

Ovarian Lesions – A Hospital Based Analysis

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Ovaries are common site of non-neoplastic and neoplastic lesions. Ovarian tumors are among the most frequent pathologic conditions in gynaecological practice. They arise from different cell lineages and constitute a wide variety of neoplastic entities with diverse morphological and clinical manifestations. Among cancers of the female genital tract, it ranks only below carcinoma of the cervix and the endometrium. Histopathological study is the gold standard to assess the treatment modalities and prognosis of various tumors. This study was done to determine the frequency and morphological variants of non-neoplastic and neoplastic lesions of ovary. It was a retrospective cross sectional study conducted in the Department of Pathology, Enam Medical College & Hospital, Savar, Dhaka during the period from January 2008 to December 2013. A total of 464 ovarian biopsies were selected for histopathological evaluation. The age of the patients ranged from 7 to 85 years with a mean age 35.42±12.67 years. Of these, 164 cases (35.34%) were non-neoplastic and 300 cases (64.66%) were neoplastic ovarian lesions. The commonest non-neoplastic lesion was endometriotic cyst (39.02%), followed by follicular cyst (19.51%). Of the ovarian tumors 248 (82.67%) cases were benign, 8 (2.66%) were borderline and 44 (14.67%) were malignant. Surface epithelial tumors (218, 72.67%) formed the largest group among the histological types of ovarian tumors, followed by germ cell tumor (21.67%) and sex cord stromal tumor (4.33%). Serous cyst adenoma (171, 68.95%) was the commonest benign tumor, followed by mature cystic teratoma and mucinous cyst adenoma. Serous cyst adenocarcinoma (34.09%) was the commonest malignant tumor, followed by dysgerminoma (27.27%).

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Introduction

A number of non-neoplastic and neoplastic lesions occur within the ovaries. Ovarian masses are a common occurrence in women of all age group. These are often asymptomatic and found at the time of routine health care visit,

during screening for other unrelated complaints, or when evaluating a specific gynaecological complaints.¹ The vast majority of ovarian cysts in women of reproductive age are functional, either follicular cysts or cystic corpus luteum.² However ovarian cysts can herald an underlying neoplastic process.

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Amongst the various non-neoplastic lesions follicular cysts are the most common which originate in unruptured graaffian follicles or in follicles that have ruptured and immediately sealed. Solitary cysts are common and occur throughout life. Functional cysts are often asymptomatic and seen in younger patients having symptoms of dysmenorrhea, menorrhagia and abdominal pain. Corpus luteal cysts are less prevalent than follicular cysts and mainly results from intra-cystic hemorrhage. Endometriosis corresponds to ectopic endometrial glands and stroma outside the uterine cavity and is associated with pelvic pain and infertility.^{3,4} The prevalence of endometriosis amongst female population is 6-10% and reported to be more common on the left side as compared to the right and bilaterality is often seen.⁵

Ovarian tumors are among the most frequent pathologic conditions in gynaecological practice and a frequent cause of hospitalization and surgery.⁶ Diverse histopathologies are common in ovarian tumors reflecting the different cell origins of the tumor. These can be benign, borderline or malignant. About 80% are benign, and these occur mostly in young women between the ages of 20 and 45 years. Borderline tumors occur at slightly older ages. Malignant tumors are more common in older women, between the ages of 45 and 65 years.⁴

Cancers of ovary and ovarian adnexae, including fallopian tube cancer, constitutes the eight most common cancers among women worldwide. The incidence rate of ovarian cancers is at least twice as high in Europe and North America than in Asia and Africa. The incidence of ovarian cancers ranks below only carcinoma of cervix and endometrium among the cancers of the female genital tract. It accounts for 3% of all cancers in female.⁷ Serous carcinomas account for approximately 40% of all cancers of the ovary

and are the most common malignant ovarian tumors. This study was designed to provide information regarding the frequency and the morphological variants of ovarian lesions.

Methods

This is a retrospective study of ovarian biopsies at the Department of Pathology of Enam Medical College & Hospital, Savar, Dhaka during a period of 6 years, from January 2008 to December 2013. All histopathologically diagnosed cases of ovarian lesions were included in this study. A total of 464 biopsies were selected for morphological evaluation. Patients with abdomino-pelvic masses other than of ovarian lesions were excluded from the study. Histology slides of all cases were reviewed and clinicodemographic data regarding age, laterality and clinical information were obtained from histology request forms and register. Thorough grossing was done and multiple representative sections given. All biopsies were fixed in 10% formalin and routine haematoxylin-eosin stained sections were examined. Special stain like Ziehl-Neelsen and periodic acid-Schiff were employed where necessary.

Diagnosis of tuberculosis was confirmed by demonstration of epithelioid granuloma with caseation necrosis on histopathological examination. The results were tabulated and presented as percentage frequencies. Means and standard deviation (SD) were used to summarize continuous variables, while percentages were used for categorical variables.

Results

A total of 464 cases were included in this study, out of which 164 (35.34%) were non-neoplastic ovarian lesions and 300 (64.66%) were neoplastic lesions. Age of the patients ranged from 7 to 85 years with a mean age 35.42 ± 12.67 years. The commonest age group

(Figure 1) affected was from 21 to 30 years (140, 30.17%), followed by age group from 31 to 40 years (126, 27.16%).

The commonest non-neoplastic lesion diagnosed was endometriotic cyst (64, 39.02%), followed by follicular cyst, infarction, luteal cyst, simple serous cyst and oophoritis (Table I). One patient showed granulomatous inflammation compatible with tuberculosis. Hemorrhagic areas were seen in endometriotic and luteal cysts.

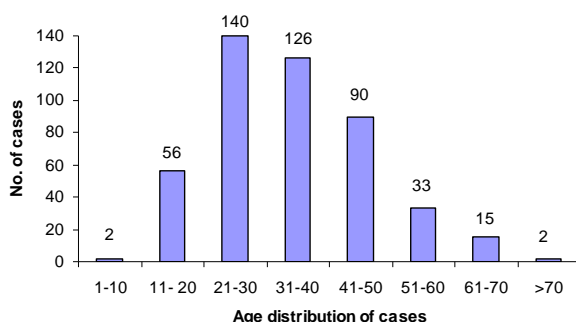


Figure 1. Age distribution of cases of ovarian mass (n=464)

Table I: Distribution of various types of non-neoplastic ovarian lesions (n=164)

Non-neoplastic lesions	No. of cases	Percentage
Endometriosis	64	39.02
Follicular cyst	32	19.51
Infarction	29	17.68
Luteal cyst	24	14.63
Simple serous cyst	10	6.1
Oophoritis	5	3.05

Table II: Distribution of various types of ovarian tumors (n=300)

Types of ovarian tumor	No. of cases	Percentage
Surface epithelial tumor	218	72.67
Germ cell tumor	65	21.67
Sex cord stromal tumor	13	4.33
Metastatic tumor	4	1.33

Neoplastic lesions included benign tumors (248, 82.67%), borderline tumors (8, 2.66%) and malignant tumors (44, 14.67%). The tumors varied in size. The largest tumor was a dermoid cyst measuring 45x30x25 cm in a female of 55 years age and smallest tumor was serous cyst adenoma measuring 2x2x1.5 cm. Surface epithelial tumors formed the largest group (218, 72.67%) among the histological types, followed by germ cell tumors, sex cord stromal tumors and metastatic tumors (Table-II). The commonest surface epithelial tumor was serous cyst adenoma (171, 78.44%), followed by mucinous cyst adenoma (15, 6.88%) (Table III). Serous tumors accounts 63% of all ovarian tumors, of which 90.48% was benign, 1.59% was borderline and 7.94% was malignant tumor.

The occurrence of malignancy was seen more in serous tumors (15, 34.01%) as compared to mucinous tumors (5, 11.36%). Mature cystic teratoma (52, 20.97% of benign) and dysgerminoma (12, 27.27%) were the commonest benign and malignant tumors respectively among germ cell tumors. The group of sex cord stromal tumor was having nine cases of benign fibroma and four cases of malignant granulosa cell tumor. Four cases of metastatic Krukenberg tumours were found.

Table III: Frequency of different types of ovarian tumors (n=300)

Histological classes	Benign tumors (n=248)	Borderline tumor (n=8)	Malignant tumors (n=44)	Total	%
Surface epithelial tumor	Serous cyst adenoma (171) Mucinous cyst adenoma (15)	Serous tumor (3) Mucinous tumor (5)	Serous cyst adenocarcinoma (15) Mucinous cyst adenocarcinoma (5) Endometrioid carcinoma (3) Clear cell adenocarcinoma (1)	218	72.67
Germ cell tumor	Mature teratoma (52)		Dysgerminoma (12)	65	21.67
Sex cord stromal tumor	Struma ovarii (1) Fibroma (9)		Granulosa cell tumor (4) Krukenberg tumor (4)	13 4	4.33 1.33
Metastatic tumor					

Discussion

There is a wide spectrum of pathological conditions both non-neoplastic and neoplastic which affect the ovary from early age to throughout life. The mean age of the patients was 35.42 years with age range 7 to 85 years. Ashraf et al. in their study found mean age 35.6 years with age range 4 to 80 years.⁸ The commonest age group affected in this study was from 21 to 30 years followed by age group from 31 to 40 years. This correlates with other studies,^{8,9} but differs from Western data where it is between 50 and 70 years.¹⁰

The present study had observed 35.34% cases of ovarian non-neoplastic and 64.66% neoplastic lesion. Higher levels of neoplastic lesions were also observed by Maharjan S¹¹ and Okugawa et al.¹², 86.87% of ovarian neoplasms while 13.33% of non-neoplastic ovarian lesions; and 72% ovarian neoplasms and 28% of non-neoplastic lesions respectively. In contrast, Makwana et al.⁹ and Gupta et al.¹³ found non-neoplastic lesions to be more common ovarian lesions, 58.46% and 58.8% respectively.

There is a great variation in the frequency of different non-neoplastic lesions in various

studies with the present study. Among this group endometriosis was the commonest lesions observed in the present study constituting 39.02%, which was also found as the most frequent lesions by others but with a high values, 67% and 71.52% respectively.^{5,12} This observation contrasts with others who found corpus luteal cysts as the commonest lesions.^{8,11,14} Still others found follicular cysts as more common lesion.¹⁵

In this study neoplastic lesions contained 82.67% benign, 2.66 borderline and 14.67% malignant. The frequency of benign tumors was similar to other studies in India,⁹ Pakistan¹⁴ and Nepal¹⁶, 78.7%, 80.71% and 83.9% respectively. Still higher values are found by others, 90.5% and 93.85% respectively.^{11,17} However, the frequency of benign tumors was relatively lower in the studies of others.^{12,13}

With agreement with others, the majority of the benign category of ovarian neoplasms was serous cyst adenoma (68.95%).^{4,8,9} It was followed by mature cystic teratoma (20.97%). Studies from Nepal found mature cystic teratoma as the most common benign ovarian neoplasm.^{16,18} Maharjan S observed equal

frequency of serous cyst adenoma and mature cystic teratoma, in benign category.¹¹

In the western literature, surface epithelial tumor is the commonest category of ovarian tumors among the histological types which accounts for 65% to 70%.⁴ This formed the main histological group in our study accounting 72.67%. However, low frequency of surface epithelial tumor was documented in the literature.^{8,11,16} Serous tumor constitutes about 30% of all ovarian tumors, of which 70% are benign or borderline and 30% are malignant.⁴ In our study, serous tumors accounts 63% of all ovarian tumors, of which 90.48% was benign, 1.59% was borderline and 7.94% was malignant tumor.

There is a great variation in the frequency of different categories of malignant neoplasms in various studies.^{4,8,9,14} In agreements with many studies, the most common malignancy was serous cyst adenocarcinoma (34.09%) in the present study. In some studies mucinous cyst adenocarcinoma was the commonest malignancy.^{19,20} Yasmin et al.²¹ observed granulosa cell tumor and endometrioid carcinoma (28.5% each) as the most common malignant ovarian neoplasms. Maharjan S found dysgerminoma was the most common malignancy.¹¹

Tumors in borderline category are characterized by epithelial proliferation greater than that of the benign tumor in absence of destructive invasive stroma. Mucinous borderline tumor was prevalent and seen in 5/8 cases which was also seen in another study.¹⁸ The frequency of borderline tumor in the present study was lower than the studies by Vaidya et al.¹⁸ and Okugawa et al.¹², both have observed 3.58% and 4% respectively.

In conclusion, neoplastic lesions were more common than non-neoplastic lesions of the ovary while benign tumors were more

common than malignant tumors. Endometriotic cyst was the commonest non-neoplastic lesion. Surface epithelial tumors were the most common group in both benign and malignant tumors. Serous cyst adenoma was the most common benign tumor whereas serous cyst adenocarcinoma was the most common malignancy.

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