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Original Article

Histological Pattern Of Ovarian Neoplasms And Their Age Wise Distribution-Study Conducted At A Tertiary Care Hospital

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Abstract

Background: Ovarian cancer is the 6th most common cancer in females in USA. The purpose of this study is to determine the distribution of histopathological types of ovarian cancers in different age groups of females to provide an institutional experience.

Methods: This descriptive cross-sectional study included 123 cases of ovarian neoplasms reported from January 2014 to June 2017 in Benazir Bhutto Teaching Hospital, Rawalpindi, Pakistan. The patients who underwent surgery for ovariotomy alone or along with hysterectomy were selected in the study. All the patients with proved histopathological diagnosis of ovarian tumors were included in the study, while all those with other ovarian pathologies were excluded. Non probability consecutive sampling technique was used. The WHO classification of ovarian tumors was the basis of histopathological reports (HPR).

Results: The results ascertained that 107(86.99%) tumors were benign while 16 (13.01%) were malignant. 82.3% were surface epithelial tumors and 17.7% were germ cell tumors. Serous cystadenoma was the most common benign tumor being 54.2% of all tumors while serous adenocarcinoma was the most common malignant tumor (62.5%). Most of tumors were seen in reproductive age group. Benign tumors were more common below 40 years of age while malignant neoplasms were more common above 40 years. Only 4 tumors were bilateral.

Conclusion: Benign ovarian neoplasms are commonest of ovarian tumors. These are common in age group <40 years.

Key words: Germ cell tumor, ovarian tumors, ovary.

Introduction

Ovarian cancer is 6th most common cancer in females in USA.[1] Ovarian tumors are one of the major causes of gynecological problems in females and present with marked variation in their histological types. Relative frequency of these lesions is different for Western and Asian countries.[2] The WHO histological classification of ovarian tumors separates ovarian neoplasms according to most probable tissue of origin; surface epithelial tumors (65%), germ cell (15%), sex cord – stromal (10%), metastatic 5%. Surface epithelial tumors are further classified by cell types (into serous, mucinous, endometroid etc) and atypia (benign, borderline, and malignant). Most malignant tumors are surface epithelial tumors.[3] Ovarian cancer has often been called the "silent killer" because of nonspecific symptoms and a lack of trustworthy screening for its early detection. Majority of cases are diagnosed late when they are in an advanced stage or large enough in size. It contributes not only to diagnostic delay and a poor prognosis but is also responsible for the increased burden of the diseases.[4]

The risk of a female newborn to have ovarian tumor during her lifetime is 6.0-7.0%, of having ovarian cancer is almost 1.5% and dying from ovarian cancer is 1.0%.[5] Peak incidence of ovarian tumor is between 21-40years.[6,7] Benign ovarian tumors occur in all age group whereas malignant ovarian tumors are more common in the elderly.[7] Majority of benign serous tumors occur in 4th–6th decade although they may occur in patients younger than 20 or older than 80 years.[3] Serous carcinomas are extremely rare in first two decades of life, average patient age for serous carcinomas is 56 years. Mucinous cystadenoma may occur at any age but are most often diagnosed in 4th–6th decade. Mucinous cancers have a mean age of 53-54 years.[5] According to research conducted at Armed Force Institute of Pathology, Rawalpindi Pakistan in

2015, the most common tumors in adolescents and adults (21-30 years) are surface epithelial tumors constituting 365 cases (17%) of all ovarian tumors, followed by germ cell tumors constituting 246 cases (11.5%). Commonest tumors in middle age and older age group are surface epithelial tumors.[4]

This study was conducted with the aim to find out frequency of different histological types of ovarian tumors reported from Department of Pathology at Benazir Bhutto Hospital Rawalpindi, Pakistan and to analyze age distribution of these tumors.

Materials and method

This was a descriptive cross-sectional study and included 123 cases of ovarian neoplasms reported from January 2014 to June 2017 in Benazir Bhutto Teaching Hospital Rawalpindi, Pakistan. Approval was taken from institutional research forum and ethical review committee of RMC and from the authority of Histopathology department of Benazir Bhutto Hospital. Non probability consecutive sampling technique was used.

Patients who underwent surgery for ovariotomy alone or along with hysterectomy were selected in the study. Histopathological examination of the specimens was conducted by the department of Histopathology following appropriate staining (haematoxylin and eosin staining). All the patients with proved histopathological diagnosis of ovarian tumors were included in the study. The other ovarian diseases including inflammation and abscesses were not included. A total of 123 cases fulfilled the inclusion criteria. We reviewed histopathology report of the cases in the study. Histopathological diagnosis, tumor type, tumor subtype, laterality and age of patients were noted. All the required data was retrieved from records of histopathology department of BBH. The WHO classification of ovarian tumors was the basis of Histopathological Reports (HPR). Data was entered in IBM SPSS version 23 and descriptive statistics were applied.

Results

Out of 123 ovarian tumors 107 (86.99%) were benign while 16 (13.01%) were malignant. Surface epithelial tumors 102(82.9%) were the most common followed by germ cell tumors 21 (17.1%).There were no sex cord-stromal and metastatic tumors reported during our study period. Surface epithelial tumors comprised 86 (80.4%) of all benign neoplasms whereas all malignant neoplasms were surface epithelial in nature. Germ cell tumors comprised 21(19.6%) of benign ovarian neoplasms. Most common benign ovarian tumor was serous cyst adenoma 58 (54.2%) followed by mucinous cyst adenoma 28 (26.2%). Mature cystic teratoma constitutes 21 (19.6%) of all benign tumors. Serous cyst adenocarcinoma was most common (62.5%) of all malignant tumors followed by mucinous cyst adenocarcinoma (37.5%). Benign ovarian neoplasms were common in all age groups below 60 years of age while malignant were more common in elderly ages. Of all benign tumors, 89 (83.17%) were found in up to 40 years of age whereas only 18 (16.83%) of total benign tumors were found in patients above 40 years of age (Table I). Malignant tumors were far less common below 40 years. Out of all malignant tumors, 13 (81.25%) were seen above 40 years where as this figure was 3 (18.75%) among patients up to 40 years (Table II). Tumors belonging to borderline category were not seen during our study period.

Bilaterality was more a feature of benign tumors as all 4 bilateral ovarian tumor in our study were benign in nature where as all 16 malignant tumors were unilateral.

Table I: Frequency of individual Benign tumors in different age group

Diagnosis	Up to 20 year	21-40 years	41-60 years	Above 60 years	Total
Mature cystic teratoma	8	11	2	0	21
Serous cyst adenoma	6	42	10	0	58
Mucinous cyst adenoma	1	21	6	0	28
Theoma	0	0	0	0	0
Fibroma	0	0	0	0	0
Serous cyst adenofibroma	0	0	0	0	0
Total	15	74	18	0	107

Table lI: Frequency of individual Malignant tumors in different age group

Diagnosis	Up to 20 years	21-40 years	41-60 years	Above 60 years	Total
Serous cyst adenocarcinoma	0	2	3	5	10
Mucinous cystadenocarcinoma	0	0	5	1	6
Metastatic adeno/Krukenburg	0	0	0	0	0
Immature teratoma	0	0	0	0	0
Granulosa cell tumor	0	0	0	0	0
Yolk sac	0	0	0	0	0
Total	0	2	8	6	16


Figure 1: Adenexal Mass

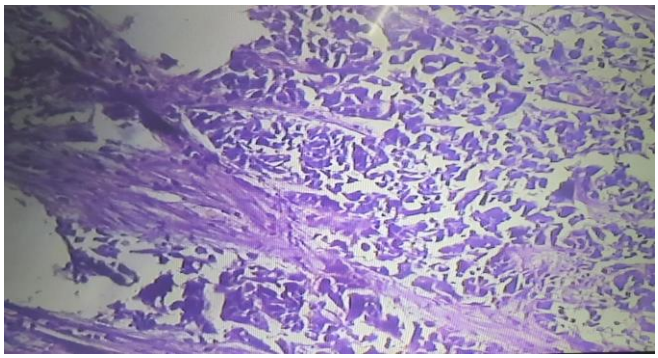
Figure 2: High Grade Serous Carcinoma Of Ovary

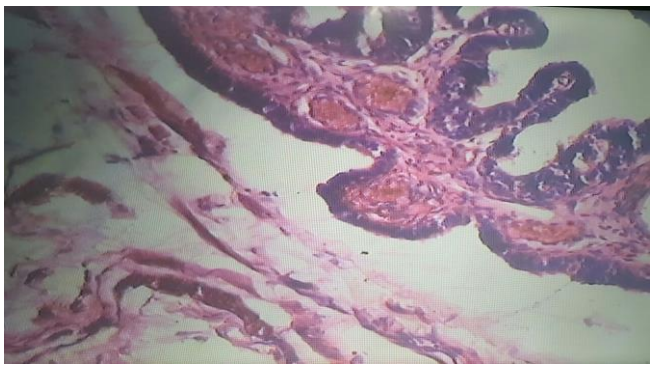
Figure 3: Serous Cystadenoma Of Ovary

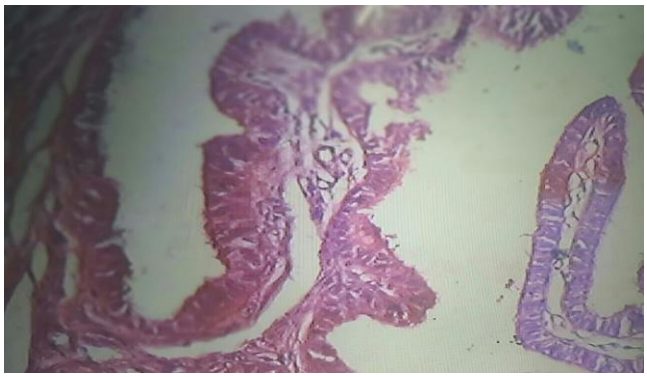
Figure 4: Mucinous Cystadenoma Of Ovary

Discussion

A number of neoplastic and non-neoplastic lesions can occur in ovaries. Ovarian masses are very common. They range from benign cysts to highly aggressive malignant tumors.[4] Diagnosis of ovarian tumors can be difficult due to a variety of pathologic conditions that can affect the ovaries and present with similar clinical and radiological manifestations. The histopathological pattern of ovarian tumors is important upon which further management rests.

In this study 86.99% tumors were benign and 13.01% were malignant. This is similar to a study conducted in Nepal in 2009 where 90% were benign and 10% were malignant.[8] On studying data collected from Western countries it was found out that 75% to 80% ovarian tumors were benign.[5] Also, a study carried out in India by Pilli et al had approximately similar results which showed that 75.2% ovarian tumors were benign.[6] However, this figure was only 59.2% in a study carried in Pakistan by Ahmed et al.[9]

In our study, surface epithelial tumors comprised 82.3% of all ovarian tumors. All malignant tumors in our study were surface epithelial in nature whereas in another study carried in Pakistan, this was found to be 63.5%.[9] The results from similar studies conducted in neighboring countries like India and Nepal were 67.9% and 52.2% respectively.[6, 1] Surface epithelial tumors accounted for 46-50% of all ovarian tumors in Japan.[5]

In this study, serous tumors accounted for 55.28% of all ovarian neoplasms, 85.3% of them were benign and 14.7% were malignant. In West, serous tumors accounted for 30% of all ovarian neoplasms and 60% of these were benign, 10% were borderline and 30% were malignant.[5] In another study carried out in Pakistan, benign serous tumors comprised 64.5% and their malignant counterpart were 35.5% of all tumors.[10]

In our study, mucinous tumors accounted for 27.6% of all ovarian tumors which resemble another study carried out in India in which this figure was 25.5%.[6] In another study conducted in Nepal this figure was 16.8%.[1] Out of all mucinous tumors 82.4% were benign and 17.6% were malignant .

In other studies serous cystadenoma was the commonest benign tumor similar to our study whereas it was mature cystic teratoma in studies which were conducted in Nepal and USA .[9-12] Serous cystadenocarcinoma was the commonest malignant tumor in this study which is consistent with other studies.[1,9,11,12]

Germ cell tumors were second major group of tumors in the present study and comprised 17.1% of all

ovarian neoplasms. In other studies this figure was 23.1%and 23.9% respectively.[10,13] Sex cord stromal tumors were not present in our study whereas in another study carried in Pakistan,[11] this tumor comprised 3.15% and in West it comprised 5% of the total.[14] Malignant germ cell tumors are the most common ovarian cancers among children and adolescent females.[2] Germ cell ovarian tumor is one of the major ovarian neoplasms in the first two decades of life. In this study mature cystic teratoma accounted for approximately half of ovarian neoplasms that appeared in the 1st two decades of life. Immature teratoma was not seen in our study. In our study, in patients under the age of 21, approximately 53.3% ovarian tumors were germ cell tumors.

Ovarian neoplasms can occur in all age groups and no age is exempted. Our study showed that most ovarian tumors occur in women of reproductive age group. Benign ovarian tumors occurred in all age groups whereas malignant ovarian tumors were more common in elderly age group. Majority of benign serous tumors occurred in 2nd-6th decades of life although they may occur in patients younger than 20 years or older than 80 years.[3] Serous carcinoma was not seen in first two decade of life in our study.

Ovarian tumors are well known for bilateral involvement. The likelihood of bilateral involvement by primary ovarian tumors varies with histologic subtype. In this study, 4 ovarian tumors were bilateral. All these bilateral tumors were benign in nature whereas all 16 malignant tumors in our study were unilateral. In similar studies conducted in neighboring countries like Nepal and India bilaterality was more a feature of malignant neoplasm.[1,10]

Ovarian cancer is the third most common malignancy in Karachi (after breast and oral cancer) with an age standardized incidence rate of 10.9%.[15] In this study, some data approximated to data from the western world whereas some approximated to that of neighboring countries like India and Nepal. Even results of two studies within Pakistan are different from each other.[2,4,11] Whether this represents changing trend in this region of the world or not needs to be uncovered by further studies.[16] This study as well as most of the studies from India and Nepal which are included here for comparison had small sample sizes whereas in the Western world, large population based studies were done. This could be one cause of variation in results. The difference from other studies may be due to sample size but genetic, socioeconomic and environmental factors may also be involved.

This study is institution based and has a small sample size so; the results obtained may or may not reflect the actual histological pattern and age distribution of ovarian tumors in Pakistani women. Therefore, more studies with larger sample sizes need to be conducted.

Conclusion

Knowing specific histology of ovarian mass is becoming increasingly important as management options have become more tailored to individual patients. Benign ovarian tumors are common in our setup. Most of ovarian neoplasms are noted in reproductive age group. The risk of malignancy increases with increasing age.

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