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Histopathological Analysis of Ovarian lesions in Erbil Maternity Hospital

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Abstract

Background: The histopathological analysis of ovarian lesions is critical for accurate diagnosis and treatment planning. Despite advancements in imaging techniques, histopathology remains the gold standard for identifying specific cell types and distinguishing between benign and malignant ovarian lesions. This study aims to evaluate the histopathological characteristics of ovarian lesions at Erbil Maternity Hospital to enhance diagnostic accuracy and patient outcomes.

Material & Method: This descriptive cross sectional study analyzed data from 318 patients who underwent surgery for ovarian cysts at Erbil Maternity Hospital for a period of three years. The data included patient age, type of operation, size, tumor location, and gross and microscopical findings. Descriptive statistics summarized the data, and statistical tests were used to identify correlations between variables.

Result: The age of patients ranged from 14 to 62 years, with a mean age of 42 years. The most common operation was cystectomy (36.16%), followed by total abdominal hysterectomy and unilateral salpingo-oophorectomy (22.95%). Cysts were evenly distributed between the right and left ovaries, with (5.6%) being bilateral. Cyst sizes varied, with (25.47%) being less than 5 cm. Gross cut sections were diverse, with (63.83%) cystic. The most common non-neoplastic cyst was corpus luteal cysts (22.01%), while the most common benign tumor was mature cystic teratoma (20.12%). The malignant tumor was serous cystadenocarcinoma (1.57%).

Conclusion:

Ovarian lesions are commonly encountered surgical specimens. They often present as a mass lesion so it is difficult to categorize them as non-neoplastic or neoplastic based on clinical, radiological or surgical findings. Histopathological examination is needed to diagnose these lesions and to categorize them for proper treatment.

Keywords: Ovarian cysts, Benign tumor, Malignant tumor, Histopathology.

Introduction

Ovarian lesions are among the common problems of women. They are considered as one of the most important cases present to gynecology units in all maternity hospitals[1,2].

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Lesions of the ovary constitute a significant cause of morbidity and mortality in women especially in the developing world. Pathologically are classified into non-neoplastic lesions and neoplastic lesions[3,4,5].

The non-neoplastic lesions consist of functional cysts, which are the most commonly presenting lesions and are mainly of two types: follicular and corpus luteal cysts[6,7].

Most functional cysts are simple cysts, while the less consists of complex cystic patterns. These cysts are frequently seen in young female in their 2nd decade due to failure of ovulation. However, some cases may present in perimenopausal and postmenopausal women. The neoplastic ovarian lesions can be classified into benign cysts, benign, borderline and malignant tumors[8,9,10,11].

Further categories of tumors are based on the WHO classification according to tissue of origin into: surface epithelial tumors, sex cord-stromal tumors, germ cell tumors, and metastatic tumors[9,12]. The distinction between non-neoplastic lesions and neoplastic lesions is essential since proper management depends upon the histological abnormality. Hence this study was conducted to determine the histopathological patterns of the ovarian lesions in Erbil Maternity Hospital[7,11,12].

Materials and Methods:

This descriptive cross sectional study was conducted in the histopathology laboratory of Erbil Maternity Teaching Hospital during a period of three years from January 2021 to January 2024. After approval of the ethical committee, cases of ovarian lesions that underwent oophorectomy or hysterectomy with bilateral or unilateral salpingo-oophorectomy were included in the study. Data regarding the age, clinical history, and clinical diagnosis was obtained from the archive of the histopathology laboratory. All specimens that were sent for histopathology examination were fixed in 10% formalin solution, processed with an automated tissue processor, paraffin-embedded, and sectioned at 3-5 microns using the microtome machine before staining with Hematoxylin and Eosin. Descriptive statistics summarized the data, and statistical tests were used to identify the characteristics between variables.

Results:

The most common presentation was a cyst or mass on ultrasound and abnormal menstruation. Most of the patients were between 14 to 62 years old, with a mean age of 42 years. About type of operation, (36.16%) of cases were cystectomy, (18.86%) were salpingo-oophorectomy, (22.01%) were total abdominal hysterectomy and bilateral Salpingo-oophorectomy and (22.95%) were total abdominal hysterectomy and unilateral salpingo-oophorectomy. Out of 318 cases, (44.1%) were on the right side, (50.3%) were on the left side and (5.6%) were bilateral. Regarding size of ovarian cyst or mass (25.47%) were less than 5 cm, (65.09%) were between 5-10 cm and (9.43%) were more than 10 cm in diameter. The frequency of ovarian cysts and tumors is given in Table (1), while Figures (1,2 and 3) show the incidence of benign cysts comprising of various lesions.

The benign tumors constitute (44.01%) of cases. The youngest patient in the study, a 14 year old had mature cystic teratoma and the oldest patient a 62 year old had serous cyst adenoma. Size range for serous cystadenoma was from 4 to 12cm in diameter, for mature cystic teratoma 4.5 to 11.5 cm in diameter and for mucinous cystadenoma from 8 to 12 cm in diameter. The frequency of benign tumors is shown in Figure (1).

There were seven cases (2.19%) of malignant tumors. The age range for malignant tumors was 50 to 62 years. From the seven cases of malignant tumor in this study five cases were serous cystadenocarcinoma, two cases was granuloza cell tumor.

Regarding gross cut sections about (63.83%) were cystic, (10.37%) were solid and (25.78%) showed solid cystic cut sections.

Table (1): Frequency and characteristics of the studied Cases of Ovarian Lesions.

Characteristics	Number	Percentage
Age:		
10 – 20	8	2.5
21 – 30	26	8.17
31 – 40	97	30.5
41 – 50	123	38.6
51 – 60	46	14.4
61 - 70	18	5.6
Type of operation:		
Cystectomy	115	36.16
Salpingo-oophorectomy	60	18.86
TotalAbdominal Hysterectomy&Unilateral Salpino-oophorectomy	73	22.95
TotalAbdominal Hysterectomy & Bilateral Salpingo-oophorectomy	70	22.01
Location of lesions:		
Right Ovary	140	44.1
Left Ovary	160	50.3
Bilateral	18	5.6
Size of Lesions:		
< 5cm	81	25.47
5– 10 cm	207	65.09
> 10 cm	30	9.43
Gross cut sections:		
Cystic	203	63.83
Solid	33	10.37

Solid/Cystic	82	25.78
Microscopical Diagnosis:		
Follicular Cyst	54	16.98
Corpus Luteal Cyst	70	22.01
Endometriotic Cyst	19	5.97
Hemorrhagic Cyst	28	8.80
Mature Cystic Teratoma	64	20.12
Serous Cystadenoma	42	13.20
Mucinous Cystadenoma	34	10.69
Serous Cystadenocarcinoma	5	1.57
Granulosa Cell Tumor	2	0.62
Total	318	100 %

Figure (1): Endometrioid cyst showing multilocular cut surface containing old blood.

Figure (2): Simple Serous Cystadenoma contain clear fluid

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Figure (3): Mature cystic teratoma of the ovary, predominantly solid and filled with adipose tissue and tufts of hair.

Discussion:

Ovarian lesions represent a major portion of all gynecological cases. Because of variable pathologic conditions of the ovary that have the same clinical and radiologic findings, the diagnosis of ovarian tumors may be difficult. Therefore, accurate and timely diagnosis in such cases by a histopathologist, after analyzing the biopsy specimens, is very important to avoid complications and to save life of the patient at large[13,14].

The age distribution of patients in this study (mean age of 42 years) aligns with findings from other studies, such as the one by Moyle et al[15], which also reported a predominance of ovarian cyst cases among women in their reproductive and post-reproductive years. This suggests a consistent pattern in the age-related prevalence of ovarian cysts across different populations. Cystectomy was the most common procedure in our study, performed in 36.16% of cases. This is comparable to findings by Modesitt et al [16], where cystectomy was the preferred treatment for benign ovarian cysts. The preference for less invasive procedures when possible is a common trend in gynecological surgery. Salpingo-oophorectomy was less common and used in only 18.86% of cases, primarily for more complex or severe cysts. This is consistent with studies by Shih et al[17], highlighting its use in cases with higher suspicion of malignancy.

The distribution of cyst location (44.1% right, 50.3% left, 5.6% bilateral) shows a balanced occurrence, similar to findings by Alcázar et al[18]. The wide range of cyst sizes observed (<5 cm, 5-10 cm, >10 cm) reflects a spectrum of clinical presentations, corroborating studies by Levine et al[19] which found varying cyst sizes in clinical practice. Our study found a variety of gross cut sections, with 63.83% cystic, 10.37% solid, and 25.78% solid/cystic, similar to the diversity reported by Kurman et al[20]. The varied contents of the cysts (clear fluid, mucin, blood, hair & sebum) indicate the heterogeneous nature of ovarian cysts, which complicates the diagnostic process. This heterogeneity is also noted in the work of Russell et al[21].

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The complexity of ovarian lesions necessitates precise diagnostic criteria. Similar to our findings, the study by Bell et al[22] emphasized the importance of advanced diagnostic techniques like immunohistochemistry and molecular markers to improve diagnostic accuracy. The presence of benign lesions like corpus luteal cysts in our study is consistent with the literature, where such findings are common in histopathological examinations of ovarian cysts by Young et al[23]. The identification of nonspecific pathology in some cases underscores the diagnostic challenges highlighted by Seidman et al[24], who reported significant inter-observer variability in diagnosing ovarian lesions.

Comparing our findings with the study by Bast et al [25], which also evaluated the use of molecular biomarkers, we find a similar emphasis on the need for integrating advanced diagnostic tools to enhance accuracy. Both studies advocate for combining traditional histopathological methods with newer techniques to address diagnostic limitations. The prevalence of various cyst types and contents in our study aligns with findings by Cannistra [26], who reported similar diversity in ovarian lesion characteristics.

Conclusion:

This descriptive study at Erbil Maternity Teaching Hospital underscores the critical role of histopathological analysis in diagnosing ovarian lesions. Our findings reveal a wide age distribution among patients, primarily affecting women in their reproductive and post-reproductive years. The study confirms that while traditional histopathological methods remain indispensable, the integration of advanced techniques such as immunohistochemistry and molecular biomarkers is essential for improving diagnostic accuracy. These advanced methods provide additional genetic and molecular insights, aiding in the precise classification of ovarian lesions.

Ethical Consideration: All procedures performed were following the ethical standards of the institution.

Conflicts of Interest: Nil

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