ORIGINAL ARTICLE

Clinicopathological Pattern in 150 Females Presenting with Benign and Malignant Ovarian Tumors

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ABSTRACT

Objective: To study the histological pattern of benign and malignant ovarian neoplasms.
Study design: A cross- sectional study.
Duration of study: Two and half years.
Place of study: Departments of Pathology, Fatima Memorial Hospital and Arif laboratory, Hameed Latif Hospital Lahore.
Methods: The study consisted of 150 specimens of ovarian tumors, received fixed in 10% formalin. Haematoxylin and Eosin stained slides were examined to determine the histological type by WHO classification.
Results: Majority of these tumors were benign (74%), border line tumors were <2% and malignant tumors were 24.33%.Histologically the major categories were surface epithelial tumors 92 (61.33%), germ cell tumors 48 (32%) sex cord stromal tumors 9(6%) and metastatic adenocarcinoma 01 (0.66%).Amongst malignant tumors, the most common category was malignant surface epithelial tumor (67.56%) followed by malignant germ cell tumors (24.32%). Serous cystadenocarcinoma was the most common malignant ovarian tumor and 88% malignant surface tumors were seen in the 5th and 6th decades. All 9 malignant germ cell tumors (100%) occurred in patients below 30 years of age. Serous cystadenoma was most common benign tumor (38.73%) followed by mature cystic teratoma (35.13%). Benign ovarian tumors 60.36%(67/111) were seen in 3rd and 4th decades.
Conclusion: Epithelial tumors are the commonest variety of ovarian tumors followed by Germ cell tumors. There are minor differences from local and western studies.
Key words: Ovarian tumors, cystadenoma, adenocarcinoma

INTRODUCTION

Ovarian neoplasm is the most fascinating tumor of women in terms of its histogenesis, clinical behavior and malignant potentiality .Ovarian neoplasm can occur in all age groups and no age is exempted[1]. Diverse histopathologies are common in ovarian tumors reflecting the different cell origins of the tumors. Exact incidence in Pakistan is not known but ovarian cancer is the fourth most common cancer among females of Pakistan and continues to present at an advanced stage[2].The cancer of the ovaries represents about 30% of all cancers of the female genital tract[3]. In a tumor registry data analysis from AFIP Rawalpindi, ovarian tumors were also more frequent than cervical cancer[4]. Ovarian cancer represents one fourth of the malignancies of the female genital tract, and is the most common cause of death among women who develop cancers of gynecologic origin. The lifetime risk for a woman to develop ovarian cancer is approximately 1 in 70, compared to 1 in 8 or 9 for breast cancer[5]. Ovarian

cancers are also associated with the highest mortality, they mostly remain asymptomatic in early stages and are diagnosed at an advanced stage[6] because they arise at deep seated, physically inaccessible locations. Age, race, nulliparity, infertility, history of breast or endometrial cancer and family history of ovarian cancer are few of the known risk factors for ovarian cancer[7]. Determination of various histologic patterns of ovarian tumors is very important in diagnosis as well as prognosis of ovarian tumors. A prospective study was carried out to assess the clinico-pathological pattern of ovarian cancers in a particular group of patients presenting at a tertiary care hospital in Lahore and to compare it with other national and international studies.

MATERIALS AND METHODS

One hundred and fifty consecutive series of patients were selected for this study from Jan 2008 to July 2010 who underwent laparotomy when after abdominal or bimanual examination and abdominal ultrasound, they were found to have ovarian cyst or tumor at Fatima Memorial Hospital and Hameed Latif Hospital, Lahore. Patients with endometriotic ovarian

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cysts or abdomino-pelvic masses other than ovarian tumors were excluded from the study Relevant clinical data of these patients including age, menstrual history, and menopausal status, familial risk of ovarian / breast malignancy etc. were recorded in separate proformas. The symptoms recorded were grouped into abdominal symptoms (abdominal pain, abdominal mass and abdominal enlargement), gastrointestinal symptoms (nausea, vomiting and constipation), constitutional symptoms (loss of appetite and weight loss), urinary symptoms (increase in urinary frequency) and chest symptoms (dyspnoea). The specimens were received in 10% formal saline at the Pathology laboratory of Fatima Memorial Hospital College of Medicine and Dentistry, Lahore. Gross examination of the surgical specimens was performed and recorded on a Performa. Adequate representative tissue sections from the lesions were taken as described by Rosai[8]. The tissue sections were processed under standardized conditions for paraffin embedding and were stained with haematoxylin and eosin (H&E)[9]. The tumors were classified histologically by WHO classification system[10].

The main outcome measures were age, symptoms of the patient, and histopathology of tumor. All the data was analyzed on SPSS version 17. Percentages and 95% CI were calculated.

RESULTS

One hundred and fifty cases of ovarian tumors were included in this study. Out of these, 74%(111/150) were benign, 24.66% (37/150) were malignant and 1.33% (2/150) were border line neoplasms. Surface epithelial tumors were most common and accounted for 61.33% (92/150) of all ovarian tumors included in this study followed by germ cell tumors (32%) (48/150).

Out of 92 surface epithelial tumors, 70.65 %(65/92) were benign, 27.17% (25/92) were malignant and 2.17% (2/92) were border line neoplasms. Benign serous cystadenoma was the commonest benign tumor and it was 46.73% (43/92).Mucinous cyst adenoma was 23.91% (22/92).

Among the malignant surface epithelial tumors, papillary serous cyst adenocarcinomas were most common and they were 11.96% (11/92). Mucinous cystadenocarcinomas were 8.69% (08/92). 3.26% (03/92) cases were reported as Endometeroid adenocarcinoma and 3.26 %(03/92) were catageroized as Clear cell carcinoma of ovaries.

Germ cell neoplasms constituted 32 %(48/150) of all ovarian neoplasms included in this study. Most of the germ cell neoplasms i.e. 81.25% (39/48) were benign and all of these benign germ cell tumors were reported as mature cystic teratomas or Dermoid

cysts. Among 09 malignant Germ cell neoplasms 12.5 %(06/48) were diagnosed as Yolk sac tumor and 6.25% (03/150) were reported as Dysgerminomas.

Six percent cases (09/150) were classified as Sex cord stromal tumors, among those 77.77% (07/09) were benign and 22.2 %(02/09) were malignant. Out of these benign sex cord stromal tumors, 44.44 %(04/09) were Granulosa cell tumors, 11.11 %(01/09) each belonged to Thecoma fibroma, Sclerosing Stromal tumor and Lipoid cell tumor .Metastatic tumors of ovaries were far less common than primary ovarian tumors only 0.66% (01/150) was reported as metastatic adenocarcinoma or Krukenberg tumor.

Overall, serous cystadenoma was the most common benign tumor. It accounted for 28.66% of all ovarian tumors (43/150) and 38.73 %(43/111) of all benign ovarian tumors. Among the malignant ovarian tumors, serous cyst adenocarcinoma was most common and constituted 29.72% (11/37) of all ovarian malignancies in this study.

Patients of all ages were included in the study. Forty three (43) benign serous cystadenomas were found from 21>60 years of life. Out of these 93% (40/43) were between 21—60 years of life. Serous cyst adenocarcinomas were not seen up to 30 years. Most serous cyst adenocarcinomas, 90.99% (10/11) were seen above 40 years. Among 22 mucinous cystadenomas in this study, 86.36% (19/22) were found in 4th and 5th decade .Like serous cyst adenocarcinomas, mucinous carcinomas were not found below age 30 years and 75% (6/8) were reported above 40 years.

Germ cell tumors were seen in young patients. 94.87% (37/39) of benign mature cystic teratoma were found up to 40 years of life. Malignant germ cell tumors were found up to 30 years, among these 66.66% were Yolk sac tumors and were found between 1—30 years. All three Dysgerminoma cases were diagnosed in the 3rd decade.

Sex cord stromal tumors comprised only 6% (9/150) of all ovarian tumors; they were not seen below age of 20 years. One case of metastatic carcinoma was diagnosed at the age of 56 years.

Regarding presenting complaints, in this study the commonest presenting symptom was lower abdominal pain 98(65.5%) patients presented with lower abdominal pain followed by mass abdomen in 32 (21.33%) patients.

Table 1 shows the frequency of individual benign/border line tumors in different age groups in 113 cases of ovarian tumors.

Table 1: Frequency of benign and malignant ovarian tumours in 150 study subjects

Types of Tumours		n%=
Benign		111(74%)
Malignant		37(24.66%)
Border line tumors		02(1.33%)
A	**Surface Epithelial Tumours**	92(61.33%)
	Benign:	65(70.65%)
	Serous Cystadenoma	43(46.73%)
	Mucinous Cystadenoma	22(23.91%)
	Borderline:	
	Serous Cystic Neoplasm	02(2.17%)
	Malignant:	25(27.17 %)
	Serous Cystadenocarcinoma	11(11.96%)
	Mucinous Cystadenocarcinoma	08(8.69%)
	Clear Cell Carcinoma	03(3.26%)
	Endometroid Carcinoma	03(3.26%)
B	**Germ Cell Tumours**	**48(32%)**
	Benign:	39(81.25%)
	Mature Cystic Teratoma (Dermoid Cyst)	39(81.25%)
	Malignant:	09(18.75%)
	Yolk Sac Tumour	06(12.5%)
	Dysgerminoma	03(6.25%)
C	**Sex Cord Stromal Tumours**	**09(6%)**
	Benign:	07(4.66%)
	Granulosa Cell Tumour	04(2.66%)
	Thecoma Fibroma	01(0.66%)
	Sclerosing Stromal Tumour	01(0.66%)
	Lipoid Tumour	01(0.66%)
	Malignant:	
	Malignant Sex Cord Stromal	02(1.33%)
D	**Metastatic tumors**	**01(0.66%)**

Fig: 1: This figure shows the right ovarian papillary serous cystadenocarcinoma presenting in a 38 years old female. (H&E: 20X x 10X).
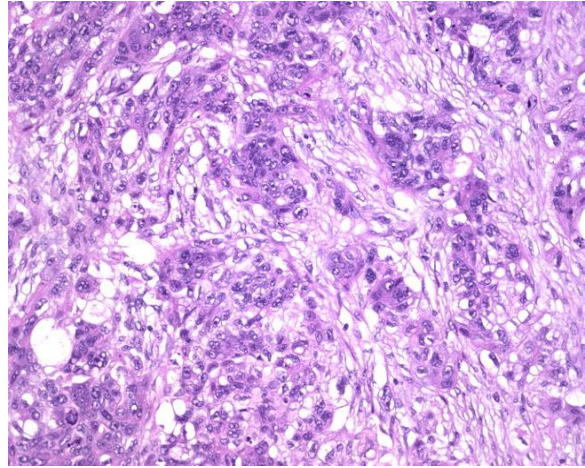

Fig: 2: This figure shows the juvenile granulose cell tumour presenting in a 21 years old female. (H&E: 20X x 10X).
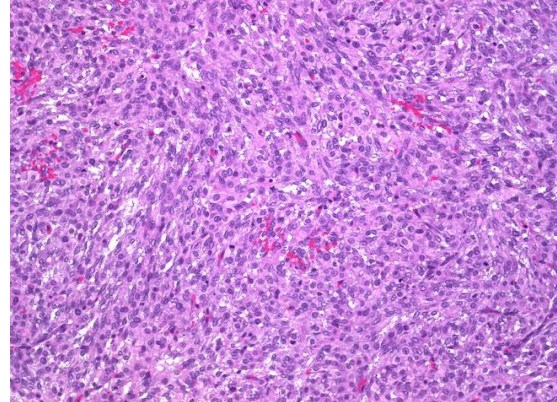

Table 2a: Age Distribution of benign/border line ovarian tumors in 113 Patients

Diagnosis	1-20	21-30	31-40	41-50	51-60	>60	Total	%
Serous cyst adenoma	0	08	15	10	07	03	43	38.73%
Mucinous cyst adenoma	0	03	12	07	0	0	22	29.81%
Border line serous cystic neoplasm	0	0	0	02	0	0	02	1.33%
Mature cystic teratoma	08	19	10	02	0	0	39	35.13%
Granulosa cell tumors	0	02	02	0	0	0	04	3.6%
Thecomafibroma	0	0	01	0	0	0	01	0.90%
Lipoid cell tumor	0	01	0	0	0	0	01	0.90%
Sclerosing stromal cell tumor	0	01	0	0	0	0	01	0.90%
Total	08	34	40	19	07	03	113	100%

Table 2b: Age distribution of malignant ovarian tumors in 113 patients

Diagnosis	1---20	21--30	31—40	41--50	51--60	>60	Total	%
Serous cyst adenocarcinoma	0	0	01	03	04	03	11	29.72%
Mucinous cyst adencarcinoma	0	0	02	04	02	0	08	21. 62%
Endometeroid Adenocarcinoma	0	0	0	02	02	01	03	8.1%
Clear cell carcinoma	0	0	0	0	01	02	03	8.1%
Yolk sac tumors	04	02	0	0	0	0	06	16.21%
Dysgerminoma	0	03	0	0	0	0	03	8.1%
Malignant sex cord stromal tumors	0	0	0	02	0	0	02	5.4%
Metastatic tumors	0	0	0	0	1	0	01	2.7%
Total	04	05	03	11	09	06	37	100%

DISCUSSION

In this study 74%, 1.33% and 24.66% ovarian tumors were classified as benign, borderline and malignant tumors respectively. This is similar to results of studies conducted by Pilli et al, Naseer A Sheikh et al and Mumtaz Ahmed et al which showed that benign ovarian tumors were more common than malignant tumors[11,12,13] . .

Among the histological types, the commonest category of ovarian tumors encountered in our series was epithelial tumors (61.33%) followed by germ cell tumors (32%). Surface epithelial tumors formed the main histological group not only in this analysis but in other national and international studies. Samina Iltaf and Noor Khan reported in their study that the main bulk of ovarian tumors, comprised of the surface epithelial tumors [91/150 (60.67%)][14]. Ahmed Z et al reported that surface epithelial tumors were 63.50% (542/855) of all ovarian tumors[15].

In the study, benign serous cyst adenomas were found to be more common than mucinous cyst adenomas. Similar results were reported by Sumaira Yasmin et al, in which serous tumors were found to be more common than mucinous tumors[2].

Serous cyst adenocarcinoma is the most common primary ovarian epithelial malignancy[3]. In this study, 44% malignant epithelial tumors were serous in type followed by mucinous, endometrioid adenocarcinoma and Clear cell type. This finding is in concordance with the results of studies conducted by W G Mc Cluggage, Dhakal HP et.al, and with a report from Kathmandu by R Jha[16,17,18].

Tumors in borderline category are characterized by epithelial proliferation greater than that of the benign tumor but an absence of destructive invasive stroma19. They are most common during the fourth and fifth decades of life, with an average patient age of 46 years20. In this study only 1.33% (2/150) tumors were classified as borderline or tumors of low malignant potential and both patients were in the 5th decade of their lives. The result was similar with the result of a study conducted by Naseer A Sheikh et. al[12].

Regarding age, benign epithelial tumors are most commonly seen in the reproductive age group. In this study 58.45%(38/65) benign epithelial tumors were diagnosed in the 3rd and 4th decade of life. Malignant surface epithelial tumors are more frequent in middle to old age. In this study 22/25 (88%) malignant surface epithelial tumors were seen in patients above 40 years of age. A study conducted by Dhakal HP et al also concluded that the commonest affected age group due to ovarian cancers was between 40 and 49 years with mean age 44.71 years[17].

We found 48 cases of germ cell tumors, comprising of 32% of all ovarian tumors in this study. Among these 81.25% were benign and all were mature cystic teratomas (dermoid cysts). Malignant germ cell tumors were 18.75%. Malignant Germ cell tumors are the most common ovarian cancer among children and adolescent females[18]. In this study all 9 malignant germ cell tumors were in patients below 30 years of age. A study conducted in Nepal by R Jha et al also reported the occurrence of 100% malignant germ cell tumors in the 1st two decades[18].

Metastatic tumors were rare; only one case (0.66%) was reported as metastatic carcinoma. Metastatic deposits were seen in only 1.58% of cases in the study conducted by Naseer A Sheikh et.al[12]. Samina Iltaf et al also reported only on case of metastatic carcinoma out of 150 ovarian tumors[14].
Sex cord stromal tumors were 6% in this study and the results are in accordance with other studies conducted in Pakistan[13,14].

In our study the commonest presenting symptom was lower abdominal pain 98(65.5%) patients presented with lower abdominal pain followed by mass abdomen in 32 (21.33%) patients. The results comply well with a study carried out by Yasmin S et al in which abdominal pain was the commonest presenting complaint (59%) followed by abdominal mass/ distention (37%)[2].

CONCULSION

Thus we conclude that benign ovarian tumors are more common than malignant ones for all age groups. Surface epithelial tumors are the most common class of tumors, similar to the Western and local data from other medical institutions. Benign surface epithelial tumors being the most common benign tumors and malignant surface epithelial tumors being the most common malignant tumors. Considering individual tumors, serous cystadenoma is the most common ovarian tumor overall as well as the most common benign tumor, whereas serous cystadenocarcinoma is the most common ovarian malignancy. Malignant ovarian tumors are more common above 40 years. Germ cell tumors are most common tumor up to 30 years. However this study is institution based and has a small sample size. So the result obtained may or may not reflect the actual histological pattern and age distribution of ovarian tumors in Pakistani women. So more studies with larger sample size should be conducted.

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