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Original Article

Frequency of Benign and Malignant Ovarian Lesions: A Histopathological Analysis

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Abstract

Objective: To find the frequency of ovarian lesions in various ages at Pathology Department, ANMC Islamabad

Material and Methods: This Cross sectional study was conducted in department of Pathology ANMC Islamabad from 1st January 2015 to 30th June 2016. About 178 cases of ovarian lesions were included in the study. The samples were processed as per recommended steps for histopathological diagnosis. Data was recorded and analyzed by using SPSS version 20. Frequencies for specific diseases were calculated in terms of percentages. Mean and standard deviation were calculated for numerical values.

Results: Among 178 ovarian specimens, commonest pathology was non-neoplastic cysts in 78 cases (43.8 %) followed by benign tumors in 74 cases(41.6 %) and malignant tumors in 26 cases (14.6 %). The common lesions were endometriotic cysts 21.3 %, serous cystadenoma 17.4 %, benign cystic teratoma 14 %, follicular cyst 12.3 %, hemorrhagic cysts 10.1% and mucinous cystadenoma 7.3 %. Common malignant tumors were serous cystadenocarcinoma 6.7%, mucinous cystadenocarcinoma 2.8% and endometroid carcinoma 1.7% .

Conclusion: Non neoplastic cysts were the most common ovarian lesions (43.8%). This was followed by benign (41/6%) and malignant tumors (14.6%) cases. Surface epithelial tumors were more common than other tumors.

Key Words: Frequency, Malignant ovarian tumors, Serous cystadenoma, Teratomas.

Introduction

Ovaries are paired bean-shaped female reproductive organs. The germ cells along with the multipotential and totipotential mesenchymal cells are mainly performing the ovarian functions. In case of any ovarian pathology, definitely the reproductive functions will be disturbed.

Some of the non- neoplastic lesions of the ovary form large masses and mimic malignant neoplasms and therefore they should be properly recognized and classified to allow appropriate therapy.[1] Prompt diagnosis, categorization, stage of disease, and hence management of any benign or malignant ovarian pathology is a challenging task for gynecologists.[2] Ovarian cancer is the seventh leading cause of cancer death in females and in postmenopausal women 30% of ovarian tumors are malignant whereas in premenopausal females only 7% of the ovarian tumors are malignant.[1] Berek et al in 2007 described that the benign ovarian pathology is most commonly seen in younger aged females of around 20 years. However, the malignant ones are either seen between the ages of 50-60 years or in pre-menopausal ages. It was also highlighted that the prognostic outcomes are good in ages less than 40 yrs.[3] Delay in diagnosis leads to the disease progression along with the emergence of complications. Thus, the management options in that situation used to be limited, resulting in increased mortality rate.[4] The current study was planned to identify the spectrum of ovarian pathologies in our setup. Awareness regarding their presentation in various age groups, can be helpful for the gynecologists to diagnose early and hence manage them prior the development of complications.

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Material and Methods

The current study was conducted at pathology department of Al Nafees Medical College & Hospital, Islamabad, Pakistan from January 01st, 2015 to June 30th, 2016. All specimens received during the study period for diagnosis of ovarian diseases were included in the study. A total of 178 specimens were analyzed. All specimens were collected in 10% buffered formal saline and processed in automated tissue processor. Paraffin embedded sections were made and stained with the hematoxylin and eosin stains. Data was entered on SPSS version 20.0 for statistical inference.

Results

Among various ovarian lesions, non-neoplastic and functional cysts were the most common lesion found in 43.8% (n=78) of patients. These comprised endometriotic cysts 21.3% (n=38), follicular cyst 12.3% (n=22) and

hemorrhagic cysts including luteal cysts 10.2% (n=18). Among the ovarian tumors, the benign tumors were about three times common as compared to malignant ones as benign lesions were seen in 74 (85.4%) cases while 26 (14.6%) of the cases were malignant. The detail of these lesions is given in table 1.

Malignant ovarian tumors were all primary tumors except one case of metastatic signet cell carcinoma (Krukenberg tumor). Among the primary malignant tumors, epithelial tumors were the most common accounting for 84 %(n=21), followed by germ cell tumors 12% (n=3) and one case of undifferentiated sarcoma (4 %). On the basis of histogenesis, surface epithelial tumors comprised two third of cases-66% followed by germ cell tumors 28 %. Among epithelial tumors, mostly were benign (45%) while 21% were malignant. Serous tumors both benign and malignant were the commonest tumour in this study as shown in table 2.

Table 1: Frequency of Various Ovarian Lesions with Mean Ages (n=178)

Sr. No	Types of Lesions	No. of cases (n)	Percentages (%)	Age (years) mean±SD
A. Non-Neoplastic/functional cysts - 78(43.8 %)				30± 1.6
1.	Endometriotic Cyst	38	21.2	
2.	Follicular Cyst	22	12.3	
3.	Hemorrhagic/ luteal cyst	18	10.3	
B. Primary Tumors				
i. **Benign- 74 (41.6%)**				37 ± 1.8
1.	Serous cystadenoma	31	17.4	
2.	Benign cystic teratoma	25	14.0	
3.	Mucinous cystadenoma	13	7.3	
4.	Thecoma-fibroma	02	1.1	
5.	Granulosa cell tumor	02	1.1	
6.	Brenner tumor	01	0.6	
ii. Malignant - 26 (14.6%)				52±1.4
1.	Serous cystadenocarcinoma	12	6.7	
2.	Mucinous cystadenocarcinoma	05	2.8	
3.	Endometroid carcinoma	03	1.7	
4.	Immature teratoma	02	1.1	
5.	Clear cell carcinoma	01	0.6	
6.	Dysgerminoma	01	0.6	
7.	Undifferentiated sarcoma	01	0.6	
C. Secondary / Metastatic Tumor				
1.	Krukenberg tumor	01	0.6	

Table 2: Frequency of Ovarian Tumors according to Histogenesis (n=100)

Sr.No.	Primary Tumors	No of cases (n)	Percentage (%)
I. Surface Epithelial Tumors (n = 45)			
A. Benign			
1.	Serous cystadenoma	31	31
2.	Mucinous cystadenoma	13	13
3.	Brenner tumor	01	01
B. Malignant			
1.	Serous cyst adenocarcinoma	12	12
2.	Mucinous cystadenocarcinoma	05	05
3.	Endometroid carcinoma	03	03
4.	Clear cell carcinoma	01	01
II. Germ Cell Tumors (n=28)			
1.	Mature teratoma + dermoid cysts	25	25
2.	Immature teratoma	02	02
3.	Dysgerminoma	01	01
III. Sex Cord –Stromal Tumors (n=04)			
1.	Granulosa cell tumor	02	02
2.	Fibroma-thecoma	02	02
IV. Undifferentiated sarcoma		01	01
Secondary / Metastatic Carcinoma (Krukenberg tumour)		01	01

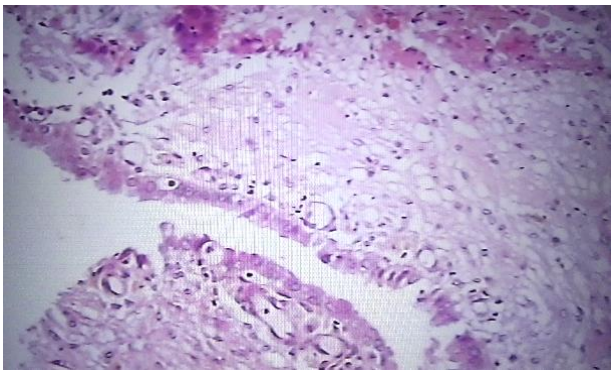

Figure 1: Endometriotic Cyst; Cyst wall lined by tall columnar epithelial cells and hemosiderin laden macrophages (H&E X 200)

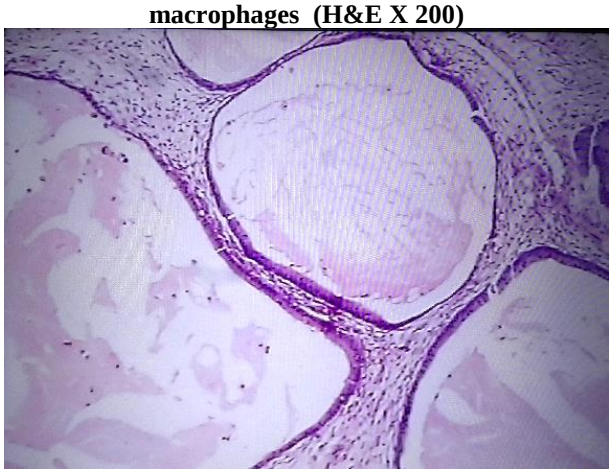

Figure 2: Mucinous Cystadenoma; Multiple cystic spaces lined by cells having apical mucin and basal nuclei (H&E X 200x)

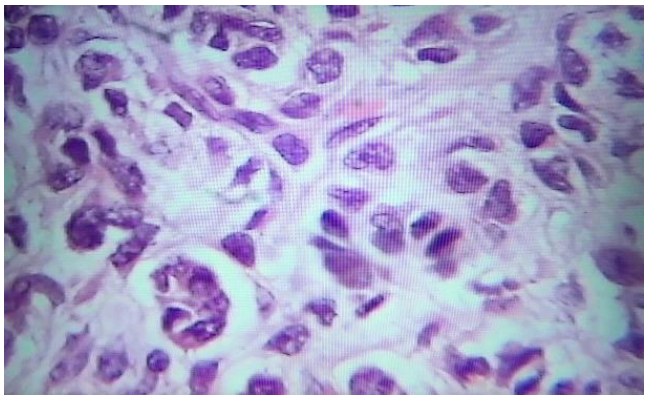

Figure 3: Granulosa cell tumor; Sheets of granulosa cells having coffee bean nuclei (H&E X 400)

Discussion

Ovarian cancer is the second commonest gynecological malignancy.[5] The Indian literature review had narrated that ovarian malignancies ranks on the seventh number regarding the cancer related mortalities.[6,7] The findings and results of current study showed that the non-neoplastic lesions are the commonest ones (43.8%), followed by benign ovarian tumors (41.6%) and then malignant ones (14.6%). Endometriotic ovarian cysts were seen in 21.2% cases of non-neoplastic pathologies. The results of current study are in accordance with the findings of Busacca et al reporting endometriotic ovarian cysts is 17%, amongst all benign ovarian lesions.[8] Maggiore et al in 2015, concluded that these benign ovarian endometriotic cysts do not affect the ovulation.[9] Other published studies had shown that in 60% of the cases left ovary is affected. The common reason for this is the anatomical variation between right and left hemipelvis along with the menstrual reflux theory.[10,] Lower levels of anti-Mullerian hormone (AMH) levels and antral follicle count are seen in women with endometriomas as compared to those who donnot have ovarian cysts, thus becoming the reason for reduced ovarian reserve.[12]

Follicular cysts were seen in 12.3% of our cases; this finding is supported by the results of study conducted by Kreuzer GF et al who reported that the follicular cysts were the most common (55%) ones followed by corpus luteal cysts in 45% cases of all benign ovarian disorders.[13] Mavromatidis et-al, reported that follicular cysts usually have a benign course, but due to their rapidly enlarging tendency, they can become symptomatic requiring the surgical interventions.[14] In order to avoid the false diagnosis, the accurate cytological diagnosis is necessary so that proper treatment can be initiated timely.[15] Corpus luteal hemorrhagic cysts were present in 10.3% of the cases of current study and these findings are comparable with another study who further added that their presence in 25-31% of cases can result in fatal outcomes.[16] The anticoagulation therapy is considered as one of the predisposing factor for such pathology.[17] The results of current study are supported by the findings of a published report for the year 2001, which showed that the frequency of benign lesions is more i.e 41.67%, as compared to the malignant ones.[18] This finding is different from the published results of Hartageet al in 2000. He described that prevalence of benign ovarian lesions was 14% in his study.[19] The non-neoplastic lesions and benign neoplastic lesions are common in the mean age of 30$\pm$1.6 and 37$\pm$1.8 years. While the malignant lesions were seen in the females with the mean of 52$\pm$1.2 years. These findings are consistent with the published report of Berek et al in 2007. He observed that the non-neoplastic and benign ovarian lesions are more common in the age group of less than 40 yrs. While malignant ones are more common in the age range between 50-60 years.[3]

The current study showed that serous cystadenoma was present in 17.4% of the cases. This finding is consistent with the results of Cheng et al. He concluded that ovarian serous cystadenomas are the common ovarian disorders and they are the precursors of low-grade serous carcinomas, because they are the hyperplastic expansion from epithelial inclusions, having clonal/neoplastic transformation potential.[20] In another study Della et al reported that, ovarian serous cystadenomas are amongst the rare disorders.[21] Benign cystic teratomas are present in 14% of the total cases. This is consistent with the findings of Kahraman et-al who reported that 10-20% of all ovarian tumors comprises of benign cystic teratomas.[22] Serous cyst adenocarcinoma was detected in 6.7% of all malignant tumors. Jemal et al in their study found serous cyst adenocarcinomas in 3% of all malignant tumours.[23]

Mucinous cystadenocarcinoma was present in 2.8% of cases. This is supported by the Harrison et al; he described that the incidence of primary mucinous adenocarcinoma is usually low.[24] The prognosis and treatment modalities of primary and metastatic mucinous adenocarcinomas are different. So, the accurate diagnosis is necessary for proper treatment.[25]

Conclusion

Non neoplastic cysts were the most common ovarian lesions seen in 43.8% cases. This was followed by benign ovarian lesions – 41.6 ±% and malignant ones in 14.6% cases. Surface epithelial tumors are the commonest.

Conflict of Interest

This study has no conflict of interest as declared by any author.

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Authorship Contribution

Author1:Active participation, analysis and interpretation of results

Author2:Active participation of results

Author3:Analysis and Interpretation of results and discussion

Author4:Conception, Critical review of article and final approval