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Original article

Histopathological Study of Ovarian Cysts in Derna

Noria Raffalla[1], Amal Srgewa[1]*, Ibtesam Emnia[2]

[1]*Department of Pathology, Faculty of Medicine, University of Derna, Derna, Libya*
[2]*Department of Pathology, Faculty of Medicine, University of Gharian, Garyan, Libya*

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Corresponding Email. *a.srgewa@uod.edu.ly*

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ABSTRACT

Ovarian cysts, which are sacs filled with fluid located in the ovaries, represent the primary reason for enlarged ovaries, impacting approximately 20% of women who experience a pelvic mass at least once during their lifetime. The present work was carried out to focus on the frequency, gross appearance and histopathological features of each type of ovarian cysts in Derna-City East of Libya. This work included 54 cases of ovarian cysts, out of 338 samples submitted to Noor-AL-Huda Medical Center Pathology Laboratory in Derna City –East of Libya during the period between January 2022 and April 2023, samples were formalin fixed, processed, then H &E sections were obtained for histologic diagnosis and subtyping. The age of patients ranges from 5 – 68 years, the predominant age group was 30– 39 years, 26 (48.14%) were on the right side, 23(42.59%) were on the left side, 5(9.25%) were bilateral. The commonest presenting symptoms were both incidental in 21(38.8%) and pain in 18(33.33%); the cyst mainly obtained from Cystectomy operation 39 (72.22%). Gross appearance of each type was studied. Out of the included 54 ovarian cysts 29 (53.70%) were non –neoplastic and25 (46.29%) were neoplastic. Follicle cysts represented (37.93%) of the non-neoplastic lesions, while serous cyst adenoma represented (40%) of the neoplastic lesions. We concluded that non-neoplastic cysts are the most common types of ovarian cysts. Among non-neoplastic ovarian cysts, the functional cysts including follicular and corpus luteal cysts were the most common, while serous cysts and teratomas are the common neoplastic cysts. Most ovarian cysts are found on the right side. Histopathological examination is essential for accurate diagnosis and proper management of ovarian cysts.

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INTRODUCTION

Ovarian cysts, fluid-filled sacs found within the ovaries, stand as the leading cause of enlarged ovaries, affecting about 20% of women who encounter at least one pelvic mass in their lifetime. These cysts can be broadly categorized into non-neoplastic and neoplastic types [1,2]. These cystic formations present a significant challenge to gynecological oncologists and pathologists. Notably, certain non-neoplastic ovarian lesions manifest as pelvic masses, often resembling ovarian neoplasms.

Non-neoplastic ovarian cysts represent the most prevalent types among women of reproductive age [3]. These include Follicular cysts, which, typically measuring up to 6 cm, can emerge at any age from infancy to menopause. They are often asymptomatic and incidentally detected during ultrasound examinations. Usually, these cysts resolve spontaneously without intervention. However, surgical treatment becomes necessary if complications such as torsion,

persistent pain, or rupture arise [4,5]. Luteal cysts, stemming from the corpus luteum of pregnancy, produce estrogen and, occasionally, androgens. These cysts usually vanish without medical intervention [6].
Polycystic ovarian syndrome presents as enlarged ovaries displaying multiple small follicular cysts. Clinically associated with symptoms like amenorrhea, infertility, and virilism (also known as Stein-Leventhal syndrome), it affects approximately 6% to 10% of women in the reproductive age group worldwide [7].
Non-neoplastic ovarian cysts represent the most prevalent types among women of reproductive age [3]. These include Follicular cysts, which, typically measuring up to 6 cm, can emerge at any age from infancy to menopause. They are often asymptomatic and incidentally detected during ultrasound examinations. Usually, these cysts resolve spontaneously without intervention. However, surgical treatment becomes necessary if complications such as torsion, persistent pain, or rupture arise [4,5]. Luteal cysts, stemming from the corpus luteum of pregnancy, produce estrogen and, occasionally, androgens. These cysts usually vanish without medical intervention [6].
Neoplastic ovarian cysts develop due to abnormal cell proliferation within the ovary, resulting in the formation of cystic masses. These neoplasms can exhibit both malignant and benign characteristics and may originate from various ovarian cell types and tissues, such as surface epithelial cell tumors, germ cell tumors, and sex cord-stromal tumors.
Benign cystic lesions are more prevalent among women of reproductive age, while malignant cystic lesions are commonly observed in elderly women. Among the ovarian neoplasms, epithelial tumors constitute the most frequent type. Benign lesions encompass serous and mucinous cystadenomas, while their malignant counterparts include partially cystic lesions like serous carcinoma, mucinous carcinoma, endometrioid carcinoma, and clear cell carcinoma. Malignant ovarian cysts often remain asymptomatic until they reach an advanced stage [8,9].
The most prevalent benign ovarian neoplasm is the benign cystic teratoma, also known as a dermoid cyst, which is categorized as a germ cell tumor. These cysts contain elements derived from all three germ layers (ectodermal, mesodermal, and endodermal). Despite their mostly benign nature, dermoid cysts can undergo malignant transformation in approximately 1 to 2% of cases [10]. Endometriomas arise from the ectopic growth of endometrial tissue, with the ovary being a frequent site. These cysts are colloquially referred to as "chocolate cysts" due to their contents of dark, thick, gelatinous aged blood products [11]. A comprehensive histopathological examination is crucial to accurately confirm the nature of ovarian cysts. Proper classification plays a pivotal role in determining appropriate therapeutic approaches [12,13].

METHODS

Study design and setting

This retrospective study examined fifty-four cases diagnosed as ovarian cysts using H&E-stained sections. The specimens were obtained from patients who underwent procedures such as cystectomy, total abdominal hysterectomy with bilateral or unilateral salpingo-oophorectomy at the Noor-AL-Huda Medical Center Pathology Laboratory in Derna City, situated in the eastern region of Libya. The study period spanned from January 2022 to April 2023. Only cases specifically identified as ovarian cysts were included for analysis. Exclusion criteria encompassed cases with insufficient samples or lacking essential clinical information.

Clinical Data Collection

Clinical information was gathered from patients who requested sample analysis.

Histopathologic Examination

It was performed using Formalin-fixed paraffin-embedded blocks from the 54 included cases of ovarian cysts underwent sectioning into 5µm-thick slices. These sections were stained using H&E and examined via light microscopy to confirm the histologic diagnosis.

Statistical Analysis

Data analysis was performed using IBM SPSS software package version 20.0 (Armonk, NY: IBM Corp). Qualitative data were described using numbers and percentages.

Ethical Considerations

The retrospective nature of the study involved ensuring the confidentiality of patient records. Approval from the ethics committee was obtained before conducting the research.

RESULTS

The study encompassed 54 cases with ages ranging from 5 to 68 years, exhibiting a mean age of 39.62 years. Among these cases, 33 patients were aged ⩽ 40 years (61.11%), while 21 patients were aged > 40 years (38.88%).

The most prevalent presenting symptoms were incidental findings in 21 cases (38.8%) and pain in 18 cases (33.33%). Additionally, 15 cases (27.7%) did not exhibit specific symptoms.

Cystectomy specimens constituted the most commonly received samples, accounting for 39 cases (72.22%). Among the 54 samples of ovarian cysts, 29 (53.70%) were identified as non-neoplastic, whereas 25 (46.29%) were classified as neoplastic. A summary of the clinical and histologic data for the studied cases is presented in Table 1.

Table 1. Clinical and histologic data of the studied cases

Characteristic	N (%)
Age	
≤40	33(61.11%)
>40	21(38.88%)
Type of specimen	
Cystectomy	39(72.22%)
Abdominal hysterectomy &bilateral salpingo-oophorectomy / unilateral salpingo-oophorectomy	15(27.77%)
Presenting symptoms	
Incidental	21(38.8%)
Pain	28 (51.85%)
Others symptoms	15(27.77%)
Side of ovarian cysts	
Right sided	26(48.14%)
Left sided	23 (42.59%)
Bilateral	5 (9.25%)

Regarding non-neoplastic ovarian cysts, follicle cysts were observed in 11 cases (37.93%), followed by endometriosis present in 8 cases (27.58%). Additionally, corpus luteum cysts were identified in 6 cases (20.68%), while torsion/infracted cysts were seen in 4 cases (13.79%).

Among neoplastic cysts, the majority comprised ten cases (40%) of serous cystadenoma, followed by nine cases (36%) of mucinous cysts. Specifically, seven cases were identified as mucinous cystadenoma, one as mucinous cystadenoma with focal proliferation, and one case classified as borderline mucinous cystadenoma. The gross appearance of these cases is depicted in figure 2.

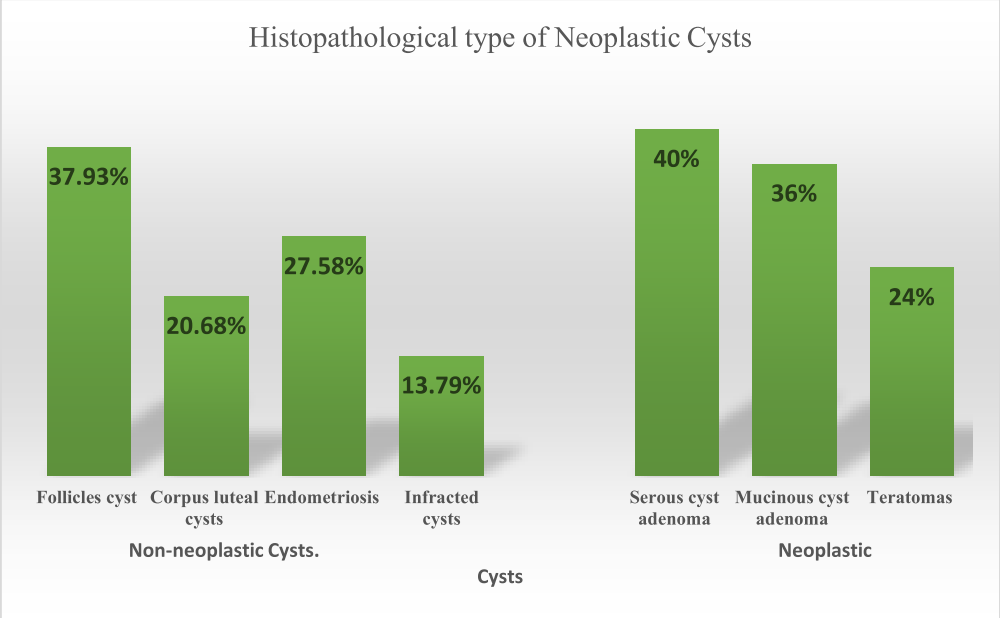

Figure 1. Bar chart illustrating the distribution of the studied cases according to histological type of ovarian cysts (n = 54).

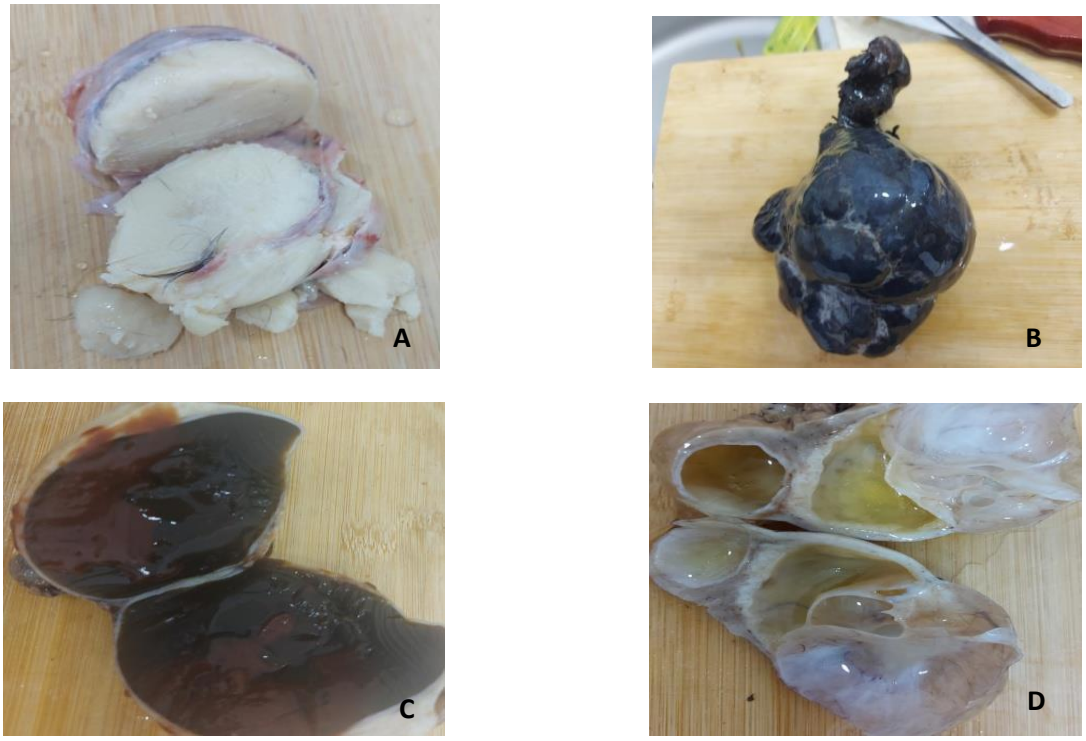

Figure 2. Gross appearance of different types of ovarian cysts;(A) Ovarian teratoma, (B) Infracted cyst, (C) Endometriosis, (D) Mucinous cyst adenoma

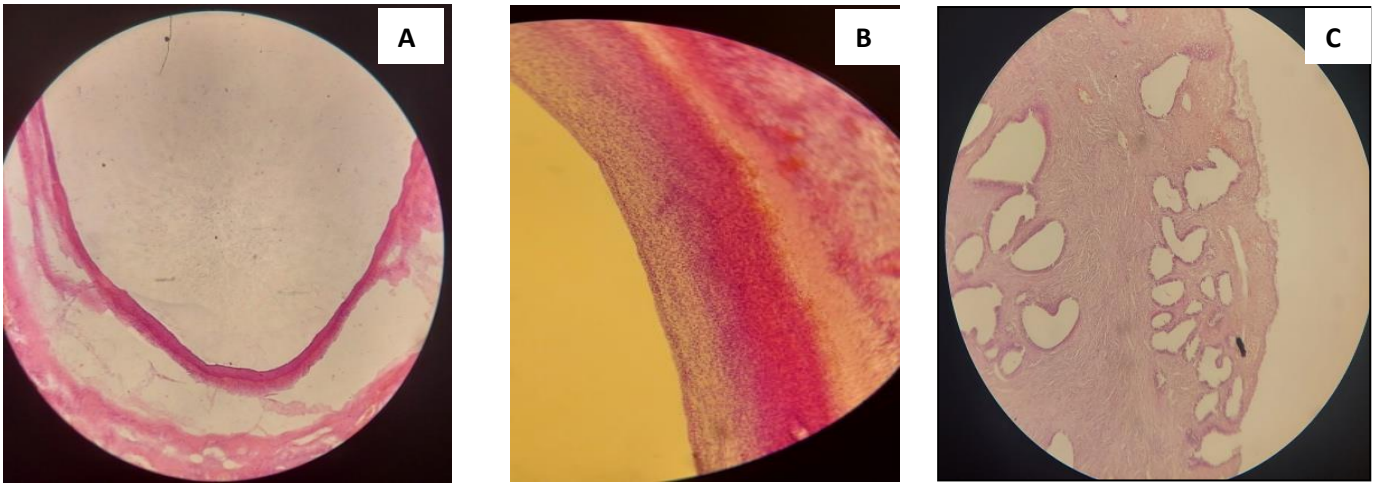

Figure 3. H&E staining of studied cases;(A) Follicle cyst cases. – Ax40, (B)X100, (C) Serous cyst adenoma x40.

DISCUSSION

This study highlights the ovarian lesion patterns in the center/ Derna. The mean patient age was 39.62 years, with non-neoplastic cysts most commonly occurring in individuals under 40 years old, while malignant tumors were predominant in those over 40. These findings align with those of other researchers [14], who have also documented these age groups as being most commonly affected by benign and malignant neoplastic tumors in their study.

The examination of the studied specimens revealed that non-neoplastic cystic lesions accounted for the majority, constituting 53.70% of the cases. In contrast, a prior study conducted in Saudi Arabia found 63.2% to be ovarian neoplasms, while 36.8% were non-neoplastic functional cysts [14].

Among these non-neoplastic cystic lesions, Follicular cysts were the most prevalent, representing 37.93% of cases, followed by endometriosis at 27.58%, corpus luteum cysts at 20.68%, and torsion/infracted cysts at 13.79%. Neoplastic cysts comprised 40% serous cystadenoma, 36% mucinous cysts, within which 8% mucinous cystadenoma with focal proliferation, and 8% borderline mucinous cystadenoma.

Functional or physiological cysts, characterized as enlarged formations occurring within the ovary during the regular menstrual cycle, commonly presented as asymptomatic conditions. These cysts exhibited a tendency to spontaneously resolve without necessitating specific medical interventions [15]. Functional cysts emerged as the most common non-neoplastic cysts in our study, consistent with findings from previous studies [16,17]. This differs from Naik et al.'s observations, where chocolate cysts were more prevalent [18].

Mature cystic teratomas, among the most prevalent ovarian tumors in young women, consist of tissues derived from ectoderm, mesoderm, or endodermal layers. In our study, they accounted for 24% of cases among individuals aged 34 to 49 years. This contrasts with research indicating a higher prevalence among younger adults (16–20 years) for dermoid cysts [19]. However, in a study conducted in Nigeria, mature cystic teratomas accounted for 40.7% of tumors [20].

Benign mucinous neoplasms, including mucinous cystadenoma and mucinous adenofibroma, constitute 80% of mucinous neoplasm cases according to previous research [21]. In this study, 38.8% of cases were incidentally diagnosed, while lower abdominal pain, abdominal swelling, and an abdominal mass were the common symptoms associated with ovarian lesions, which is consistent with other reports [22].

CONCLUSION

Our study findings support the prevalence of non-neoplastic cysts as the most frequently encountered ovarian cyst types. Within the non-neoplastic category, functional cysts, notably follicular and corpus luteal cysts, emerged as the most prevalent, while serous cysts and teratomas were observed as common neoplastic cysts. Additionally, there's a tendency for the majority of ovarian cysts to manifest on the right side. The significance of histopathological examination cannot be overstated, as it remains pivotal for ensuring precise diagnosis and appropriate management of ovarian cysts.

Limitations

Several limitations warrant acknowledgment within this study. Primarily, the generalizability of our findings to broader populations or different geographical areas may be constrained due to the study's exclusive focus on the Derna region in Libya. Secondarily, to the best of our knowledge, there are no other published studies conducted to examine a similar issue within the context of Libya.

Conflict of Interest

There are no financial, personal, or professional conflicts of interest to declare.

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دراسة نسجية مرضية لأكياس المبيض في مدينة درنة

نورية رفلة[1]، أمل سرقيوة[1]*، ابتسام أمنية[2]

[1]قسم علم الأمراض، كلية الطب، جامعة درنة، درنة، ليبيا
[2]قسم علم الأمراض، كلية الطب، جامعة غريان، غريان، ليبيا

المستخلص

تمثل أكياس المبيض، وهي أكياس مملوءة بالسوائل الموجودة في المبيضين، السبب الرئيسي لتضخم المبايض، حيث تؤثر على ما يقرب من 20٪ من النساء اللاتي يعانين من كتلة في الحوض مرة واحدة على الأقل خلال حياتهن. تم تنفيذ العمل الحالي للتركيز على التكرار والمظهر الإجمالي والسمات النسيجية المرضية لكل نوع من أكياس المبيض في مدينة درنة شرق ليبيا. شمل هذا العمل 54 حالة لتكيسات المبيض، من أصل 338 عينة مقدمة إلى مختبر علم الأمراض بمركز نور الهدى الطبي بمدينة درنة – شرق ليبيا خلال الفترة ما بين يناير 2022 وأبريل 2023، وتم تثبيت العينات بالفورمالين ومعالجتها ثم ح تم الحصول على أقسام E & للتشخيص النسيجي والتصنيف الفرعي. تتراوح أعمار المرضى بين 5 - 68 سنة، وكانت الفئة العمرية السائدة 30 - 39 سنة، 26 (48.14٪) كانوا على الجانب الأيمن، 23 (42.59٪) كانوا على الجانب الأيسر، 5 (9.25٪) كانوا ثنائيين . كانت الأعراض الأكثر شيوعًا عرضية في 21 (38.8٪) والألم في 18 (33.33٪)؛ الكيس الذي تم الحصول عليه بشكل رئيسي من عملية استئصال المثانة 39 (72.22%). تمت دراسة المظهر الإجمالي لكل نوع. من بين 54 كيسة مبيضية، 29 (53.70%) كانت غير ورمية و25 (46.29%) كانت ورمية. تمثل الأكياس الجريبية (37.93%) من الآفات غير الورمية، بينما يمثل الورم الحميد الكيسي المصلي (40%) من الآفات الورمية. وخلصنا إلى أن الأكياس غير الورمية هي أكثر أنواع أكياس المبيض شيوعا. من بين أكياس المبيض غير الورمية، كانت الأكياس الوظيفية بما في ذلك أكياس المبيض الجريبي وأكياس الجسم الأصفر هي الأكثر شيوعًا، في حين أن الأكياس المصلية والأورام المسخية هي الأكياس الورمية الشائعة. تم العثور على معظم أكياس المبيض على الجانب الأيمن. الفحص النسيجي ضروري للتشخيص الدقيق والإدارة السليمة لكيسات المبيض.

الكلمات الدالة. أكياس المبيض، ورم، درنة.