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Original Article

Morphological Profile of Ovarian Tumours

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Abstract

Background: To study the morphological types of ovarian tumours .

Methods: In this descriptive, cross sectional study all consecutive specimens of ovarian tumours . Gross examination was done, representative sections taken, processed and paraffin embedded blocks made. Sections of blocks were taken by microtome and the prepared slides were stained by H&E stain and examined under the microscope. Results obtained were analyzed according to age and tumour type.

Results: A total of 182 cases of ovarian neoplastic lesions were reported, out of which 67.6% were benign while 32.4% were malignant tumours. Surface epithelial tumours were the commonest and constituted 49.2 % followed by germ cell tumours 20.3 %, sex cord stromal tumours 18.6 % and metastatic tumours 11.9 %. Mucinous tumours were more common than serous tumours. Among the benign category, mature cystic teratoma was the commonest.Benign tumours were more common in young females while incidence of malignant tumours increased with the advancing age.

Conclusion: Benign ovarian tumours are more common than malignant ovarian tumours. Among the surface epithelial tumours, mucinous tumours are the commonest in our study followed by germ cell tumours. Recognition of border line tumours is very important because such patients need close follow up.

Key Words: Ovarian tumours ,Surface epithelial tumour, Teratoma

Introduction

Ovarian tumours pose a major cause of morbidity and mortality in gynecological patients.[1] They are usually asymptomatic and present late due to pressure symptoms caused by their large size.[2]They may be diagnosed incidentally on ultrasound examination done for another cause. Patients usually have nonspecific symptoms and complain of abdominal or pelvic discomfort, pain, fatigue, urinary frequency and increased abdominal girth[3, 4]

According to studies, incidence of ovarian tumours varies globally. It is more common in European and American countries than Asia. In United Kingdom it is the fifth most common cancer and is the leading cause of death from gynecological cancer.[5]They are reported to be the 4th most common malignancy in the women of eastern India and Pakistan, 4thmost common malignancy in Lahore city and 10.2 per 100,000 per year in Karachicity.[4,6] According to WHO classification, ovarian tumours can be either surface epithelial tumours, sex cord stromal tumours, germ cell tumours or metastatic tumours. Fortunately, most of these tumours are benign.

Benign tumours mostly occur in child bearing age while malignant tumours occur in the elderly females and Incidence increases with the increasing age[7]. Ovarian tumours are rare in children constituting 1 % of all childhood malignancies. Germ cell tumours usually present in teen agers and young women. If diagnosed in time, approximately 90 % of germ cell tumours can be cured while preserving fertility[8].Exact cause of ovarian tumours is not clear. Main risk factors are reproductive age, long term estrogen intake as replacement therapy and positive family history of cancers of other than that of ovaries, especially breast.[9,10]Tubal ligation, hysterectomy at early age, high parity and healthy life style have been reported to have protective effects. [11- 13] Prognosis of tumours is predicted by the early detection, degree of differentiation, stage and laterality.[14]

Patients and Methods

It was a descriptive cross sectional study done in the department of histopathology, Holy Family Hospital, Rawalpindi from 1st January 2013 to 31st December 2015.All the specimens of ovarian tumours received in the department of Histopathology were included in the study. Gross examination of the specimen was done, representative sections taken and processed in an automatic tissue processor. Paraffin blocks were prepared and 3 -5 micron thick sections were taken by the microtome. Prepared slides were stained by H& E stain and examined under the microscope. Results obtained were analyzed according to age and tumour type.Unfixed and autolyzed specimens were not included in the study.

Results

During the study period, a total of 491 consecutive cases of ovarian specimens were received. Three hundred and nine (62.9 %) ovaries were having non

neoplastic lesions while 182 (37.1 %) cases were diagnosed as neoplasms.(Table - I).

Table 1:Distribution of total benign, borderline and malignant tumours.

Microscopic Type	Benign No(%)	Borderline No(%)	Malignant No(%)	Total N0(%)
Epithelial tumours	69(56.1)	9(9.18)	20(40)	98(53.84)
Germ Cell Tumours	48(39)	-	12 (24)	60(33)
Sex cord Stromal Tumours	6(4.9)	-	11(22)	17(9.34)
Metastatic Tumoursa	-	-	7(14)	7(3.85)
Total	123(67.6)	9(4.95)	50(27.5)	182(100)

Table 2: Age Distribution of 182 benign, borderline and malignant ovarian tumours.

Age (years)	Benign	Border line	Malignant
10-19	5		6
20-29	47	4	6
30-39	35	1	12
40-49	18	1	9
50-59	12	3	13
60-69	5		4
70 or >	1		

Table 3 : Distribution of ovarian neoplastic lesions according to age

Age (years)	Type of Tumour			
	Surface epithelial tumour	Sex cord stromal tumour	Germ cell tumour	Metastatic carcinoma
10-19	3		8	
20-29	26	4	25	2
30-39	33	4	25	2
40-49	17	3	6	2
50-59	16	6	4	2
60-69	3	2	4	
70 or >				1

Table 4: Distribution of benign lesions (n=123)

Microscopic type of benign tumors	Number	%
Epithelial Tumoors	69	56.1
Serous Tumors	34	27.64
Serous cyst adenoma	29	23.57
Serous cyst adenofibroma	5	4.06
Mucinous Tumors	35	28.45
Germ Cell Tumours	48	39
Mature cystic Teratoma	47	39
Monodermal teratoma with Stroma ovarrii	1	0.81
Sex Cord & Stromal Tumours	6	4.9
Thecoma	1	0.81
Fibroma	2	1.63
Fibrothecoma	3	2.44

Table 5: Distribution of 50 malignant and 9 borderline tumors lesions (n=50)

Microscopic type of malignant tumour	Number of cases	%
Epithelial Tumours	20 + 9•	40 + 4.95
Serous Tumours	9	31*
serous borderline tumour	3	1.6•••
serous adenocarcinoma	6	12
Mucinous Tumours	13	44.8*
mucinous borderline tumour	6	3.3•••
mucinous adenocarcinoma	7	14
Endometrioid adeno carcinoma	3	6
Malignant Brenner Tumour	3	6
Poorly differentiated carcinoma	1	2
Germ Cell Tumours	12	24
Immature Teratoma	4	8
Dysgerminoma	3	6
Yolk sac Tumour	1	2
Malignant mixed Germ cell Tumor	3	6
Embryonal carcinoma	1	2
Sex Cord & Stromal Tumours	11	22
Granulosa cell tumours	11	22
Metastatic Tumours	7	14
Total	50 +9	100+ 4.9

• Borderline tumor, ••,••• - % of 182 total neoplastic tumors;* % of total malignant and borderline epithelial tumour

Majority were seen in age group 20-29 (Table 2). Among benign neoplasms, surface epithelial tumours were the commonest(56.1%) followed by germ cell tumours (39%) and sex cord stromal tumours(4.9 %) (Table-3).In benign tumours epithelial tumours were commnest (Table 4)Mucinous cyst adenoma was the commonest benign surface epithelial tumor-n= 35 (28.45 %) followed by serous cystadenoma –n=29 (23.57 %). benign germ cell tumour (Mature cystic teratoma) -n=47 (39 %). Fibrothecoma was the commonest benign sex cord stromal tumours –n=3 (2.44 %) (Table -2).Age range for benign tumours was 17 to 70 years with mean of 33.8. Maximum cases were in the age group of 20 to 29 years – n=47 (38.2 %) (Fig – 1).

Figure 1: Gross specimen of Mucinous cystadenocarcinoma. Cut surface is gelatinous, cystic and solid with hemorrhagic areas

Figure 2 - Mucinous cystadenoma showing lining of tall columnar epithelium of endocervical type with papillary growths.

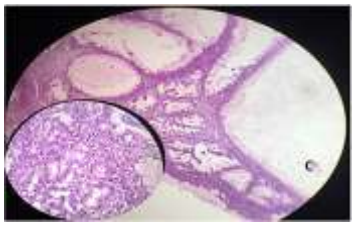

Figure 3:- Mucinous borderline tumor.; Inset shows nuclear pleomorphism

Figure 4: Mucinous cystadenocarcinoma showing stromal destruction;inset shows nuclear pleomorphism and necrosis .

Figure 5: Serous cystadenoma ; Inset shows serous lining epithelium.

Figure 6: Papillary Serous cystadenocarcinoma; Inset shows complex papillae formation

Figure 7: Endometrioid carcinoma; Inset shows villoglandular pattern

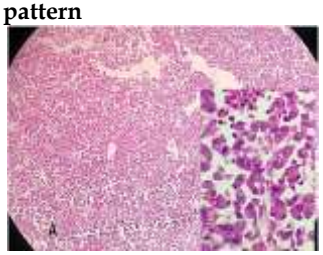

Figure 8: Dysgerminoma; Inset shows nests of tumour cell separated by scanty fibrous stroma and infiltration of lymphocytes. Cells have well-defined cell borders.

Figure 9:Yolk sac tumor; Inset shows Schiller Duval body

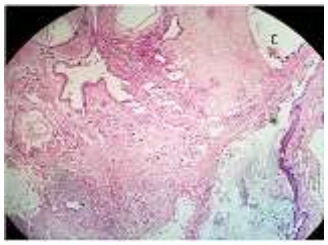

Figure 10: Mature cystic teratoma showing heterogeneous tissue

Figure 11: Immature teratoma ; Inset shows immature neuroepithelium

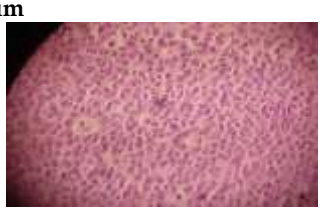

Figure 12:Photomicrographs of granulosa cell tumour (sexcord stromal tumour)

Commonest tumour in this age group was mature cystic teratoma 47.9% (Fig – 3).Among the borderline tumours, 6 (3.3 % of total 182 tumours) were borderline mucinous tumour while 3 (1.6 %) were serous borderline tumours (Table 5). Surface epithelial tumours were the commonest among the malignant neoplasms- n= 20 (40%), followed by germ cell tumours- n= 12 (24%), Sex cord stromal tumours n-11 (22%) and metastatic tumours – 7 (14%) (Table , Figure 4).Among the malignant surface epithelial tumours, mucinous tumours were the commonest -n=7 (14%) followed by serous tumours –n= 6 (12%).Other surface epithelial tumours which were diagnosed in the study included, endometrioid adenocarcinoma and malignant brenner tumour, 6 % each. One case (2 %) of poorly differentiated carcinoma was also found. Germ cell tumours were the second most common malignant tumour. Immature teratoma was the commonest-n= 4 (6.8%), followed by dysgerminoma and malignant mixed germ cell tumours constituting 3 (6 %) each (Figure 1-12). Yolk sac tumour and embryonal carcinoma , each constituting 1(1.7%) were also found. Among the sex cord stromal tumours, 11 cases of Granulosa cell tumour constituting 11 (22 %)were identified. Frequency of metastatic tumours was 14 % (n= 7). (Table 3).Age range for malignant tumours was 13 years to 69 years with the mean age of 39.0. Maximum cases were between 50 to 59 years – n= 16 (27.1%) (Fig: 1 and 4).

Discussion

Although most ovarian lesions are non-neoplastic, the neoplastic lesions are also fairly common. Benign tumours are more common than the malignant tumours. They usually present late, either after the tumour attains a huge size and produces pressure effects, or when the complications start. In our study size of ovarian tumours measured was up to 23 cm in greatest dimension.

In the present study age range of patients was 13 to70 years with mean of 35.5 years. It is comparable with the studies conducted in Pakistan.[1, 15]Mean age of patients in these studies was 38.82 $\pm$8.51 and 35.6 years respectively. For benign tumours, in our study was 17 to 70 years with mean age of 33.77 and for malignant tumours it was 13 to 69 years with mean age of 39.03.

Most of the benign tumours in our study were found in 3rd and 4th decades of life while most of malignant tumors were seen in 5th and 6th decades. These results are comparable with the studies done by other workers in Pakistan who have also found that benign tumours occur in younger age group while malignant tumours were mostly found in old age. [16, 17, 18, 22]

In our study, benign tumours (67.6 %) were more common than the malignant tumours(27.5 %.). This finding was also observed by Sheikh etal Ahmed et al. and Ashraf et al who reported benign tumours as 68.28%, 65.35% and 64.57 % and malignant tumours as 31%, 30.1 % and 35.43 % respectively.[2,15,17] In contrast to our findings, Yasmin et al, Bukhari et al and Rahman documented relatively higher frequency of benign tumours than our study constituting (80 to 89%) and low incidence of malignant tumours (10.2 to 24 %). [1,16,18] Our study is comparable to the findings of studies done in India (36.5%) and Nepal (31%) , which also documented high incidence of malignant tumours.[19,20] The reason for this relatively high frequency of malignant tumours in our setup might be as this is a tertiary care hospital and we also receive referral cases from other hospitals. Surface epithelial tumours were most common among all the neoplastic tumours (56.1%) followed by germ cell tumours (39%). These results are in agreement with the findings of other studies.[2, 17,18,21] Tumours of border line category are tumours having atypical epithelial proliferation with nuclear abnormalities and mitotic activity without stromal invasion. These tumours are considered as intermediate tumour between benign and malignant tumours of similar type. They are also called tumours of low malignant potential. In our study we found 9 (4.95 %) border line tumours. 3.3 % were mucinous border line tumours and 1.6 % were serous border line tumours. This finding is in agreement with other studies done in Pakistan.[21,22] Among the malignant tumours in our study, mucinous and serous carcinomas are most common tumours. This finding is in agreement with other studies.[15, 17, 18, 21] Yasmin et al observed the endometrioid carcinoma as the commonest epithelial malignancy (28.5%). [1]

In our study mucinous tumours were more common as compared to serous tumours both in benign(28.45 vs 27.64 %) and malignant (11.9% vs 10.16 %) epithelial tumour category. it is comparable with local studies.[23,24] However it in not in agreement with different studies in which frequency of serous tumours was reported to be more common than mucinous tumors.[615, 16, 21,22] This difference may be due to variation in sample size and other environmental factors.[21]Frequency of germ cell tumour was second to epithelial tumours in our study 60 (33 %). Benign tumours (mature cystic teratoma) 48 (39 %) were more common than malignant germ cell tumours 12(24%).This is comparable with the study done by Ahmed et al 2000, and in studies done in Malays and Chinese.[22,25]

Frequency of sex cord stromal tumours in the current study was 9.34% which is in agreement with the studies done by Tanwani (10.1%) and Abdullah and Bondagji (7.6 %).[21,26] However it is higher than reported by Ahmed et al , Ashraf et al and Rahman et al (3.15 to 4.46%). [15,17,18] Commonest benign tumour was fibrothecoma while most common malignant tumour was granulosa cell tumour. This is comparable with the results of Ashraf et al. [15]Metastatic tumours constituted 3.85 % in our study. The results are comparable with other studies [15, 21.]

Conclusion

1.Incidence of benign tumors is more common in young females while frequency of malignant tumors increases with the advancing age.

2Mucinous tumors are more common than the serous tumors.

3.Close followup is necessary for border line cases in these patients to improve the survival

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