5	16	17	14	4	7	63
Mucinous	0	9	6	1	4	0	20
Brenner	0	0	0	0	0	0	
Teratoma (Dermoid Cyst)	2	5	14	3	0	3	27
Dysgerminoma	2	0	0	0	0	0	2
Fibroma	0	0	1	1	1	0	3
Granulosa Cell Tissue	0	0	2	1	1	0	4
Total	9	30	40	20	10	10	119

Discussion

Out of 146 ovarian masses studied, 27 were cystic lesions and 119 were neoplastic lesions. Out of 119 ovarian lesions, 109 were benign (91.5%) and 10(8.5%) were malignant. There were no borderline lesions in our study. In our study, majority of the cases were in 31- 40 year age group (33.6%).

Kishanbookya et al in their study foungd 78.5% bemnign ovarian tumours and 21.4% malignant tumours. In their study they found 61.6% surface epithelial tumours and 29.8% germ cell tumours.[10] Our study correlates with this study as we found 68% surface epithelial tumours and 24.4% germ cell tumours. Our study also correlates with the study by R. Jha et al and Zubin Ahmad et al.[11,12]

In a study conducted by Vadatti et al Surface epithelial tumours comprised of 85.25% of all the ovarian tumours while germ cell tumours were 9.72%.[13] Similarly, Nitin Panchal et al in their study found 46.9% surface epithelial tumours and 45.7% germ cell tumours.[14] Shah Neerja et al in their study found that 83.4% were benign ovarian tumours, 2.3%were borderline and 14.29% were malignant tumours.[15] They found that 64.98% were SETs and 25.35% were GCTs. However, in our study we did not get any borderline tumours.

In our study Sex cord stromal tumours constituted 5.9% of all ovarian tumours out of which granulose cell tumour was more common (3.4%) followed by fibroma(2.5%). Nirali Thakkar et al reported 1.5% granulose cell tumours and 3.1% fibroma in their study.[16] Two cases of Sertoli Leydig cell tumour was reported in their study. We did not find any Sertoli leydig cell tumour in our study. Gupta N et al and Misra R.K. et al found 7.06% sex cord stromal tumours which is comparable to our study.[17,18]

Mature cystic teratomas were 21% in our study followed by 1.7% each of immature teratoma and dysgerminoma. Gupta SC et al and Couto F et al showed an incidence of 18.46% and 23.13% respectively of mature cystic teratomas in their study.[19,20]

Conclusion

Ovary is a common site of neoplasia in the female genital tract and usually present with a variety of clinicomorphological and histological features. However, benign tumours are far more common than their malignant counterparts with surface epithelial tumours being the commonest followed by germ cell tumours, majority presenting in 31-40 years age group.

Aproper histological diagnosis provides help to the gynaecologist in initiating proper and timely treatment

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