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Unilateral and Bilateral Involvement of Ovarian Tumors According to Histopathological Types

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Abstract

Introduction: Ovarian neoplasm is produced by the rapid growth and division of cells within the ovary. Under normal circumstances, ovarian cells reproduced to maintain tissue health. When growth control is lost and cellular division is too much and too fast, a cellular mass or tumor is formed. Ovarian neoplasm is the one of major gynecological malignancies & is a frequent site for primary & metastatic tumors. Due to its complex structure, primary ovarian neoplasm manifests a wide spectrum of clinical, morphological & histological features. Ovarian neoplasm has become increasingly important, not only because of a large variety of neoplastic entities but also because they have gradually increased the mortality rate due to genital cancer. The study aimed to find out the unilateral and bilateral involvement of ovarian tumors according to histopathological types. ***Methods:*** This cross-sectional study was carried out among forty-five patients who were admitted to the department of gynecology at Shaheed Suhrawardy Medical College & Hospital with features of ovarian neoplasm from February 2013 to February 2014. ***Result:*** A total of 45 cases were studied in this present study. Patients were of age group 2nd to 7th decade with ovarian tumors. Among 45 cases majority had benign tumors (82.3%), followed by malignant tumors (15.5%). A case of borderline tumor (2.2%) was also found. Benign tumors were the commonest in the 3rd decade. The highest frequency of malignant tumors was in the 4th to 6th decade. Germ cell tumors were found at a young age and sex cord-stromal tumor was found in the 5th decade. Most of the benign tumors (67.56%) were cystic, the rest 27.03%, and 5.42% of cases were partly cystic and partly solid respectively. Among benign tumors, two of the mature teratomas were solid. About 42.86% of malignant tumors were solid, 42.86% were partly cystic partly solid and only 14.28% cases were cystic. Among the malignant tumors, serous cystadenocarcinoma was solid in 3 out of 4 cases and the rest of the malignant tumors of different histology were partly cystic and partly solid. Borderline Brenner tumor was solid in morphology. Most of the benign cases were unilateral 78.38% and the rest 21.62% were bilateral. Among the benign cases, serous cystadenoma showed the highest percentage covering 45.95% followed by mucinous cystadenoma at 18.92%. The borderline tumor showed unilateral distribution. Among malignant cases 57.14% were bilateral and 42.86% were unilateral. ***Conclusion:*** This study concludes that benign ovarian tumors are more common from the 3rd decade & malignant tumors occur in the 4th to 6th decade. This study also showed that most of the benign tumors were cystic. Malignant ovarian tumors had an equal percentage of being solid entirely and partly cystic partly solid. Most benign cases were unilateral and malignant cases were mostly bilateral.

Keywords: Ovarian Neoplasm, Histopathology, Unilateral, Bilateral.

INTRODUCTION

Ovarian tumors are common forms of neoplasia in women. These neoplasms have become increasingly important not only because of the large variety of neoplastic variants but more because they have gradually increased the mortality rate due to female genital cancers [1]. Ovarian neoplasms are common tumors in females encompassing 23% of all gynecologic tumors and are the most common gynecologic malignancy [2]. It is the 3rd commonest cause of death due to malignancies of the female genital tract in the western world [3]. Ovarian neoplasm is the most mysterious tumor in women concerning its histogenesis, clinical behavior, and malignant potentiality. Furthermore, no age group is immune to developing ovarian neoplasm and no age is exempted. Ovarian cancer incidence rates are 2 to 3 times higher

in women between 65 to 84 years of age than in younger women [4]. A higher frequency of carcinoma is seen in unmarried women and married women with low parity [5]. The percentage of benign ovarian neoplasm changes with the age of the women, but most of them are functional and require very minimum resources or do not require anything for remedy. Geographic and racial differences in the incidence of cancer are well recognized, but information regarding any dissimilarity in clinicopathological behavior of cancers is scarce. There is considerable variability in the incidence of cancer and its related mortality amongst different racial groups. Blacks are more likely to develop cancer and have higher mortality than whites, Asian pacific islanders, American Indians, or Hispanics [6, 7]. The geographical differences in cancer incidence, as well as mortality rates, are generally lower in Asian and African countries [8]. About 60 to 80 percent of ovarian tumors are of epithelial origin and the rest are from germ cells (15-20%) and sex cord [9]. The American joint committee on cancer endorses the histological typing of malignant ovarian tumors as endorsed by the world health organization and recommends that all ovarian epithelial tumors be subdivided according to a simplified version as benign, borderline, and malignant in almost all varieties like serous, mucinous, endometroid, clear cell, Brenner, etc [10]. Among the neoplasms 75% are benign and the rest are borderline and malignant. 80% of malignant tumors are of primary origin and the rest is secondary named as Krukenberg tumor [9]. Ovarian cancers are associated with the highest mortality which mostly remains asymptomatic in the early stage and are diagnosed at an advanced stage because these arise at a deep-seated and physically inaccessible location [11]. Though most benign tumors were found to be unilateral, metastatic and malignant tumors were found to involve bilateral ovaries [12]. The study aimed to analyze the laterality involvement of ovarian tumors according to histopathological types. The aim of the study was to assess the unilateral and bilateral involvement of ovarian tumors according to histopathological types.

OBJECTIVE

General Objective

- To analyze the unilateral and bilateral involvement of ovarian tumors according to histopathological types.

METHODS

This was a cross-sectional study and was conducted at the Department of obstetrics and gynecology, shaheed Suhrawardy medical college hospital, Bangladesh. The study duration was from February 2013 to February 2014. A total of 45 patients were selected for this study who presented clinically with ovarian tumor and had evidence of ovarian neoplasm radiologically (USG or CT scan). Data were collected by interview, physical and lab examination using a structured questionnaire containing all the variables of interest. Pathological information was obtained from a histopathological report. All the collected information was recorded in a predesigned data collection sheet. Data from the study were compiled and analyzed using SPSS (Statistical Package for Social Sciences) version 16.0 for windows. The research protocol was approved by the ethical committee of Shaheed Suhrawardy Medical College and Hospital. All information was kept with strict confidentiality.

Inclusion Criteria

- Patients who have one persistent adnexal mass clinically and/ or with radiologically.
- Patients who had given consent to participate in the study.

Exclusion Criteria

- Patients who were unable to answer the criteria question.
- Patients who did not give consent.

RESULTS

A total of 45 cases were studied. Among them 37(82.3%) were benign, 7(15.50%) were malignant and 1(2.2%) case were of borderline was Brenner. Of 45 cases of ovarian tumor 38(84.5%) cases had surface epithelial tumors, 6 (13.3%) cases were germ cell tumors and 1 (2.20%) case was of sex cord-stromal tumor (Table 1). The age group varied from 17 to 70 years. This study revealed that the frequency of ovarian tumors is more in between 21 to 50 years. Benign tumors were more common in the 3rd and 4th decades whereas malignant tumors were in the 4th to 6th decades. Most serous cystadenoma and mucinous cystadenoma were presented between 21 to 40 years. Germ cell tumors were found at a young age and sex cord-stromal tumors were found at more than 61 years. Serous cystadenoma and mucinous cystadenoma were found in 41 to 61 years and more than 61 years respectively (Table 2). Most of the benign tumors (67.56%) were cystic, the rest 27.03%, and 5.42% of cases were partly cystic and partly solid respectively. Among benign tumors, two of the mature teratomas were solid. About 42.86% of malignant tumors were solid, 42.86% were partly cystic partly solid and only 14.28% cases were cystic. Among the malignant tumors, serous cystadenocarcinoma was solid in 3 out of 4 cases and the rest of the malignant tumors of different histology were partly cystic and partly solid. Borderline Brenner tumor was solid in morphology (Table 3). Most of the benign cases were unilateral 78.38% and the rest 21.62% were bilateral. Among the benign cases, serous cystadenoma showed the highest percentage covering 45.95% followed by mucinous cystadenoma at 18.92%. The borderline tumor showed unilateral distribution. Among malignant cases 57.14% were bilateral and 42.86% were unilateral. Among all malignant

histological types, serous adenocarcinoma established the highest percentage of bilateral involvement (Table 4).

Table 1: Types of ovarian tumor, (N=45)

Histopathological types of tumors	**Classification of tumors**			**Number of cases**	**Percentage of total cases**
	Benign 37 (82.30%)	**Borderline 01 (2.20%)**	**Malignant 07 (15.50)**		
Epithelial tumors				**38**	**84.50%**
Serous cystadenoma	19	-	-	19	42.50%
Serous cystadenocarcinoma	-	-	04	04	8.90%
Mucinous cystadenoma	09	-	-	09	20.00%
Mucinous cystadenocarcinoma	-	-	02	02	4.40%
Endometroid	03	-	-	03	6.60%
Brenners	-	01	-	01	2.20%
Germ cell tumor				**06**	**13.30%**
Mature teratoma	05	-	-	05	11.20%
Non gestational choriocarcinoma	-	-	01	01	2.20%
Sex cord-stromal tumor				**01**	**2.20%**
Fibroma	01	-	-	01	2.20%

Table 2: Age distribution of ovarian tumor, (N=45)

Histopathological types	**Age distribution in years**					
	<20	**21-30**	**31-40**	**41-50**	**51-60**	**>60**
	No. (%)	**No. (%)**	**No. (%)**	**No. (%)**	**No. (%)**	**No. (%)**
Benign tumors(n=37)	**01 (2.7)**	**14 (37.43)**	**12 (32.43)**	**04 (10.81)**	**02 (5.41)**	**04 (10.81)**
Serous cystadenoma	-	08 (21.62)	06 (16.22)	02 (5.41)	01 (2.70)	02 (5.41)
Mucinous cystadenoma	-	03 (8.11)	04 (10.81)	01 (2.70)	-	01 (2.70)
Endometroid	-	01 (2.70)	-	01 (2.70)	01 (2.70)	-
Teratoma	01 (2.70)	02 (5.41)	02 (5.41)	-	-	-
Sex cord-stromal	-	-	-	-	-	01 (2.70)
Borderline tumor(n=1)	-	-	-	**01 (100)**	-	-
Brenners tumor	-	-	-	01 (100)	-	-
Malignant tumors(n=70)	-	-	-	**03 (42.86)**	**02 (28.57)**	**02 (28.57)**
Serous cystadenocarcinoma	-	-	-	02 (28.57)	02 (28.57)	-
Mucinous cystadenoma	-	-	-	-	-	02 (28.57)
Non gestational choriocarcinoma	-	-	-	01 (14.29)	-	-

Table 3: The gross appearance of ovarian tumors according to histopathological type, (N=45)

Histopathological types of tumor	**Gross appearance of ovarian tumors**		
	Cystic No. (%)	**Solid No. (%)**	**Partly cystic and partly solid No. (%)**
Benign (n=37)	**25 (67.56)**	**02 (5.41)**	**10 (27.03)**
Serous cystadenoma	17	-	02

	(45.95)		(5.41)
Mucinous cystadenoma	07 (18.92)	-	-
Endometroid	-	-	03 (8.11)
Mature teratoma	01 (2.70)	02 (5.41)	02 (5.41)
Sex cord-stromal	-	-	01 (2.70)
Borderline (n=1)	**-**	**01 (100)**	**-**
Brenners tumor	-	01 (100)	-
Malignant (n=7)	**01 (14.28)**	**03 (42.86)**	**03 (42.86)**
Serous cystadenocarcinoma	01 (14.28)	03 (42.86)	-
Mucinous cystadenocarcinoma	-	-	02 (28.57)
Non gestational choriocarcinoma	-	-	01 (14.28)

Table 4: Unilateral and bilateral involvement of ovarian tumors according to histopathological types, (N=45)

Histopathological types of tumor	**Involvement of ovary**			
	Unilateral		**Bilateral**	
	No. of cases	**Percentage**	**No. of cases**	**Percentage**
Benign (n=37)	**29**	**78.38**	**08**	**21.62**
Serous cystadenoma	17	45.95	02	5.41
Mucinous cystadenoma	07	18.92	02	5.41
Endometroid	01	2.70	02	5.41
Mature teratoma	03	8.12	02	5.41
Sex cord-stromal	01	2.70	-	-
Borderline (n=1)	**01**	**100**	**-**	**-**
Brenners tumor	01	100	-	-
Malignant (n=7)	**03**	**42.86**	**04**	**57.14**
Serous adenocarcinoma	01	14.29	03	42.86
Mucinous cystadenocarcinoma	02	28.57	-	-
Non gestational choriocarcinoma	-	-	01	14.29

DISCUSSION

A total of 45 cases were studied. Among them 37(82.3%) were benign, 7(15.50%) were malignant and 1(2.2%) case was borderline named Brenner. Another study showed that 75.2% of tumors were benign, 20.94% were malignant and 2.8% were borderline malignancy which was quite understandable [13]. Histopathologically, a total of 45 patients who presented with ovarian tumors were classified according to WHO classification. Surface epithelial tumors were the commonest variety, constituting 84.50% of the ovarian tumor followed by germ cell tumors 13.30% and sex cord-stromal tumors 2.20%. The surface epithelial tumors are the most common ovarian tumor. Benign epithelial tumors are more frequent than malignant ones and occur during the reproductive age group. Serous epithelial tumors are the most common ovarian tumor. In this study, serous cystadenoma was the single most common tumor which constituted 42.50% of cases. It was found in 32.20% in another quite relatable study. Mucinous tumors are not infrequent and can grow to a large size. In this study, mucinous cystadenoma was the single most common tumor which established 20% of total cases. The most common malignant ovarian tumor was serous cystadenoma which constituted about 8.90% in the present study. serous cystadenoma was also the most common malignant ovarian tumor in a study that established 10.28% cases of all cases. Sex cord-stromal tumors are usually seen in the postmenopausal age group. In this study, 1 benign sex cord-stromal tumor was found which accounted for 2.20% of total cases and also relatable with another study (3.5%). In germ cell tumors, teratoma is common. In this study, they were 3rd most common tumors which constituted 13.30% of cases. In a study, they constituted 15.6% which is similar to this study [13]. The ovarian tumors vary from cystic to solid in consistency. Most of the benign ovarian tumors are cystic (67.56%) & only

5.41% were solid which was quite relatable to another study [14]. Among benign tumors, serous cyst adenoma & mucinous cyst adenoma showed cystic and two cases of mature teratomas were solid. About 42.86% of malignant tumors were solid, 42.86% were partly cystic partly solid & only 14.28% were solid. Three out of four serous cyst adenocarcinoma were solid and the rest of the malignant tumors of different histology were partly cystic and partly solid. Borderline Brenner tumor showed solid morphology. In a study, 76% of benign were cystic, 21.5% were partly solid partly cystic & 2.4 % were solid. In the malignant category, 49.20% were solid & 44.1% were partly cystic and partly solid which reveals the same picture as this study [13]. Ovarian tumors may involve unilateral or bilateral ovaries. Bilateral involvement is usually seen in malignancy. Bilaterality is related to the multicentric origin of the tumor or the tumor spread from one ovary to another. In this study most of the benign cases were unilateral 78.38%, 21.62% were bilateral. Serous cystadenoma and mucinous cystadenoma were mostly unilateral. In malignant cases, 57.14% were bilateral and 42.86% were unilateral. A study showed that 30.02% of malignant cases were bilateral which was quite understandable [13] two-thirds of malignant serous tumors were bilateral which quite similar to this study [15]. In another study, most bilateral ovarian tumor lesions were determined to be serous carcinoma, mature teratoma, or metastasis [16]. Another study was also understandable which established that malignant serous tumors were bilateral in 57.5% of cases [17]. Several studies also showed similar results concerning the involvement of ovaries [18-20].

Limitations of The Study

The study was conducted in a single hospital with a small sample size. So, the results may not represent the whole community.

CONCLUSION

In the present study, ovarian involvement of tumors (unilateral and bilateral) was studied for one year from February, 13 to February,14. A total of 45 cases were studied in which most of the benign cases were unilateral and the rest were bilateral. Among the benign cases, serous cystadenoma showed the highest percentage followed by mucinous cystadenoma. The borderline tumor showed unilateral distribution. Most malignant cases were bilateral and the rest were unilateral. Among all malignant histological types, serous adenocarcinoma established the highest percentage of bilateral involvement

RECOMMENDATION

Due to the anatomical position of ovaries and gradual progression of the disease usually, ovarian neoplasm presents in the advanced stage and ovarian malignancy consists 15-20% of female genital tract cancer but has no screening system. So, early detection by progressing analysis from presenting features produced by different varieties of ovarian neoplasms and there by early precision could be made by gynecologists about the extent of surgery and prompt action could be taken to delay or prevent the bilateral involvement.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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