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A STUDY OF HISTOMORPHOLOGY OF OVARIAN CYSTIC LESION AT TERTIARY CARE CENTRE

Histopathology

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ABSTRACT

Background: Ovarian cystic neoplasms are common in gynaecological practice. These are liquid or semi-liquid-material-filled sac in an ovary. All the patients who were clinically and radiologically diagnosed as having ovarian cysts, which had histopathological confirmation, were included in the present study. Data including the age, clinical symptoms, laterality and histopathological findings were analysed.

Aim:

-To describe age wise distribution of patients with cystic ovarian lesions.
-To describe the morphological features of cystic ovarian lesions by histopathology.
-To classify cystic ovarian lesions into non-neoplastic, benign and malignant lesions.

Material and Method: A study was done from August 2019 to July 2024 on histopathological findings of ovarian specimens received at the pathology department. In the present study, a total 850 specimens were studied. Sections prepared from the specimen are stained with haematoxylin and eosin. **Result:** A total of 850 cases were analysed in the present study, out of which 667(78.47%) were non-neoplastic and 183(21.53%) were neoplastic (Benign-171, Borderline-3 and Malignant-9). Out of 667 non-neoplastic lesions, simple serous cyst was most common, followed by follicular cyst and luteal cyst. Out of 183 benign lesions, mature cystic teratoma was the most common, followed by benign serous cystadenoma and benign mucinous cystadenoma. Out of 9 malignant lesions, Granulosa cell tumour was the most common. The age of the patients ranged from 13 years to 80 years. **Conclusion:** Ovaries are a common site for tumours. Most of the patients present late due to non-specific clinical presentation. Hence, histopathological diagnosis is required for accurate diagnosis to institute appropriate therapy.

KEYWORDS

Ovarian cystic neoplasms, Histopathology, Neoplastic- Benign, Borderline, Malignant etc.

INTRODUCTION

Ovarian cystic neoplasms are common in gynaecological practice. Ovarian cysts, though mostly benign, pose a diagnostic dilemma to the gynaecologist as well as to the pathologist. Ovarian cysts are seen in all age groups and are subdivided into physiological and pathological cysts.[1] They can be solid, cystic or can have both solid and cystic components. Physiological cysts are mainly simple serous cysts, follicular and luteal cysts. Pathological cysts can be benign, borderline or intermediate grade and malignant in nature.[1,2] Ovarian cancer is the fourth most common cancer in Indian women with an incidence of 4.9 cases per 100,000.[3] Until these lesions attain a large size or cause signs and symptoms, they escape detection. Pre-operative diagnosis of ovarian cysts largely depends on clinical examination, radiological imaging and tumour markers.[4] Ovarian cysts can lead to complications such as pelvic pain, cyst rupture, blood loss, and ovarian torsion that require prompt management.[5] Sometimes, it is difficult to differentiate benign and malignant lesions. Therefore, histopathological examination is necessary to confirm the diagnosis. This study was done to find out the clinical and histopathological pattern of ovarian cystic lesions at the tertiary care centre.

Aims and Objective

- To describe age wise distribution of patients with cystic ovarian lesions.
- To describe the morphological features of cystic ovarian lesions by histopathology.
- To classify cystic ovarian lesions into non-neoplastic, benign and malignant lesions.

MATERIAL AND METHOD

This is a retrospective observational study done over a period of 5 years from August 2019 to July 2024 at Department of Pathology at C U Shah Medical College, Surendranagar. All the patients who were clinically and radiologically diagnosed as having ovarian cysts, which had histopathological confirmation, were included in the present study. All the cases underwent oophorectomy or hysterectomy with bilateral/unilateral salpingno-oophorectomy were included in the present study. Clinical details regarding patients' age, presenting symptoms and laterality of the cysts were obtained from hospital records for analysis.

Specimens were sent and fixed in 10% formalin for pathological examination. Gross information regarding the nature and typing of the ovarian cysts were noted. Tissue samples of the ovarian specimens were routinely processed and embedded in paraffin. The formalin-fixed, paraffin-embedded tissue sections were stained with haematoxylin and eosin for light microscopic examination. Histopathological information was obtained from microscopic examinations. Special stains and immunohistochemical stains were done wherever applicable for the diagnosis.

RESULTS

A total of 850 patients operated for ovarian cysts in the study period were analysed. The age of the patients ranged from 13 years to 80 years. The youngest patient with 13 years of age, was diagnosed with simple ovarian cyst and the eldest patient, 80 years of age, was diagnosed with monodermal teratoma with a thyroid component. In the present study, we found out that out of 850 cases, 667 (78.47%) were non-neoplastic and 183 (21.53%) were neoplastic. Among the neoplastic cystic ovarian lesions, 171 (93.44%) were benign, 3 (1.64%) cases were borderline, and 9 (4.92%) were malignant.

Out of 667 non-neoplastic lesions, simple serous cyst was the most common, followed by follicular cyst and luteal cyst. Out of 183 benign lesions, mature cystic teratoma was the most common, followed by benign serous cystadenoma and benign mucinous cystadenoma.

Out of 9 malignant lesions, Granulosa cell tumour was the most common followed by secondary malignancy arising from benign cystic teratoma. There are 4 cases of monodermal teratoma. Among them, 3 were with thyroid components and 1 with adipose tissue components. Three cases of Collison tumour were seen, one with serous cyst and monodermal teratoma with thyroid component and other two with serous-cystadenoma and mature teratoma.

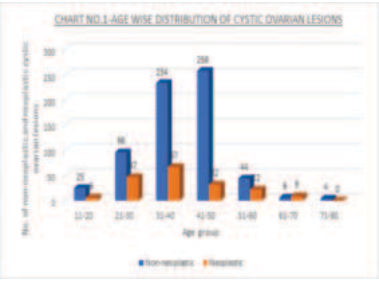
Table-1. Year-wise Distribution Of Ovarian Cystic Lesions

	Year	Total No. of cases	Percentage (%)
1	2019	81	9.53%
2	2020	63	7.41%
3	2021	99	11.65%
4	2022	210	24.71%

5	2023	229	26.94%
6	2024(Till July)	168	19.76%
		850	100%

Table-2. Age Distribution Of Ovarian Cystic Lesions

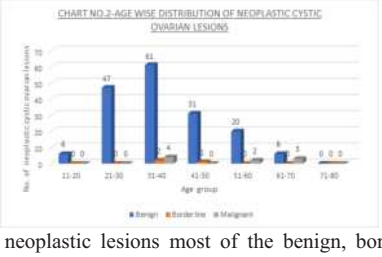
Age	Non-neoplastic	Neoplastic	Total No. of cases
11-20	25	6	31
21-30	96	47	143
31-40	234	67	301
41-50	258	32	290
51-60	44	22	66
61-70	6	9	15
71-80	4	0	4
	667	183	850



Non-neoplastic lesions were commonly observed in 41-50 years followed by 31-40 years. Neoplastic lesions were commonly observed in 31-40 years followed by 21-30 years. (Table-2)

Table- 3. Age Wise Distribution Of Neoplastic Ovarian Cystic Lesions

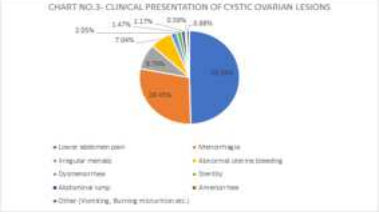
Age	Benign	Borderline	Malignant	Total
11-20	6	0	0	6
21-30	47	0	0	47
31-40	61	2	4	67
41-50	31	1	0	32
51-60	20	0	2	22
61-70	6	0	3	9
71-80	0	0	0	0
	171	3	9	183



Among the neoplastic lesions most of the benign, borderline and malignant tumours were observed in 31-40 years. (Table 3)

Table No. 4. Clinical Presentation In Cystic Ovarian Lesions

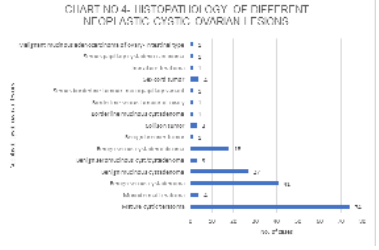
Sr. No.	Clinical presentation	Percentage
1	Lower abdomen pain	49.56%
2	Menorrhagia	28.45%
3	Irregular menses	8.79%
4	Abnormal uterine bleeding	7.04%
5	Dysmenorrhea	2.05%
6	Sterility	1.47%
7	Abdominal lump	1.17%
8	Amenorrhea	0.59%
9	Other (Vomiting, Burning micturition, etc.)	0.88%



In the present study, the most common clinical presentation is lower-abdomen pain, followed by menorrhagia. Other menstrual abnormalities, such as irregular menstruation and dysmenorrhea, were also seen. (Table no-4)

Table-5. Histopathological Diagnosis Of Neoplastic Cystic Ovarian Lesion

Sr. No.	Lesions	No. of cases	Percentage
	Benign		
1	Mature cystic teratoma	74	40.43%
2	Monodermal teratoma	4	2.18%
3	Benign serous cystadenoma	41	22.40%
4	Benign mucinous cystadenoma	27	14.75%
5	Benign seromucinous cyst/cystadenoma	3	1.64%
6	Benign serous cystadenofibroma	18	9.84%
7	Benign brenner tumor	1	0.55%
8	Collison tumor	3	1.64%
	Borderline		
9	Borderline mucinous cystadenoma	1	0.55%
10	Borderline serous tumour of ovary	1	0.55%
11	Serous borderline tumour-micropapillary variant	1	0.55%
	Malignant		
12	Sex cord stromal tumour	4	2.18%
13	Immature teratoma	1	0.55%
14	Serous papillary cystadenocarcinoma	1	0.55%
15	Malignant mucinous adenocarcinoma of ovary- Intestinal type	1	0.55%
16	Secondary malignancy arising in benign cystic teratoma	2	1.09%
		183	100.00%



Among the benign lesions, mature cystic teratoma was the most common, followed by benign serous cystadenoma and benign mucinous cystadenoma. Among the malignant lesions, Granulosa cell tumour was the most common, followed by secondary malignancy arising from benign cystic teratoma. (Table-5)

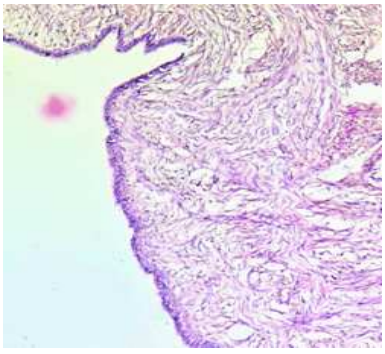


Figure -1 Serous Cystadenoma Revealing Stromal Papillae With A Columnar Epithelium.(H&E-20X).

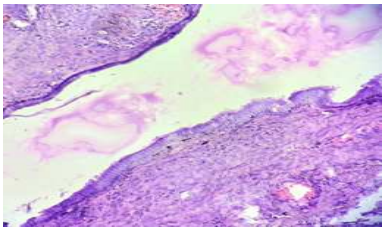


Figure -2. Mucinous Cystadenoma- Columnar Cells Lining The Cysts.(H&E-20X).

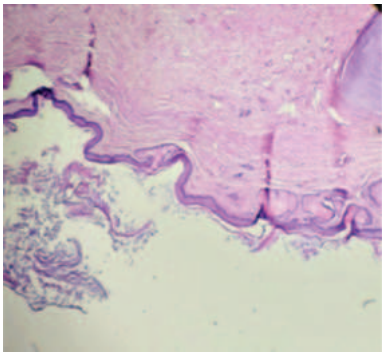


Figure-3. Mature Cystic Teratoma Showing Squamous Lining Epithelium, Sebaceous Glands, Cartilage, Keratin Flakes.(H&E-10X).

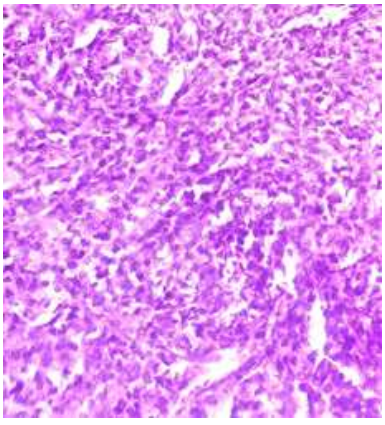


Figure-4. Granulosa Cell Tumour. Tumour Cells Are Arranged In Sheets.small Cuboidal To Polygonal Cells-in Cords, Sheets Or Strands. (H&E-40X).

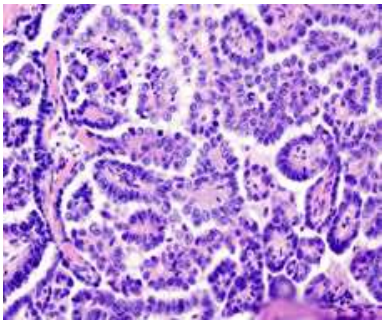


Figure-5. Serous Papillary Cystadenocarcinoma Showing Papillary Architecture With Malignant Cells Showing Nuclear Atypia With Nuclear Stratification. (H&E-40X).

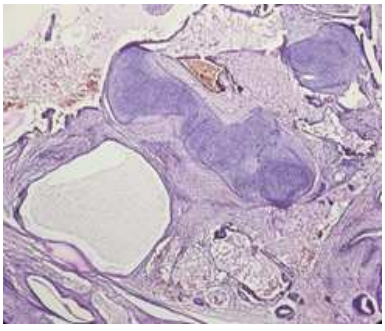


Figure-6. Immature Teratoma Showing Immature Tissues Mainly Immature Cartilage And Immature Neuroepithelium. (H&E-10X).

DISCUSSION

Ovarian cancer is the fourth most common cancer in Indian women, with an incidence of 4.9 cases per 100,000. [3] Due to similar clinical presentation, it is difficult to diagnose non-neoplastic and neoplastic cystic lesions of the ovary although it is labelled as cystic lesion on ultrasonography and hence removed prophylactically in routine oophorectomies and hysterectomies. [6] Histopathological examination is required for accurate staging and typing of the ovarian tumours as the treatment and prognosis depends on it. [7,8]

Functional ovarian cysts are common in women of reproductive age but rare after menopause. These Ovarian cysts can act as an indicator of any hidden malignant transformation. Surgery becomes essential, when these ovarian cysts increase in size, continue to exist over prolonged period or becomes extremely painful. [9,10] Two types of functional ovarian cysts may develop: follicular cysts and corpus luteum cysts.

Tabel-6. Comparison Of Age-wise Distribution In Cystic Ovarian Lesions Of The Present Study With Other Studies

Authors	Age group in years			
	0-19	20-39	40-59	≥60
Kar et al	7.40%	41.70%	46.20%	4.40%
Pilli et al(12)	7%	58%	30%	5%
Anand et al	4%	54%	40%	2%
Ramchandran et al(13)	7.90%	53%	30%	9.10%
Present study	2.59%	43.53%	50.12%	3.76%

The age distribution in the present study revealed the highest number of cases in the 40-59 years age group, followed by the 20-39 years age group, which is comparable with Kar et al study. [11] (Table-6)

Table-7. Comparison Of Laterality Wise Distribution In Cystic Ovarian Lesions Of The Present Study With Other Studies

Authors	Laterality	
	Unilateral	Bilateral
Misra et al	95.50%	4.50%
Anand et al	94%	6%
Couto F. et al	91.20%	8.80%
Prabhakar et al	90.90%	9.10%
Kar et al	73.13%	26.87%
Present study	98.40%	1.60%

In present study (98.4%) of ovarian cyst were unilateral and (1.60%) were bilateral which is comparable with other studies like Misra et al[14], Anand et al[15], Couto F. et al[16], Prabhakar et al and Kar et al.[17] (Table-7)

Table No- 8. Comparison Between Non-neoplastic And Neoplastic Cystic Ovarian Lesions Of The Present Study With Other Studies

Authors	Non-neoplastic	Neoplastic
Zaman et al.	68.87%	31.13%
Anand et al.	58%	42%
Pramila et al.	64.60%	35.40%
Present study	78.47%	21.53%

A total of 850 cases were analysed in the present study, out of which 667(78.47%) were non-neoplastic, and 183(21.53%) were neoplastic, which is comparable with other studies like Zaman et al[18], Anand et al[15] and Premila et al.[19] (Table-8)

Table No-9. Comparison Between Neoplastic Cystic Ovarian Lesions Of Present Study With Other Studies

Author	Benign	Borderline	Malignant
Pramila et al.	70%	7.70%	22.20%
Thakkar NN et al.	84.50%	2.30%	13.20%
Anand et al.	86.00%	9.50%	4.50%
Present study	93.44%	1.64%	4.92%

Among the 183 neoplastic lesions, 171(93.44%) were benign, 3(1.64%) were borderline, and 9 (4.92%) were malignant, which is comparable with other studies like Premila et al[19], Thakkar NN et al[20] and Anand et al.[15] (Table-9)

CONCLUSION

All these histomorphological parameters along with advanced newer diagnostic modalities like immunohistochemistry, can help with early diagnosis, plan the line of treatment and have an effect on prognostic significance. Due to similar clinical presentation and asymptomatic patients, it is difficult to differentiate non-neoplastic and neoplastic lesions. So, histopathological examination is required for accurate

diagnosis, staging of disease, and further planning the management accordingly.

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