

Original Research Article

Study of histomorphological spectrum of ovarian neoplasms: an institutional perspective

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ABSTRACT

Background: Ovarian tumours account for one of the top five gynaecological malignancies in Indian women. The prime objective of the current study is to document the frequency, age distribution and diverse histomorphological spectrum of ovarian tumours in a peripheral institute in South India catering rural population.

Methods: The study comprises of retrospective clinico pathological evaluation of 77 cases of ovarian neoplasms in Indian Red Cross Cancer Hospital, Nellore, India during a 4 year period (January 2015 to December 2018). Non neoplastic ovarian lesions were excluded. Gross and microscopic histopathological examination was done for ovarian neoplasms. These were classified according to the WHO classification of ovarian tumours (2003).

Results: Out of 77 cases studied, majority were malignant tumours (72.72%), followed by benign (23.38%) and borderline tumours (3.9%). Age ranged from 11-80 years. Epithelial tumours were the most common (75.32%), followed by sex cord stromal tumours (12.98%), germ cell tumours (9.09%) and metastatic ovarian tumours (1.3%). Serous cystadenoma was the commonest benign tumour and serous papillary carcinoma was the commonest malignant ovarian tumour.

Conclusions: It is concluded from this study that on morphological grounds, tumours originating from surface epithelium are the most common. Higher incidence of malignant tumours supports the metaphor often used for ovarian malignancy “ the silent killer ”.

Keywords: Benign, Histopathology, Malignant, Ovarian neoplasms

INTRODUCTION

Ovarian Neoplasms form a complex group of tumours that exhibit a wide variety of histological features. World Health Organization (WHO) categorizes primary ovarian neoplasms according to histogenetic principles, mainly with regards to their derivation i.e. from coelomic surface epithelial cells, germ cells and mesenchyme (sex cord and stroma).¹ In addition to primary benign and malignant neoplasms, there are also borderline tumours which represent non-invasive tumours of uncertain

malignant potential. Being an intra-abdominal organ, ovary is also subject to frequent metastases.

Ovarian carcinoma is considered to be the most lethal gynecological malignancy.² Most ovarian carcinomas have been suggested to originate from surface epithelial cells. Incessant ovulation resulting in carcinogenic mutations and gonadotropin based stimulation play a significant role in the development of ovarian cancer.³ Furthermore changing lifestyle factors like delayed age of

marriage, age of parity and use of oral contraceptives have also been implicated in carcinogenesis.⁴

Various cancer registries have revealed an increasing trend in the incidence of ovarian cancer in India. It is the 4th leading cause of cancer related deaths among females, often presenting at an advanced age and stage.^{5,6} Regional variations have been observed in age distribution, clinical presentation and histomorphological spectrum of these tumours.

In the present communication, an attempt has been made to analyse the above mentioned trends of ovarian neoplasms in a rural hospital in South India.

METHODS

This retrospective study included 77 consecutive cases of histopathologically proven ovarian tumours reported by the department of Pathology of our institute, over a 4 year period (January 2015 to December 2018). Ovarian tissue

following hysterectomy with unilateral or bilateral adnexa, oophorectomy and /or cystectomy was studied. Non Neoplastic lesions were excluded from this study.

Macroscopic analysis in detail was done for parameters like size, external surface, consistency and laterality. Special attention was given to solid areas adjacent to ovarian surface and papillary projections during grossing.

Microscopic examination was done on Haematoxylin and Eosin stained tissue sections following routine Formalin Fixation and Paraffin Embedding technique. WHO classification of ovarian tumours (2003) was used for tumour classification. All other relevant clinical data was retrieved from the archived records of the hospital.

RESULTS

Out of 77 cases of ovarian tumours studied, 18 cases (23.38%) were benign, 3 (3.9%) were borderline and 56 cases (72.72%) were malignant as in Table 1.

Table 1: Distribution of ovarian tumours as per WHO classification.

Class of Tumour	Number	Percentage of all tumours	Benign (%)	Borderline (%)	Malignant (%)
Surface Epithelial	58	75.32	12 (15.58)	3(3.89)	43(55.84)
Germ cell	07	9.09	1(1.3)	-	6(7.79)
Sex Cord Stromal	10	12.98	5(6.49)	-	5(6.49)
Metastatic	01	1.3	-	-	1(1.3)
Poor Differentiation	01	1.3	-	-	1(1.3)
Total	77	100	18	3	56

Histologically Surface epithelial tumours were the most common (75.32%) followed by sex cord stromal tumours (12.98 %) and germ cell tumours (9.09%) (Table 1). Gross examination revealed a higher percentage of both solid and cystic lesions (44 /77, 57.14%), purely solid (21/77, 27.27%) and purely cystic (12/77,15.58%) (Table 2).

Table 2: Consistency of ovarian tumours.

Lesion	Solid	Cystic	Solid and Cystic	Total
Benign	03	09	06	18
Borderline	00	00	03	03
Malignant	18	03	35	56

Table 3: Age wise incidence of various histologic types of ovarian tumours.

Age in years	BSE	Borderline SE	MSE	BSCS	MSCS	BGC	MGC	Metastatic and Others	Total
<20	01	-	-	-	01	-	04	-	06
21-30	02	-	01	-	-	-	01	-	04
31-40	03	01	05	-	-	01	-	-	10
41-50	03	01	12	01	03	-	01	01	22
51-60	02	01	15	04	01	-	-	-	23
61-70	-	-	07	-	-	-	-	01	08
71-80	01	-	03	-	-	-	-	-	04

BSE – Benign Surface Epithelial, Borderline SE – Borderline Surface Epithelial, MSE – Malignant Surface Epithelial, BSCS – Benign Sex Cord Stromal, MSCS – Malignant Sex Cord Stromal, BGC – Benign Germ Cell, MGC – Malignant Germ Cell

A prominent solid component was noted predominantly in malignant tumours (53/77, 68.83%).

Maximum number of cases were seen in the age group 41-60 years. A higher incidence of both benign and malignant tumours (45/77, 58.44%) was noted in this age group. However in our study 4 out of 6 malignant germ cell tumours were noted below 20 years of age. (Table 3)

Left sided tumours of ovary, 26 cases (33.77%) were slightly more common than the right sided tumours, 24 cases (31.17%).

Slightly higher incidence of bilateral cases (27 cases, 35.06%) was also noted in our study.

Histologically, among the surface epithelial tumours, the most common benign tumour was serous cystadenoma (6 cases, 7.79 %) and most common malignant tumour was serous papillary carcinoma (36 cases, 46.75 %).

Among the germ cell tumours, dysgerminoma was the most common (4/77, 5.19%). Granulosa cell tumour (5/77, 6.49%) was the commonest sex cord stromal tumour. Only one case of secondary ovarian tumour was noted in our study.

Table 4 : Histomorphological types of ovarian tumours and Laterality.

Histological Type	U/L Left	U/L Right	B/L	Number	Percentage
Dysgerminoma	03	01	-	04	5.19
Yolk Sac Tumour	-	01	-	01	1.3
Mature Cystic Teratoma	-	-	01	01	1.3
Mixed Germ cell Tumour	-	01	-	01	1.3
Granulosa Cell Tumour	01	03	01	05	6.49
Thecoma	-	01	-	01	1.3
Fibroma	01	01	01	03	3.9
Sertoli Leydig cell tumour	-	01	-	01	1.3
Krukenberg Tumour	-	-	01	01	1.3
Carcinosarcoma	01	-	-	01	1.3
Serous Cystadenoma	04	02	-	06	7.79
Serous Cystadenofibroma	-	01	-	01	1.3
Borderline Serous	-	-	01	01	1.3
Malignant Serous Papillary Ca.	08	09	19	36	46.75
Malignant Serous Adeno Ca.	02	01	02	05	6.49
Mucinous Cystadenoma	03	01	-	04	5.19
Borderline Mucinous	02	-	-	02	2.59
Malignant Mucinous Ca.	01	01	01	03	3.9

DISCUSSION

Compared to studies in Western countries where 75-80 % of tumours were benign, this study shows an increased trend in the percentage of malignant tumours (55/77, 71.42%).

Most primary malignant tumours (43/77, 55.84%) were diagnosed in women above 40 years of age in our study. Basic et al, found ovarian cancers occurred most frequently in a similar age group.⁷ Yet a significant proportion (12/77, 15.58 %) of ovarian malignancies was found in women younger than 40 years. This correlates with the findings of Jha R et al, and Mankar DV et al.^{8,9}

Unilateral occurrence was more common than bilateral. We did not find any predilection of ovarian cancer either in the right ovary or in the left ovary. Our findings are in

accordance with studies of Thakkar et al, Misra R et al.^{10,11}

Grossly, it was found in our study that benign tumours were more often cystic in consistency. Majority of the malignant tumours were partly cystic and partly solid, followed by solid consistency. This is in accordance with other studies of Kanthikar et al, Pachori et al, Pilli G.¹²⁻¹⁴

Histopathologically, surface epithelial tumours (75.32 %) were the most common category of ovarian tumours encountered. This agrees with the findings of Gupta et al and Shah et al.^{15,16}

Malignant surface epithelial tumours account for only 55.84 % in our series, the commonest being serous papillary carcinoma (36/77, 46.75 %). Both serous cystadenocarcinoma and granulosa cell tumours stood

second in the malignant category accounting for 6.49% each.

Among benign surface epithelial tumours, serous cystadenomas were the most common in our series akin to the findings of Shah et al, and Thanikasalam et al.^{16,17}

The main strength of this study is that these results and observations provide a valuable base line information regarding frequency and pattern of ovarian tumours in our region.

The limitation of this study is its relatively small sample size which could be one of the causes of interregional incidence variation.

Alarmingly, we have observed an increased incidence of ovarian malignancy in our study, which calls for more research into region specific risk factors.

CONCLUSION

It is concluded from this study that on morphological grounds, tumors originating from surface epithelium are the most common and their malignant counterparts are more frequent in our study population. Further studies are needed to elicit the region specific causative factors responsible for the increase in the incidence of ovarian cancer.

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