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CLINICOPATHOLOGICAL EVALUATION OF OVARIAN CYSTS IN A SAMPLE OF FEMALE IRAQI PATIENTS

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ABSTRACT

Background: Ovarian cysts are very common forms of gynecological problems in women that can be ranged from physiological cysts to highly aggressive neoplasms. The aim of this study is to assess the pathological changes of ovarian cysts in a sample of Iraqi female patients in relation with age, clinical presentation, localization and histopathological diagnosis. **Method:** this was a retrospective study of 205 randomly selected cases of ovarian cysts reported from January 2018 to December 2020 in department of pathology, Baghdad Medical City / Baghdad / Iraq. All statistical analyses were performed using SPSS. Variables included age in years, age group, laterality of cysts, gross features and histopathological type. **Result:** The age ranged from 12-74 years with a mean age of presentation was 35.01years. The highest incidence of ovarian cysts was in the age group 21 to 30 years (30.7%). The most common clinical presentation was abdominal pain (38.5%). Most cases were unilateral (89.3%). Of the 205 patients studied, the incidence of benign cysts was (46.3%), functional cysts (32.1%) and malignant cysts (14.1%), while borderline cysts were (7.3%). most common gross feature of cases was unilocular with clear fluid (88; 42.9%). The most common histopathological diagnosis was Corpus luteal cyst which formed (20.5%) of cases. **Conclusion:** Functional and benign cysts are more common across all age groups except in elderly where malignant cystic lesions are more predominant. Corpus luteal cyst is the most common histological diagnosis in patient younger than 30, while serous cyst adenocarcinoma is the most common in patients older than 50.

KEYWORD: Ovarian cysts, histopathology, Iraqi females.

INTRODUCTION

The ovaries are solid bilateral pelvic organs located close to the uterus. Their average weight is 5–8 g & their average size 3.0 × 2.0 × 1.0 cm in females of reproductive age. They have two major functions: release of mature ova during ovulation, and the secretion of steroid hormones. Cyclic release of pituitary follicular stimulating hormone (FSH) and luteinizing hormone (LH) controls these functions.[1]

The ovaries are a usual site for both benign and malignant tumors in females from the intrauterine period to post-menopause.[2]

Ovarian cysts are very common forms of gynecological problems in women that can be ranged from physiological cysts to highly aggressive neoplasms.[3] It is presumed that approximately 7% of women worldwide experience a symptomatic cyst throughout their lifetime.

The epidemiology of ovarian cysts is uncertain due to the inadequacy of consistent reporting and a significant chance of spontaneous resolution. In the USA, post-menopausal women have an ovarian cyst incidence of 18% through a 15-year period. In Europe, a considerable screening trial found a 21.2% incidence of ovarian cysts between healthy post-menopausal female populations.[4]

Ovarian cysts can be generally divided into non neoplastic (functional) cysts, inflammatory and neoplastic.[5] Most ovarian cysts in female of reproductive age are physiological (functional), consisting of either follicular cysts or corpus luteul cysts.[6] The possibility of developing functional cysts is reduced by using combined oral contraceptive pill “COCP”. Little is known about their etiology; but diagnosis is carried out when the cyst measures greater than 3 cm (normally ovulatory follicles measure up to 2.5 cm). They occasionally grow larger than 10 cm and appear as simple unilocular cysts on ultra sound.[7]

Benign ovarian cysts can be asymptomatic or presented with pain, abdominal enlargement, mass effects, menstrual irregularity, and hormonal abnormality or with abnormal cervical smear.[8]

Carcinomatous processes of the ovary (both primary and metastatic) commonly complicated by cystic degeneration.[9] The overall incidence of malignancy in ovarian cysts is 1 in 1000 in young woman, and 3 in 1000 at the age of 50.[10]

The ovary is the third most common site of primary malignancy in the female genital tract, preceded by the endometrial and cervical carcinomas.[11] Worldwide, malignant ovarian lesions is the sixth most common form of cancer in female population. Known risk factors for ovarian cancer include old age, Family history of ovarian cancer, nulliparity, early onset menarche, and delayed menopause.[12]

The type of ovarian cystic lesions is hard to determine by clinical testing and even on surgical exploration.[13] As the management and prognosis mainly depend on the histologic type and the grade of the neoplasm, it is obligatory to obtain the origin and the type of tumor by performing a thorough histopathological examination.

The aim of this study is to assess the pathological changes of ovarian cysts in a sample of Iraqi female patients in relation with age, clinical presentation, localization and histopathological features of ovarian cysts.

MATERIAL AND METHOD

This is a retrospective study of 205 randomly selected cases of ovarian cysts reported from January 2018 to December 2020 in department of pathology, Baghdad Medical City.

The data collection included.

- Age of the patients.
- Clinical presentation (asymptomatic, abdominal pain, amenorrhea, menorrhagia, abdominal swelling and postmenopausal bleeding).
- Localization of the cysts; unilateral or bilateral.
- Gross features include: unilocular cyst, multilocular cyst, solid and cystic …ect.
- Type of each cyst (functional, benign, borderline and malignant).
- Post-operative histopathological diagnosis.

Exclusion Criteria

- Females with polycystic ovarian diseases.
- Lactating women.

Formalin-fixed paraffin-embedded tissue blocks were collected. Then, sections 4-6 microns stained routinely with Hematoxylin & Eosin and the diagnosis was revised by the supervisor. All statistical analyses were performed utilizing SPSS, version 23 and including mean, standard deviation, frequency and percentage using Yates Chi square with p. value <0.05 regarded as statistically significant.

RESULTS

This study included 205 females with ovarian cysts. The age ranged from 12-74 years with a mean ± standard deviation (SD) age of these patients was 35.01±13.88 years (Table 1).

Table (1): Age of cases.

	Mean	SD	SEM	Range
Age (yr)	35.01	13.88	0.97	12-74

N=205

Figure (1) shows the distribution of cases according to age groups. The highest incidence of ovarian cysts was in the age group 21 to 30 years (63 cases; 30.7%), while the least common age group was in patients older than 60 (12cases; 5.9%).

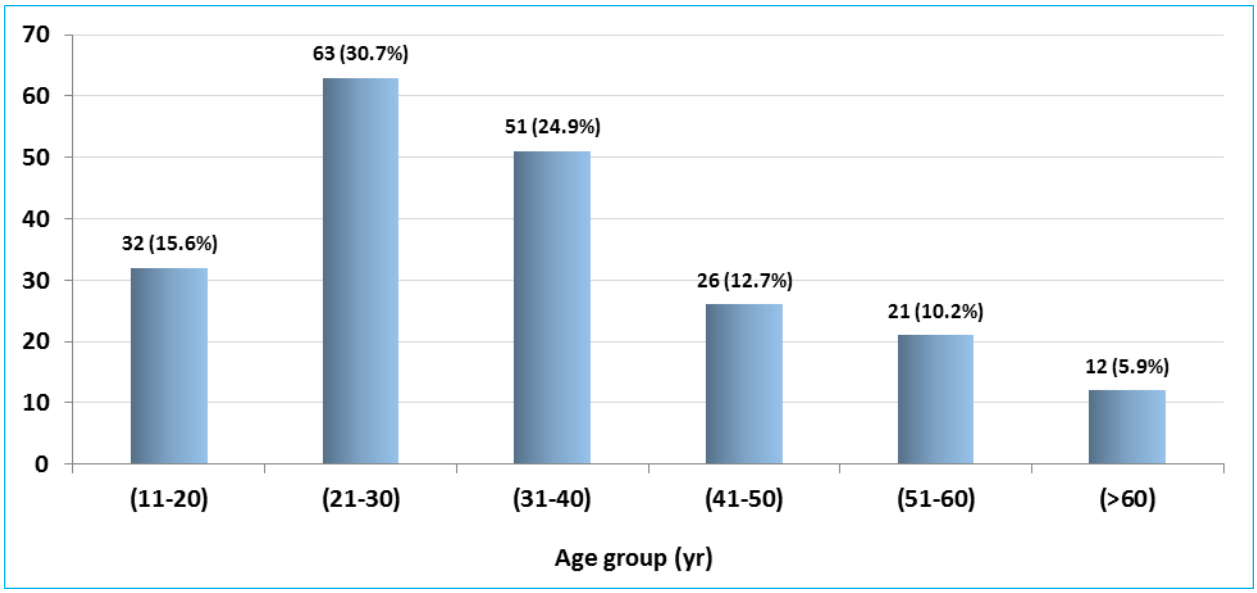

Figure (1): Bar chart for Age groups distribution of ovarian cysts.

Fig. (2) Represents the relation between age and clinical presentation.

The most common clinical presentation was abdominal pain (38.5%) and the least common was amenorrhea and dysmenorrhea (4.9%).

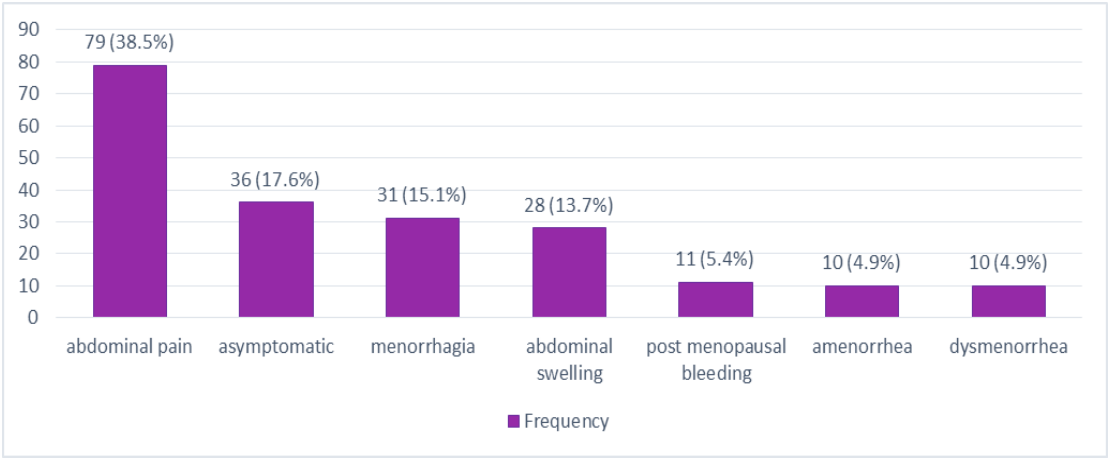

Figure (2): Bar chart for frequency of Clinical presentation of patients.

Fig. (3) Illustrates the localization of the ovarian cyst.

Most cysts were unilateral (89.3%), while 22 (10.7%) cases were bilateral.

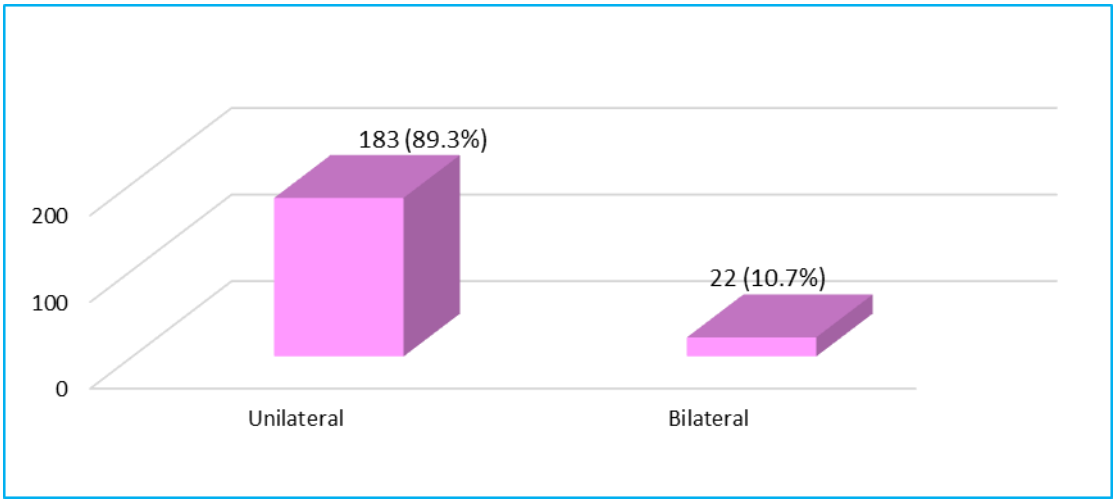

Figure (3): Localization of cysts.

Fig. (4) Represents the number of cases according to their type.

Most of the cysts were benign (46.3%), followed by functional cysts (32.1%) and followed by malignant cysts (14.1%), while borderline cysts were (7.3%).

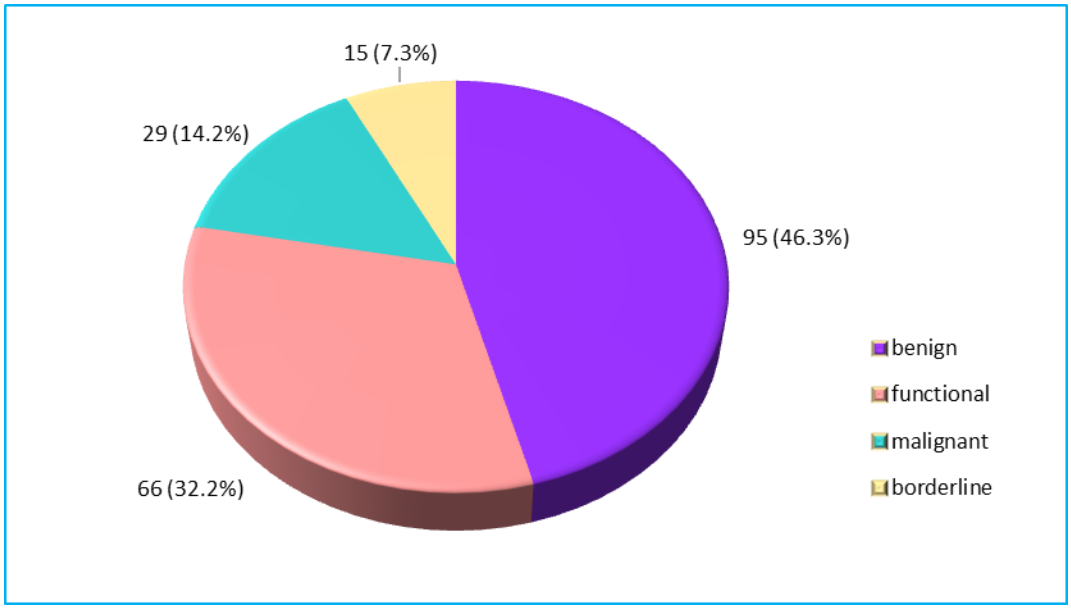

Figure (4): Pie chart showing types of cysts.

Fig. (5) Shows gross features of ovarian cysts. It's clearly seen from the fig. the most common gross feature of cases was unilocular with clear fluid (88; 42.9%); while the least common was unilocular with mucoid fluid 13 (6.3%).

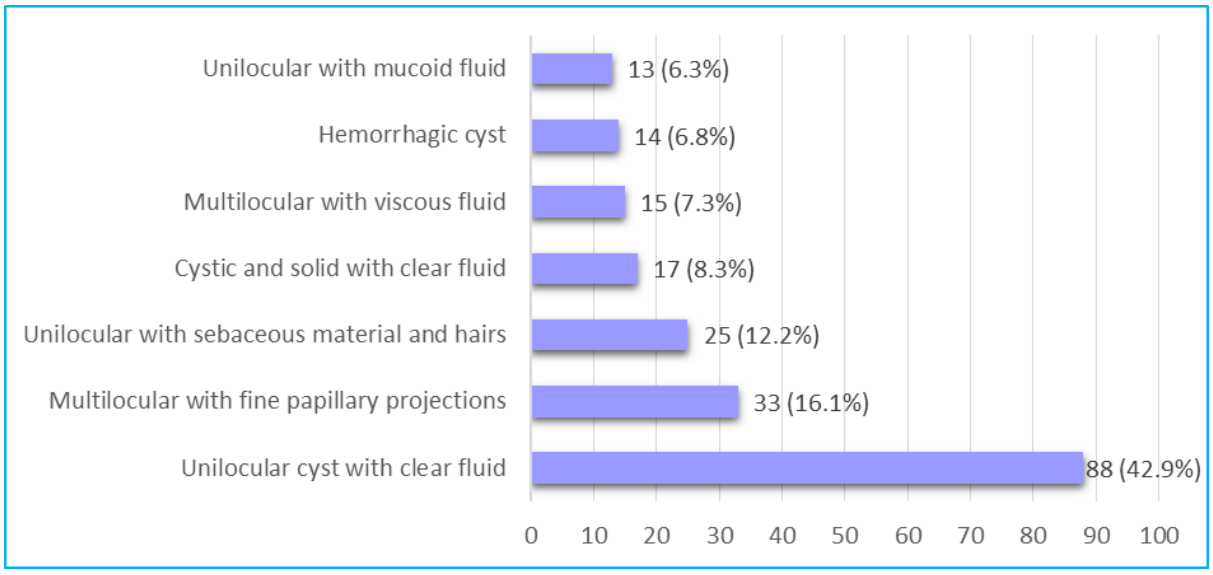

Figure (5): Gross features of ovarian cysts.

Table (2) represents the histopathological diagnosis of ovarian cysts.

The most common was Corpus luteal cyst which formed (20.5%) of cases, while the least common was fibroma with cystic degeneration (1; 0.5%).

Table (2): Diagnosis of ovarian cysts in this study.

Diagnosis	Frequency	Percent
Corpus luteal cyst	42	20.5
Serous cystadenoma	35	17.1
Mature cystic teratoma	27	13.1
Follicular cyst	24	11.7
Serous cyst adenocarcinoma	14	6.8
Endometriotic cyst	12	5.9
Mucinous cystadenoma	12	5.9
Serous borderline tumor	8	3.9
Mucinous borderline tumor	6	2.9
Metastatic adenocarcinoma	5	2.4
Mucinous cystadenocarcinoma	5	2.4
Serous cyst adeno fibroma	5	2.4
Seromucinous cystic tumor	4	2.0
Granulosa cell tumor	3	1.5
Endometrioid carcinoma	2	1.0
Fibroma with cystic degeneration	1	0.5

As shown in table (3) the most common clinical presentation in age groups (11-20 yr.) and (21-30 yr.) was abdominal pain 84.4% and 31.7% respectively followed by menorrhagia (12.5% and 27%) respectively.

In age group 31-40, abdominal pain and asymptomatic were the most common presentation (27.5% each), which is the same for the age group (41-50) where both abdominal pain and asymptomatic were found in 34.6% of cases.

In the age group 51-60, most of patients were presented with abdominal swelling (42.9 %), while in patients older than 60 years the most common presentation was post-menopausal bleeding (50%). There is a statistically significant positive relation between age group and clinical presentation. (P value: 0.001).

Table (3): Presentation according to age group.

Presentation	11-20 yr. N (%)	21-30 yr. N (%)	31-40 yr. N (%)	41-50 yr. N (%)	51-60 yr. N (%)	>60 yr. N (%)
Abdominal pain	27 (84.4)	20 (31.7)	14 (27.5)	9 (34.6)	5 (23.8)	4 (33.3)
Abdominal swelling	0 (0.0)	5 (7.9)	8 (15.7)	5 (19.2)	9 (42.9)	1 (8.3)
Amenorrhea	0 (0.0)	4 (6.3)	5 (9.8)	1 (3.8)	0 (0.0)	0 (0.0)
menorrhagia	4	17	7	2	0	1

	(12.5)	(27.0)	(13.7)	(7.7)	(0.0)	(8.3)
Dysmenorrhea	0 (0.0)	6 (9.5)	3 (5.9)	0 (0.0)	1 (4.8)	0 (0.0)
asymptomatic	1 (3.1)	11 (17.5)	14 (27.5)	9 (34.6)	1 (4.8)	0 (0.0)
Post-menopausal bleeding	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	5 (23.8)	6 (50.0)
P value	**<0.001**					

* Yates chi square test

Table (4) illustrated the localization of cysts according to age group.

In all age groups most of the cysts were unilateral and there is a statistically significant positive relation between age group and localization of the cysts. (P value: 0.006).

Table (4): Site of cysts according to age group.

Side	**11-20 yr N (%)**	**21-30 yr N (%)**	**31-40 yr N (%)**	**41-50 yr N (%)**	**51-60 yr N (%)**	**>60 yr N (%)**
Unilateral	32 (17.5)	58 (31.7)	46 (25.1)	17 (9.3)	19 (10.4)	11 (6.0)
Bilateral	0 (0.0)	5 (7.9)	5 (9.8)	9 (34.6)	2 (9.5)	1 (8.3)
P value	**0.006**					

* Yates chi square test

Table (5) represents the correlation between age and type of cyst.

Within age group (11-20) year, most of the ovarian cysts were functional (62.5%) followed by benign tumors (37.5%). while most of the cysts were benign in age group 21-30 (47.6%), in age group 31-40 (58.8%) and in age group 41-50 also (53.8%).

Within age group (51-60) and in patients older than 60 most of the cases diagnosed were malignant (52.4%) and (75%) respectively.

There is a statistically significant positive relation between age group and type of the ovarian cysts. (P value: 0.001).

Table (5): type according to age group.

Histology	11-20 yr. N (%)	21-30 yr. N (%)	31-40 yr. N (%)	41-50 yr. N (%)	51-60 yr. N (%)	>60 yr. N (%)
Benign	12 (37.5)	30 (47.6)	30 (58.8)	14 (53.8)	7 (33.3)	2 (16.7)
Functional	20 (62.5)	29 (46)	12 (23.5)	5 (19.2)	0 (0.0)	0 (0.0)
Malignant	0 (0.0)	0 (0.0)	4 (7.8)	5 (19.2)	11 (52.4)	9 (75.0)
Borderline	0 (0.0)	4 (6.3)	5 (9.8)	2 (7.7)	3 (14.3)	1 (8.3)
P value	**<0.001**					

* Yates chi square test

Corpus luteal cyst was the most common type of cysts diagnosed in age groups 11-20 (37.5%) and in age group 21-30(30.2%).

In age groups 31-40 and 41-50 the most common type of cyst diagnosed was serous cystadenoma which was found in (25.5%) and (30%) respectively , while in females aged between 51-60 and female patients older than 60, the most common type of cysts found was serous cyst adenocarcinoma (28.6% and 50% respectively), as shown in table (6).

Table (6): Histopathological diagnosis according to age group.

Diagnosis	11-20 yr. N (%)	21-30 yr. N (%)	31-40 yr. N (%)	41-50 yr. N (%)	51-60 yr. N (%)	>60 yr. N (%)
Corpus luteal cyst	12 (37.5)	19 (30.2)	8 (15.7)	3 (11.5)	0 (0.0)	0 (0.0)
Endometrioid carcinoma	0 (0.0)	0 (0.0)	0 (0.0)	1 (3.8)	1 (4.8)	0 (0.0)
Endometriotic cyst	0 (0.0)	5 (7.9)	5 (9.8)	1 (3.8)	1 (4.7)	0 (0.0)
Fibroma with cystic degeneration	0 (0.0)	0 (0.0)	1 (2.0)	0 (0.0)	0 (0.0)	0 (0.0)
Follicular cyst	8 (25.0)	10 (15.8)	4 (7.8)	2 (7.7)	0 (0.0)	0 (0.0)
Granulosa cell tumor	0 (0.0)	0 (0.0)	2 (3.9)	0 (0.0)	0 (0.0)	1 (8.3)
Mature cystic teratoma	5 (15.6)	11 (17.5)	6 (11.8)	2 (7.7)	2 (9.5)	1 (8.3)
Metastatic adenocarcinoma	0 (0.0)	0 (0.0)	1 (2.0)	2 (7.7)	2 (9.5)	0 (0.0)
Mucinous borderline tumor	0 (0.0)	2 (3.2)	3 (5.9)	0 (0.0)	1 (4.8)	0 (0.0)

Mucinous cystadenocarcinoma	0 (0.0)	0 (0.0)	1 (2.0)	0 (0.0)	2 (9.5)	2 (16.7)
Mucinous cystadenoma	3 (9.4)	2 (3.1)	2 (3.9)	2 (7.7)	3 (14.3)	0 (0.0)
Seromucinous cystic tumor	0 (0.0)	1 (1.6)	1 (2.0)	2 (7.7)	0 (0.0)	0 (0.0)
Serous borderline tumor	0 (0.0)	2 (3.1)	2 (3.9)	1 (3.8)	2 (9.5)	1 (8.3)
Serous cyst adeno fibroma	0 (0.0)	3 (4.8)	2 (3.9)	0 (0.0)	0 (0.0)	0 (0.0)
Serous cyst adenocarcinoma	0 (0.0)	0 (0.0)	0 (0.0)	2 (7.7)	6 (28.6)	6 (50.0)
Serous cystadenoma	4 (12.6)	8 (12.6)	13 (25.5)	8 (30.8)	1 (4.7)	1 (8.3)

DISCUSSION

Ovarian cysts are one of the most common specimens received in the Pathology laboratory and because of the similarity in clinical presentation for both non-neoplastic and neoplastic cysts, histopathological examination remains essential for the correct diagnosis and management.[13]

The incidence of ovarian cysts in this study was higher in the age group 21 to 30 years (30.7%). Similar results were found in study by Suleiman *et al.*[14] and Fatimah Zahra.[8]

The most common clinical presentation was abdominal pain (38.5%), comparable results were found by Chanu *et al.*[15], Kant *et al.*[16] and Neelgund *et al.*[10]

Abdominal pain and asymptomatic were the most commonly encountered clinical presentation in patients with age group 31-40 years and in patients aged between 41-50 years, while in females older than 50 years the most common clinical presentation was abdominal swelling and post-menopausal bleeding. In those patients, most of the cysts were diagnosed as serous cyst adenocarcinoma, which is sometimes called the "silent killer" as the disease is usually not discovered until an advanced stage[17] and more often presented with abdominal swelling that may result from the tumor itself or from associated ascites. Post-menopausal bleeding is often a symptom of cystic ovarian tumors, particularly in the functional neoplasms.[18]

In our study, most of cysts were unilateral (89.3%). This result is in agreement with Shali and Tadayon[3], and Hashim *et al.*[6], while only 22 cases were bilateral, and presented mostly in

patients aged 41-50 yrs. Bilateral ovarian involvement frequently noted in serous neoplasms and metastatic carcinoma to the ovary[1] which were common in those patients.

Histologically, most of the cases were benign (46.3%) followed by functional (32.1%) while malignant cases account for only (14.1%) comparable results were found by Neelgund *et al*.[10] and Tlefih *et al*.[19]

In age group 11-20 year, functional cysts was the most common type histologically (62.5%). Similar finding obtained by Shali and Tadayon[3] and Foroe *et al*.[20]

In patients older than 51 years old most of the cases diagnosed as malignant (75%), Such observation was in agreement with other studies done by Tlefih *et al*[19] and Suleiman *et al*.[14]

Corpus luteal cysts were the most common type of ovarian cysts (20.5%) followed by serous cystadenoma (17%), These results were similar to the study by Suleiman *et al.*[14] and Hasan *et al*.[21] and different from the results by Kant *et al.* (16) in which serous cystadenoma was the most common type followed mucinous cyst adenoma, and different from the study by Neelgund *et al*[10] where serous cystadenoma was the most common type followed by mature cystic teratoma. Differences in the duration of the study as well as different study design may clear up these variations.

When correlating the relation between age and type of ovarian cyst, corpus luteal cyst was the most common type in age group11-20(37.5%) and age group 21-30(30.2%) which is comparable to the results by Tlefih *et al.*[19], while in the study by Neelgund *et al.*[10], mature cystic teratoma was the most common type.

In age group 31-40 the most common type was serous cystadenoma (25.5%) which is similar to Neelgund *et al.*[10]

Serous cystadenocarcinoma is the most common type of ovarian cancer and accounts for approximately 70% of all ovarian malignancy with the median age of patients is 56 yrs.[1] In our study, females aged 51-60 yrs. and older than 60yr. were mostly diagnosed with serous cystadenocarcinoma (28.6%) and (41.7%) respectively. A similar result was found by Tlefih *et al*.[19] and Abdullah *et al.*[22]

CONCLUSION

In this study, we can conclude the followings.

1. The highest incidence of ovarian cysts was among women aged 21 -30 years.
2. Abdominal pain was the first clinical presentation in all patients except in postmenopausal women where vaginal bleeding was more common.
3. Regarding localization, most of the cysts were unilateral (89.3%).
4. Functional and benign cysts were more common across all age groups except in elderly where malignant cystic lesions were predominant.
5. Corpus luteal cyst was the most common histological diagnosis in patient younger than 30, while serous cyst adenocarcinoma was the most common in patients older than 50.

Recommendation

1. We recommend further prospective studies with a larger sample size, full history, laboratory investigation and ultrasonography.
2. Immunohistochemistry is important for reaching the final diagnosis in difficult cases such as (CK7, carcinoembryonic antigen (CEA), cancer antigen 125 (CA125), estrogen receptors (ER) and Wilms' tumor 1 (WT1) to help in classification of various ovarian neoplasms and differentiate them from metastatic tumors to the ovary.

REFERENCES

1. Mutter GL, Prat J. Pathology of the female reproductive tract. 3rd ed. U.S.A: Elsevier publishing, 2014; 509-82.
2. Thirukumar M, Ahilan S. Histopathological pattern of ovarian lesions: a Hospital based study in Batticaloa, Sri Lanka. Journal of Diagnostic Pathology, 2018; 13(1): 16-21.
3. Shadab S, Tadayon T. Histopathological diagnosis of ovarian mass. Journal of Pathology of Nepal, 2018 Apr 3; 8(1): 1261-4.
4. Farghaly SA. Current diagnosis and management of ovarian cysts. Clin Exp Obstet Gynecol, 2014; 41(6): 609–612.
5. Blake Gilks .ovary. In; Goldblum JR, Lamps LW, McKenney JK, Myers JL (Eds). ROSAI AND ACKERMAN'S surgical pathology .11th ed. Philadelphia; Elsevier Inc, 2018; 1369.
6. Hashim I, Tawfeek RS, Mawlood Z. Ovarian Cysts in Unmarried Women in Tikrit City. The Medical Journal of Tikrit University, 2017; 23(1): 105-12.

7. Clark TJ. Benign conditions of the ovary and pelvis. In: Bickerstaff H., Kenny LC. (Eds). Gynaecology by Ten Teachers. 20th ed. U.S.A: Taylor & Francis Group, 2017; 226- 66.
8. Zahra F. Pattern of benign ovarian cysts in Qatari women. Qatar medical journal, 2016 Dec 24; 2016(2): 17.
9. Zaman S, Majid S, Hussain M, Chughtai O, Mahboob J, Chughtai S. A retrospective study of ovarian tumours and tumour-like lesions. Journal of Ayub Medical College Abbottabad, 2010 Mar 1; 22(1): 104-8.
10. Neelgund S, Hiremath P. A retrospective study of ovarian cysts. Int J Reprod Contracept Obstet Gynecol. 2016; 5(6): 1969-73.
11. Harsh Mohan. Text book of pathology. 6th ed. New Delhi: Jaypee Brothers Medical Publishers, 2010; P741.
12. Levine DA, Los Santos JF, Fleming JF, et al. Handbook for Principles and Practice of Gynecologic Oncology. 5th ed. Philadelphia: Lippincott Williams & Wilkins, 2010; P207.
13. Pradhan SB, Chalise S, Pradhan B, Maharjan S. A study of ovarian tumors at Kathmandu medical college teaching hospital. Journal of Pathology of Nepal, 2017 Sep 1; 7(2): 1188-91.
14. Suleiman AY, Pity IS, Mohammed MR, Hassawi BA. Histopathological patterns of ovarian lesions: A study of 161 cases. Biocell, 2019; 43(3): 175.
15. Chanu SM, Dey B, Raphael V, Panda S, Khonglah Y. Clinicopathological profile of ovarian cysts in a tertiary care hospital. Int J Reprod Contracept Obstet Gynecol, 2017; 6(10): 4642-5.
16. Kant RH, Rather S, Rashid S. Clinical and histopathological profile of patients with ovarian cyst presenting in a tertiary care hospital of Kashmir, India. Int J Reprod Contracept Obstet Gynecol, 2016; 5(8): 2696-700.
17. Wasim T, Majrroh A, Siddiq S. Comparison of clinical presentation of Benign and Malignant Ovarian Tumors. J Pak Med Assoc, 2009; 59(1): 18–21.
18. Gambone, J. and Hobel, C., 2010. Hacker & Moore's essentials of obstetrics and gynecology. 5th ed. Philadelphia: Saunders, 413.
19. Tlefih AJ, Majeed FM. Prospective analysis of 300 cases of ovarian cysts in Iraqi women. Karbala Journal of Medicine, 2007; 1(2).
20. Forae GD, Aligbe JU. A histopathological overview of ovarian lesions in Benin City, Nigeria: How common are the functional cysts? International Journal of Medicine and Public Health, 2014; 4(3).

21. Hasan SF, Hasaani HS, Abd AL-Hameed JR. Surgical variables analysis of 116 cases of ovarian cystic diseases in Al-Elwiya maternity teaching hospital at 2013. Al-Kindy College Medical Journal, 2014; 10(2).
22. Abdullah LS, Bondagji NS. Histopathological pattern of ovarian neoplasms and their age distribution in the western region of Saudi Arabia. *Saudi Med J,* 2012; 33: 61–65.