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Research Article

Histopathological Study of Ovarian Tumors in a Rural Population in Tamilnadu – Six Years Study

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Abstract
The ovarian neoplasm which affects a significant number of the female population has become increasingly important and it constitutes 30% of female genital cancer. The ovarian neoplasm has gradually increased the mortality rate in female cancers. Approximately 80% of these are benign tumors. Here we present a retrospective study of 127 ovarian tumors in a rural population. Our result showed 88.2% were benign and 11.8% were malignant. The surface epithelial tumors were the commonest, accounting for 82.7%. Serous cystadenoma (40.2%) was the most common benign tumor and mucinous cystadenocarcinoma (3.1%) was the most common malignant tumor. In germ cell tumors, mature cystic teratoma (10.2%) constitutes the maximum and in sex cord stromal tumors, germ cell tumor (3.1%) was predominant. A solitary case of metastatic tumor was found in our study.
Keywords: *Ovarian tumor, benign ovarian tumor, malignant ovarian tumor.*

Introduction

The purpose of present study is to determine the incidence of benign and malignant ovarian tumors reported in the Department of Pathology, Rajah Muthiah Medical College and Hospital, Chidambaram from Jan 2011 to Dec 2016, by considering the patients in the age group of 11-70 and compare it with similar other studies.

The ovary is the predominant site of neoplasm in the female genital tract and the ovarian tumor is one of the leading cause of cancerous death in females[1]. Among all the ovarian tumors 80% are benign having thecystic, solid and mixed characteristic[2]. The malignant tumors account 20% which leads to fatal prognosis[3]. The ovarian cancer is the third leading site of cancer among

women, trailing behind carcinoma of cervix and breast cancer[4].There are three main types of primary ovarian tumors. Epithelial tumors which arise from the surface epithelium of the ovary, Sexcord-stromal tumors which arise from the ovarian stroma or from sex cord derivatives or both, and the germ cell tumors which originate from the germ cells. Among thethree main types, epithelial tumors are the most common ovarian tumor[5].

Materials and Method

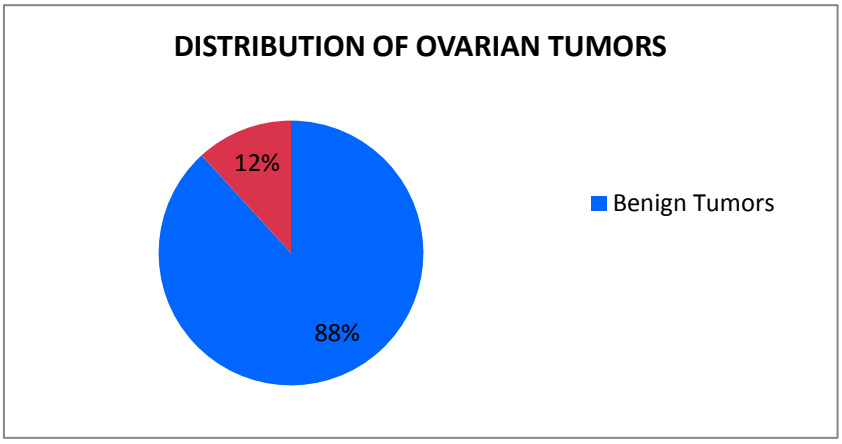
In our study, one hundred and twenty-seven cases of ovarian tumors were reported from Jan 2011 to Dec 2016 in the Department of Pathology, Rajah Muthiah Medical College, Chidambaram, India. In the retrospective study, all the materials such as blocks and slides available in the department were studied. The data was collected on a proforma, with the relevant information about age, the size of the tumor, bilaterality, consistency, provisional diagnosis and histopathological analysis. Specimens without the complete information were excluded from the study. The slides were stained with Hematoxylin and Eosin (H &E) and reviewed.

Observation

Out of 127 biopsy specimens collected,112 (88.2%) were benign and 15 (11.8%) specimens were malignant which is highlighted inTable1.

Table -I - Distribution of Ovarian Tumors

Type Of Tumors	No Of Cases	Percentage
Benign Tumor	112	88.2%
Malignant Tumor	15	11.8%
Total	127	100%



In the present study for the age group of 41-50, maximum ovarian tumors were reported. Where in benign tumors were found to be 36 (32.1%) and malignant tumors were found to be only 4 (26.6%) as portrayed in Table II.

Table II - Age Incidence of Benign & Malignant Ovarian Tumor

TYPE OF TUMORS	11-20	21-30	31-40	41-50	51-60	61-70
Surface epithelial (B)	5	25	27	33	6	1
Surface epithelial (M)	-	-	3	3	2	-
Sexcord-stromal (B)	-	-	-	-	-	1
Sexcord-stromal (M)	1	-	-	1	-	2
Germ cells (B)	-	6	4	3	-	1
Germ cells (M)	-	2	-	-	-	-
Metastatic	-	-	-	-	1	-
TOTAL	6	33	34	40	9	5

Tumor with left ovary was observed to be on slightly higher side with individuals constituting 54 cases (42.5%) whereas right ovary was involved in 51 cases (40.2%) and bilateral ovarian

tumors were found in 22 cases (17.3%). The same has been numerically represented in Table III.

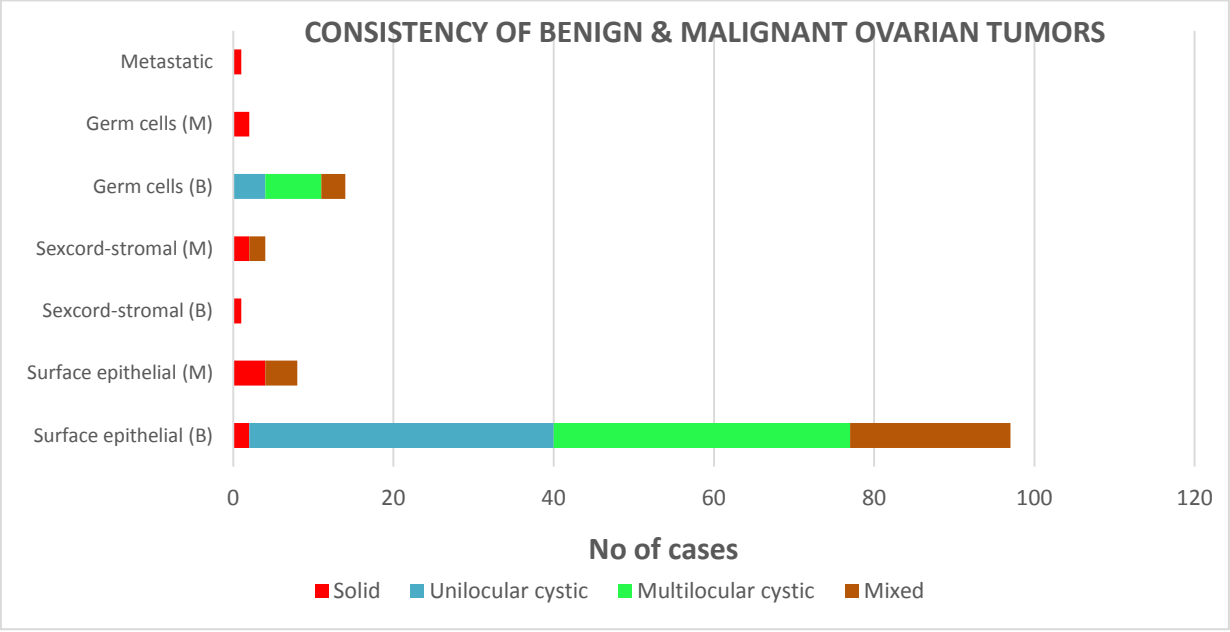
Table III - Distribution of Various Lesions as Per the Laterality

LESIONS	RIGHT SIDE	LEFT SIDE	BILATERAL
Surface epithelial	42	44	19
Sexcord-stromal	2	1	2
Germ cells	7	9	-
Metastatic	-	-	1
Total	51 (40.2%)	54 (42.5%)	22 (17.3%)

In the proposed study, most of the tumors were cystic (115 specimens - 90.5%). Among them, all were benign and 6 specimens were malignant. Table IV highlights the consistency of benign and malignant ovarian tumors. Borderline category of tumors was not seen in our study.

Table IV - Consistency of Benign & Malignant Ovarian Tumors

Type of tumors	Solid	Cystic		Mixed
		Unilocular	Multilocular	
Surface epithelial (B)	2	38	37	20
Surface epithelial (M)	4	-	-	4
Sexcord-stromal (B)	1	-	-	0
Sexcord-stromal (M)	2	-	-	2
Germ cells (B)	0	4	7	3
Germ cells (M)	2	-	-	0
Metastatic	1	-	-	0
Total	12	42	44	29



Histologically, surface epithelial tumors were the most common with 105 (82.7) specimens, followed by germ cell tumors with 16 (12.6%) specimens,sex cord stromal tumors with 8 (3.9%) specimens and metastatic tumor 1(0.8) specimen. The common epithelial tumors were serous tumor 69 (54.3%) specimens, mucinous 32(25.2%) Endometrioid tumor 2(1.6%) and Brenner tumor 2(1.6%) of the 16 germ cell tumors, benign cystic teratoma was the most common comprised of 13 (10.2%) specimen. Among the sex cord – stromal tumor the most common tumor was granulosa – cell tumor with 4 (3.1%) specimens and only1 (0.8%) the specimen was ametastatic tumor. The above categories of tumors are numerically represented in Table VI.

Discussion

In our study, the incidence of the benign tumor was maximum when compared to themalignant tumor which is similar to other studies which are shown in Table V.

Table-V –Comparison of Incidence of Benign and Malignant Tumors.

AUTHORS	BENIGN %	BORDERLINE%	MALIGNANT %
Vishrabdha Pawar et al[6]	69.3	4.84	25.8
Pachori et al [7]	72.3	2.48	25.2
Sasikala Mootha et al [8]	79.0	5.0	16.0
Swati Sing et al [9]	80.8	1.67	17.5
Present Study (2011-2016)	88.2	-	11.8

The above table shows comparative study regarding the behavior of ovarian neoplasm.

The incidence of the benign tumor was 88.2% which is higher maximum when compared with the study by Swati sing et al [9]and Sasikalamootha et al[8], whereas when compared with the study done by same author the incidence of malignant tumor in our study shows lower incidence.

Age Incidence

In the present study, the age ranged from 11- 70 years. The majority of the benign tumor was observed in the age group of 3rd to 5thdecade of life which is similar to the study done by Gupta et al[10] (1986) Muheshwar et al (1994). The majority of malignant tumors were found commonly in 4th to 6th decade of life which is in concordance with the other studies done by Rana Sarkar [11(1996)] and Shreya Hegda (2015).

Consistency

On gross examination of 112 benign tumors 86 (76.8%) were cystic, 3 (2.7%) were solid and 23 (20.5%) were with mixed in consistency which is comparable to the study done by Kanthikar et al[12].Of the 15 malignant tumors, 9 specimens (60%) were solid and 6 specimens (40%) were mixed in consistency which is comparable to the study done by Kanthikar et al[12].

Laterality

From our study,it is observed that 54 tumors (42.5%) were present on the left side, while 51 tumors (40.2%) were found on the right side.

Other authors like H.M. K Saxena et al [13]and Pachori et al shows the predominance of ovarian tumor on the left side. In the present study,bilateral tumors were seen in 22 (17.3%) cases. This incidence is lower than 21.8 % reported by Kanthikar et al[12] and higher than 13.04% study done by Jha & Korki et al[14].

Similar to the observation made by Swati Singh et al[9] and Pachori et al[7].In the proposed study also, the most common ovarian tumor was a surface epithelial tumor (82.7%) followed by Germ Cell Tumor (12.6%), sex cord – stromal tumor (3.9%) and metastatic tumor (0.8%).Similar to the report made by Pachori et al and Vishrabdhapawar et al,the most common epithelial tumors were observed to be serous cystadenoma followed by mucinous cystadenoma and the most common Germ Cell Tumor was Benign Cystic Teratoma,

The serous cystadenocarcinoma (1.6%) in our study shows the lowest incidence when compared to other studies done by Vishrabhdhu Poawar et al[6] (8.06%) and Sheikh et al[15](8.78%)

The mucinous cystadenoma shows higher incidence and mucinous cystadenocarcinoma shows lower incidence with 22% and 3.1% respectively when compared to the study made by Swati Singh et al[9] (7.5% & 12.5%) and Vishrabdha et al[6] (16.14% and 9.67%) The endometrioid tumor constitute (1.6%) which is comparable to the study made by Vishrabdha et al[6] (16.1%) and Brenner's tumor shows (1.6%) shows increasing incidence than the study done by Swati sing et al[9] (0.8%)

Among the Germ cell tumors, the mature cysticteratoma (10.2%) followed by struma ovarii (0.8%), yolk sac tumor(0.8%) and dysgerminoma (0.8%) shows the lowest incidence when compared to the study done by Pachori et al[7] and Vishrabdha Pawar et al[6]. The Granulosa cell tumor (3.1%) is found to be comparable with the study carried out by Shaikh et al[15] (3.6%) One case of Krukenberg tumor (0.8%) was found in our study which is similar to the study done by SwatiSingh et al (6.2%)

Table- VI - Histopathological Types of Ovarian Tumors in Comparison with Other Authors

Neoplastic lesion	Shaikh etal 2007	Pachori etal 2015	Vishrabdha Pawar etal 2015	Swati Singh etal 2016	Present Study
I. Surface epithelial tumors					
A. Serous tumors					
Serous cystadenoma	42.07	36.36	19.35	45.8	40.2
Serous cystadenofibroma	-	-	-	2.5	12.6
Serous cystadenocarcinoma	8.78	10.33	8.06	62.7	1.6
B. Mucinous tumors					
Mucinous cystadenoma	16.85	11.16	16.14	7.5	22
Mucinous cystadenocarcinoma	12.11	2.07	9.67	12.5	3.1
C. Endometroid tumor	-	0.41	1.61	-	1.6
D. Brenner's tumor	-	2.48	-	0.83	1.6
II Germ cell tumors					
A. Mature cystic teratoma	7.7	17.77	17.75	22.5	10.2
B. Struma ovarii	-	1.24	1.61	0.83	0.8
C. Yolk sac tumor	0.14	1.24	1.61	-	0.8
D. Dysgerminoma	2.73	2.48	1.61	6.25	0.8
III Sex cord stromal tumors					
A. Granulosa cell tumor	3.6	4.13	4.84	10.5	3.1
B. Thecoma - fibroma	-	1.65	-	-	0.8
IV. Metastatic tumor					
Krukenberg tumor	-	-	-	6.25	0.8

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Conclusion

It is concluded from this study, that the tumor originating from surface epithelium are the most common variant. Therefore, suggested that efforts must be made to identify the risk factor for the malignancy to reduce the incidence.

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