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Histological profile of ovarian tumours in rural South Tamil Nadu – A 3 year retrospective analysis

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Abstract

Introduction: Ovarian tumors are the second most common tumors of female genital tract and the fifth leading cause of cancer related death among Indian women. This study describes the gross & histo-morphological patterns of various ovarian tumours reported in a Tertiary Medical Centre in South Tamilnadu.

Materials and Method: This retrospective study conducted in the Department of Pathology, Tirunelveli Medical College, Tirunelveli pertains to a period of 3 years between January 2014 and December 2016, wherein all ovarian tumours reported in this department were selected from the archives material. The slides were reviewed and fresh sections made wherever needed and special stains used as required. Immuno histochemistry was also performed to confirm diagnosis.

Results: Of 180 cases of ovarian tumours reviewed 157 cases presented unilaterally and 23 bilaterally and of the 157 unilateral tumours 125 were benign, 5 were borderline and 27 were malignant. Of the 23 bilateral tumours 14 were benign, 3 were borderline and 6 were malignant. In our series, serous tumors were more common (52.8%), followed by mucinous tumours (26.1%). Benign tumours were common in the 21- 40 years age group and malignant tumours were more common in 41-60years age group.

Conclusion: This study concludes that benign tumours were more common and predominantly in patients less than 40 years, while malignant tumours were predominantly in patients above 40years of age and most tumours were of surface epithelium in origin

Keywords: Ovarian Tumours, Histopathology

Introduction

Ovarian cancer is the leading cause of death among gynaecological cancers[(1)] and accounts for 30% of all cancers of the female genital tract. The annual incidence of ovarian cancers worldwide is estimated at 2,00,000.[(2)] Ovarian tumours are usually large dimension lesions with symptoms not commensurate to their sizes and hence could lead to difficulty in detecting them early.[(3)] Ninety percent of adnexal masses are detected by pelvic ultrasound while a definitive diagnosis is based on histopathology.[(4)] It is hence evident that many tumours are diagnosed in advanced stage of disease[(4)] resulting in a low mean 5 year survival rate and a poor prognosis.[(5)]

Ovarian tumours present in a wide spectrum of histological patterns which are important for their diagnosis and prognosis, and are highly heterogenous.[(5)] Broadly ovarian tumours are classified into primary and secondary tumours. Most benign tumours are cystic and finding of solid elements make malignancy more likely. Primary tumours are classified as surface epithelial tumours, germ cell tumours, sex-cord stromal tumours etc. of whom 70-80% are epithelial origin, 10% stromal origin and 5% germ cell origin.[(6)] Among surface epithelial tumours 80% are benign and 20% are malignant while some of the epithelial tumours are bilateral in presentation.[(7)] In this study we have described and analysed the histological pattern of distribution of ovarian tumours in our region.

Materials and Method

This retrospective study was conducted in a tertiary medical care centre in south Tamil Nadu pertaining to three years between January 2014 and December 2016. All the tissue paraffin blocks and sections were retrieved from the department archives and analysed. Sections stained with H&E were examined and special stains and immuno-histo-chemistry were performed wherever necessary.

Results and Observation

One hundred and eighty ovarian tumours were studied. In the study period, of which 157(87.2%) were unilateral and 23(12.8%) were bilateral. Of the 157 unilateral tumours, 127(86.9%) were of epithelial origin and of the 23 bilateral tumours, 19(13.01%) were epithelial tumours (Table 1). Epithelial tumours were the most common histological type (81.1%) followed by germ cell tumours (11.6%), sex-cord stromal tumours (6.6%) and metastatic tumours (0.6%) (Table 2 & 3).Of 146 epithelial tumours 115 (78.8%) were benign, 9 (6.2%) were borderline and 22 (12.2%) were malignant. Of the benign tumours 43.9% were serous and 17.8% were mucinous tumours. Of borderline tumours, mucinous tumours (3.3%) were more common than serous tumours (1.7%) while among malignant tumours serous (7.8%) were more common than mucinous tumours (3.3%) (Table 2). The rarer

histologies reported included 34 tumours of non epithelial origin including germ cell tumours 21 in patients (11.6%), sex-cord stromal tumours in 12 (6.6%),(Table 3). Endometrioid tumour (1.1%) Brenner tumour (1.1%) and clear cell carcinoma (0.5%) (Table 2). Of the 21 patients with germ cell tumours, benign cystic teratoma was the most common (11.1%) and dysgerminoma constituted 0.6%(Table 3). Of 12 sex cord stromal tumours, granulosa cell tumor was the most common pattern observed (3.8%), fibroma and sclerosing stromal tumor (1.1%) and sertoli leydig cell tumor (0.6%) (Table 3).

The age distribution was analysed and it was found that benign tumours were more common in 21-40 years age range (60 patients), borderline tumours (3 patients) while malignant tumours were more common in age range of 41-60 years (16 patients) (Table 4). The same pattern of age distribution was observed in tumours of unilateral & bilateral origin.

Table 1: Tumour type distribution

No	Tumour Type	Total	Bilateral		Unilateral	
			No	%	No	%
1	Tumours included in Study (n)	180	157	87.22	23	12.78
2	Epithelial Tumours	146	127	86.99	19	13.01
3	Non Epithelial Tumours	34	30	88.24	4	11.76

Table 2: Tumour type distribution – surface epithelial tumour

No	(A) Histology of Surface Epithelial Tumours	Total	Serous		Mucinous		Others#	
			No	%	No	%	No	%
1	Surface epithelial tumours	146(81.1%)	96	65.75	44	30.14	6	4.11
1a	Benign	115	79	68.70	32	27.83	4	3.48
1b	Borderline	9	3	33.33	6	66.67	0	0
1c	Malignant	22	14	63.64	6	27.27	2	9.09

	(B) Surface Epithelial Tumours (Others)	No
1	Clear cell carcinoma	1
2	Sero mucinous cystadenoma	1
3	Endometrioid tumours	2
3a	Benign	1
3b	Malignant	1
4	Brenner tumor	2

Table 3: Tumour type distribution – non epithelial tumour

Histology of Non Epithelial Tumours	Total	Unilateral		Bilateral	
		No	%	No	%
Germ Cell Tumour	21(11.6%)	18	85.71	1	4.76
Benign cystic teratoma	19	18	94.74	1	5.26
Immature teratoma	1	1	100.00	0	0.00
Dysgerminoma	1	1	100.00	0	0.00
Sex-cord stromal tumor	12(6.6%)	10	83.33	2	16.67
Granulosa cell tumor	7	6	85.71	1	14.29
Fibroma	2	2	100.00	0	0.00
Sclerosing stromal tumor	2	1	50.00	1	50.00
Sertoli leydig cell tumor	1	1	100.00	0	0.00
Krukenberg tumor	1(0.6%)	0	0.00	1	100.00

Table 4: Age distribution of ovarian tumors

Age Range	Bilateral	Unilateral	Total
<20Years	0	9	9
21-40 Years	8	70	78
41-60Years	14	64	78
>60 Years	1	14	15
	23	157	180

Table 4A: Age distribution of unilateral tumours

Age Range	Serous Tumours			Mucinous Tumours			Other Epithelial Tumours			Non Epithelial Tumours			Total
	B	BL	M	B	BL	M	B	BL	M	B	BL	M	
<20 Years	7	0	0	1	0	0	0	0	0	1	0	0	9
21-40 Years	30	1	1	18	2	1	0	0	0	12	0	5	70
41-60 Years	29	0	7	9	2	5	2	0	1	6	0	3	64
>60 Years	4	1	2	3	0	0	1	O	0	2	0	1	14
	70	2	10	31	4	6	3	0	1	21	0	9	157

Table 4B: Age distribution of bilateral tumours

Age Range	Serous Tumours			Mucinous Tumours			Other Epithelial Tumours			Non Epithelial Tumours			Total
	B	BL	M	B	BL	M	B	BL	M	B	BL	M	
<20 Years	0	0	0	0	0	0	0	0	0	0	0	0	0
21-40 Years	1	0	1	0	0	0	1	0	1	2	0	2	8
41-60 Years	8	1	3	1	1	0	0	0	0	0	0	0	14
>60 Years	0	0	0	0	1	0	0	0	0	0	0	0	1
Total	9	1	4	1	2	0	1	0	1	2	0	2	23

B = Benign; BL = Borderline; M = Malignant

Discussion

Ovarian cancer accounts for 30% of all malignancies of female genital tract.[2] It is the leading cause of death among gynecological cancer.[1] The mortality rate is high because most of the ovarian tumours are asymptomatic until they attain a large size. They are asymptomatic because of their anatomical location.

Broadly ovarian tumours are classified into primary and secondary tumours. The primary tumours are further classified into, epithelial, germ cell tumours, sex cord stromal tumours and others. The ovary is also the common site to get metastatic deposits from abdominal cancers.

It is globally seen that surface epithelial tumours are the most common ones.[4] In this study also, epithelial tumours were the most common 146 (81.1%), followed by germ cell tumours 21 (11.7%) and sex cord stromal tumours 10 (5.6%). This was similar to that observed by Mondal et al,[4,9] Yogambal et al and Geetha Pachori et al.[10,3]

The most common epithelial tumours were benign serous cystadenoma 70 (55.1%) followed by benign mucinous cystadenoma 31 (24.4%). This was similar to that observed by Bhagyalakshmi et al, Yogambal et al and Geetha Pachori et al.[5,10,3] Among the germ cell tumours benign cystic teratomas were the most common type. This was similar to that observed by Bhagyalakshmi et al, Geetha Pachori et al.[5,3] In our study, most of the ovarian tumours were unilateral in origin. In this study, 23 cases of bilateral ovarian tumours were seen (12.8%). Among the bilateral ovarian tumours, benign serous tumours were the most common (9cases), followed by malignant serous tumours (4 cases) and then borderline mucinous tumor (2 cases). But in the study conducted by Santhoshkumar et al, malignant serous tumours were the most common histological pattern observed in bilateral ovarian tumours.[9]

In our study, benign tumours accounts for 138 cases (76.7%), 9 cases (5%) were borderline and 33 cases (18.3%) were malignant. This was similar to that observed by Wills v et al.[4]

In this study benign tumours were more commonly seen in 21-60 years of age. This was similar to that observed by Manivasagam J, who reported an equal incidence of benign tumours in this age group.[11] This was similar to that observed by Bhagyalakshmi et al,[5] Wills V et al,[4] Geetha Pachori et al.[3] In this study malignant tumours were more commonly seen in 41-60 years of age. This was similar to that observed by Bhagyalakshmi et al,[5] Pachori et al,[3] Wills v et al.[4] In contrast Ashraf et al reported a higher incidence of malignant tumours in reproductive age group.[12] Borderline tumours were more commonly seen in 21-40 years of age. This was similar to that observed by Wills v et al.[4]

In our study benign serous tumours were equally seen in 21-40 and 41-60 years of age. In the study conducted by Wills v et al, benign serous tumours were seen most commonly in 41-60 years of age.[4] In our study malignant serous tumours were most commonly seen in 41-60 years of age. Wills v et al reported one case of malignant serous tumor which comes under 41-60 years of age.[4] Malignant mucinous tumours were common in 41-60 years which was similar to Wills v et al.[4]

In our study benign mucinous tumours were most commonly seen in 21-40 years of age. This was similar to that observed by Wills v et al.[4] In this study one case was reported as endometrioid carcinoma (0.56%). This was similar to that observed by Pachori et al.[3] but Ahamed z et al and Zaman et al reported 12.03% and 3.87% of endometrioid carcinoma.[13,14] In this study seven cases (3.9%) of granulosa cell tumor were reported. This was similar to that observed by Pachori et al and Zaman et al.[3,14] Fibroma constitutes (1.1%) of ovarian tumours in this study. This was similar to that observed by Pachori et al.[2] Krukenberg was reported in one case. This was similar to that observed by Nishal AJ et al.[7] 12.8% of tumours were bilateral in origin. Out of which 13 were benign, 3 were borderline and 7 were malignant. This was in contrast to Nishal AJ et al.[7] in their study, most of the tumours in bilateral category were malignant in nature. Benign tumours were more often cystic in consistency in our study which was similar to that observed by Pachori et al[3] and Kanithkar et al.[15] Malignant tumor were solid in consistency in our study which was similar to Pachori et al[3] and Kanithkar et al.[15]

Conclusion

In our study tumours originating from surface epithelium are the most common histopathological type of ovarian tumours. Benign tumours are more common than malignant tumours in all age group. Benign tumours are more commonly seen in 21-40 years of age and malignant tumours are more common in 41- 60 years of age.

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