International Journal of Clinical and Diagnostic Pathology

ISSN (P): 2617-7226
ISSN (E): 2617-7234
www.patholjournal.com
2022; 5(1): 85-88
Received: 17-11-2021
Accepted: 19-12-2021

Dr. Rohit Singh Jaggi
Department of Pathology, JLN Medical College, Ajmer, Rajasthan, India

Dr. Ravikant Sunaria
Department of Pathology, JLN Medical College, Ajmer, Rajasthan, India

Dr. Geeta Pachori
Department of Pathology, JLN Medical College, Ajmer, Rajasthan, India

Dr. Tushar Bayla
Department of Biochemistry, RVRS Medical College, Bhilwara, Rajasthan, India

Corresponding Author:
Dr. Geeta Pachori
Department of Pathology, JLN Medical College, Ajmer, Rajasthan, India

Histomorphological pattern of neoplastic and non-neoplastic lesions of ovary in Ajmer region of Rajasthan, India

Dr. Rohit Singh Jaggi, Dr. Ravikant Sunaria, Dr. Geeta Pachori and Dr. Tushar Bayla

DOI: https://doi.org/10.33545/pathol.2022.v5.i1b.459

Abstract
Background: The ovarian lesions manifest as a wide spectrum of clinical, morphological and histological features. Many ovarian lesions comprise neoplastic conditions, benign, borderline or malignant that may be life threatening if not urgently diagnosed and dealt with. Certain non-neoplastic lesions of ovary frequently form a pelvic mass and potentially mimic an ovarian neoplasm.
Materials and Methods: The prospective study of 2 years was conducted on surgically resected ovarian specimens from June 2019 to June 2021 received in the Department of Pathology, Jawaharlal Nehru Medical College and Associated Groups of Hospital, Ajmer (Rajasthan).
Results: Out of 280 cases studied, 120 (42.85%) were Neoplastic and 160 (57.14%) were Non-Neoplastic. In neoplastic lesions 80 were benign tumours, 32 were malignant, Borderline were 8. The commonest presentation was abdominal pain followed by mass per abdomen. Most of the ovarian lesions were unilateral 249 (88.92%) out of which 118 (42.14%) were Left sided and 131 (46.78%) were Right sided and 31 (11.07%) had Bilateral presentation. In neoplastic lesions, Surface Epithelial Stromal Tumours contributing to 83 cases, out of them Serous Cystadenoma were the most common (33 cases), in Sex Cord Stromal Tumours Fibroma Ovary was 2 cases, in Germ Cell Tumours, Mature Cystic Teratoma were 27 cases. In non-neoplastic lesions, Cystic Follicle (44 cases) was most common followed by Follicular Cyst (25 cases) and Corpus Luteal Cyst (23 cases).
Conclusion: Overall Non-neoplastic lesions of ovary were more commonly seen than neoplastic lesions. Both types of lesions often present with similar complaints, clinical and radiological features. So histopathological study is essential to diagnose ovarian lesions and predict their prognosis.

Keywords: Cystadenoma, fibroma, teratoma

Introduction
Ovaries are paired female reproductive organs with complex embryology, histomorphology and functional activity. Correspondingly, ovarian masses manifest a variety of diverse physiological and pathological lesions [1]. The complex anatomy of ovary and its peculiar physiology with constant cyclical changes from puberty to menopause is composed of a number of cell types each of which can give rise to tumours [2].

The most common lesions encountered in the ovary are functional or benign cysts and tumours. Neoplastic disorders can be grouped according to their origin from each of the three main ovarian cell types: (1) mullerian epithelium, (2) germ cells, and (3) sex cord-stromal cells [3]. Almost 80% of the ovarian neoplasms are benign and it is also a site for primary malignancy, although metastasis to ovaries can also occur [4].

Ovarian cancers account for 6% of all cancers in females. 80% are benign and these occur mostly in young women between the ages of 20 and 45 years. Malignant tumours are common in older women between the ages of 40-65 years. Classification of ovarian tumours is primarily morphological. It is based on that the ovary containing four major types of tissue: Surface, coelomic or germinal epithelium, germ cells, sex cord and ovarian stroma, specialized, and non-specific [5].

Ovaries are a common site for both benign and malignant neoplasms in all age groups right from the intrauterine period to post-menopausal age group [6]. Ovarian tumours are found to be more prevalent in the uppersocio economic class and approximately account for two-third of all malignancies in women ages between 40 and 65 years [7].

Ovarian tumours also show laterality, the commonly serous tumour are bilateral, both benign and malignant, while mucinous and sex cord stromal tumours are usually unilateral [8].

Aims and Objectives

To study the incidence of different histological types of ovarian lesions, Categories ovarian lesions into neoplastic and non-neoplastic group and to correlate incidence of neoplastic and non-neoplastic with particular age group and parity.

Materials and Methods

The prospective study of 2 years was conducted on surgically resected ovarian specimen from June 2019 to June 2021 received in the Department of Pathology, Jawaharlal Nehru Medical College and Associated Groups of Hospital, Ajmer (Rajasthan).

Inclusion criteria: Every surgically resected specimen of ovarian lesions irrespective of age.

Exclusion criteria: Included Known case of ovarian lesions, Treated cases of ovarian lesions, medico-legal cases and women not willing to participate in the study.

On receiving the specimen, gross features like size, shape, colour, external appearance, consistency, appearance on cut section and contents were noted. Then the tumors were cut at various levels depending on the individual cases and they were allowed to fix in 10% buffered formalin for 24-28 hours. The tissue is then processed which consists of following steps: 1. Grossing, 2. Processing 3. Embedding in paraffin, 4. Section cutting, 5. Staining (H & E), 6. Special stains whenever required. After fixation multiple bits were taken from representative areas of the lesion and the accompanying tissue. Special attention was given to solid areas adjacent to the ovarian surface and papillary projections. They were processed for histopathological examination and paraffin blocks were made. The blocks were cut at 3-5µ thickness and stained with Haematoxylin and Eosin.

Detailed microscopic examination of the tumor was done to arrive at a histopathological diagnosis. The tumors were categorized into neoplastic and non-neoplastic lesions. The neoplastic lesions were classified according to WHO classification of ovarian tumors.

Results

In the present study of 280 cases of ovarian lesions 120 cases (42.85%) were Neoplastic and 160 cases (57.15%) were Non-Neoplastic (Table 1)

In neoplastic lesions 80 cases (66.67%) were Benign, 8 were Borderline (6.66%) and 32 were malignant lesions (26.67%) (Table 1). Serous Cystadenoma 33/120 (27.5%) was the most common benign tumour and Serous Cystadenocarcinoma 7/120 (5.83%) was most common malignant tumour.

Neoplastic lesions were divided into four groups, namely Surface Epithelial Stromal tumours, Germ cell tumours, Sex cord stromal tumours, and Metastatic tumour. Surface Epithelial stromal tumour 83 cases (69.16%) were maximum in number, followed by Germ cell tumour 34 cases (28.33%), Sex cord stromal tumour 2 cases (1.66%), and metastatic tumour 1 case (0.83%) (Table 2)

In Surface Epithelial stromal Tumours, Serous Cystadenoma was the most common case, In Sex Cord Stromal tumour 2 cases were of Fibroma ovary. In Germ Cell Tumours, Mature Cystic teratoma was most common.

In Non-Neoplastic lesions, most common were Follicular Cyst 71/160 (44.38%) followed by Corpus Luteal Cyst 33/160 (20.625%). (Table 3)

Majority of lesions i.e. 245 out of 280 (87.5%) were present between 3rd to 6th decade. Below 20 years and above 60 years only 12.5% lesions were seen. Approximately 50% lesions were present in reproductive age group. (Table 4)

259 cases (92.5%) of ovarian lesions occurred in parous women and 21 cases (7.5%) occurred in nulliparous women. Neoplastic lesions were seen in 14 cases (11.67%) of nulliparous women and Non-Neoplastic lesions were seen in 7 cases (4.38%) of nulliparous women. (Table 5)

Most of the ovarian lesions were Unilateral 249 (88.92%) out of which 118 (42.14%) were Left sided and 131 (46.78%) were Right sided. 31 (11.07%) had Bilateral presentation. (Table 6)

Discussion

Ovarian lesions are the one of the major pathological findings in all gynaecological specimens. Ovary is the common site for neoplastic as well as non-neoplastic lesions e.g. follicular cysts are so common that they are considered virtually normal.[3] Both non-neoplastic as well as neoplastic lesions of ovary often present with similar clinical and radiological features e.g. cystic lesion in ultrasonography. So prophylactic oophorectomies and hysterectomies are performed.

In our study we found 160 cases (57.15%) of non-neoplastic lesions and 120 cases (42.85%) of neoplastic lesions out of 280 ovarian lesions. Non-neoplastic lesions were more than neoplastic lesions. Similar larger proportion of non-neoplastic lesions 147 cases (55.68%) out of 264 ovarian lesions were reported by Maurya G. *et al*. [9].

In the present study out of total 160 non-neoplastic cases, follicular cyst was most common lesion 71 cases (44.38%) followed by 33 cases (20.625%) of corpus luteal cyst. Nearly similar results were reported by Maurya G. *et al*. [9] and Gupta AK *et al*. [10].

Out of 120 neoplastic lesions in our study there were 80 benign (66.67%), 8 borderline (6.66%) and 32 malignant lesions (26.67%), while M Thirukumar *et al*. [11]. reported 263 benign (80.1%), 12 borderline (3.7%) and 53 malignant (16.2%) cases out of 328 neoplastic lesions. 259 cases (92.5%) of ovarian lesions occurred in parous women and 21 cases (7.5%) occurred in nulliparous women. Neoplastic lesions were seen in 14 cases (11.67%) of nulliparous women and Non-Neoplastic lesions were seen in 7 cases (4.38%) of nulliparous women. Majority of lesions i.e. 245 out of 280 (87.5%) were present between 3rd to 6th decade. Below 20 years and above 60 years only 12.5% lesions were seen. Approximately 50% lesions were present in reproductive age group.

In this study, in benign neoplastic lesions, Serous cystadenoma 33 cases was the most common followed by mature cystic teratoma 27 cases. Similar reports were reported by M Thirukumar *et al*. [11] and Agarwal D *et al*. [12] Bohara *et al*. [13] also reported serous cystadenoma; a benign surface But in Bello *et al*. [14] Karli *et al*. [15] and Tadayon M *et al*. [16] the most common benign neoplastic lesion was Mature Cystic Teratoma.

Conclusion

This study shows that most of the ovarian lesions are benign than malignant in all age groups. Surface Epithelial Stromal tumours are the most common class of tumours. Considering individual tumours, the most common benign tumour in this study is serous cystadenoma and the most common malignant tumour is Serous Cystadenocarcinoma.

Table 1: Distribution of cases according to Neoplastic/Non-Neoplastic nature

Type	Number of cases	Percentage
Neoplastic Lesions	120	42.85% overall
• Benign	80	66.66%
• Borderline	8	6.65%5
• Malignant	32	26.66%
Non-Neoplastic Lesions	160	57.15% overall
Total	**280**	**100%**

Table 2: Distribution of various types of neoplastic lesions of ovary

Classes of Ovarian tumour	Number of cases	Percentage
Surface Epithelial Stromal Tumour	83	69.16%
Sex Cord Stromal Tumour	2	1.66%
Germ Cell Tumour	34	28.33%
Metastatic Tumour	1	0.83%
Total	**120**	**100%**

Table 3: Distribution of Neoplastic and Non-Neoplastic lesions according to Histopathological diagnosis

Diagnosis	Number	Percentage (in Neoplastic Lesions)
A. Surface Epithelial Stromal Tumours		
Serous Cystadenoma	33	27.5%
Papillary Serous Cystadenoma	5	4.16%
Serous Cystadenoma (Microinvasive)	1	0.83%
Serous Borderline Tumour	1	0.83%
Papillary Serous Borderline Tumour	1	0.83%
Serous Cystadenocarcinoma	7	5.83%
Papillary Serous Cystadenocarcinoma	6	5%
Mucinous Cystadenoma	16	13.33%
Mucinous Cystadenofibroma	1	0.83%
Mucinous Borderline Tumour	5	4.16%
Mucinous Borderline Tumour with Microinvasion	3	2.5%
Mucinous Cystadenocarcinoma	3	2.5%
Endometroid Adenocarcinoma	1	0.83%
B. Sex Cord Stromal Tumours		
Fibroma Ovary	2	1.66%
C. Germ Cell Tumours		
Immature Teratoma	1	0.83%
Mature Cystic Teratoma	27	22.5%
Dysgerminoma	4	3.33%
Yolk Sac Tumour	2	1.66%
D. Metastatic		
Signet ring cell Adenocarcinoma (Krukenberg Tumour)	1	0.83%
Total (Neoplastic)	120	100%
Non-Neoplastic lesions		
Follicular Cyst	71	44.38%
Corpus Luteal Cyst	33	20.625%
Inflammatory pathology	12	7.5%
Simple Serous Cyst	25	15.625%
Cortical Inclusion Cyst	5	3.125%
Endometrial Cyst	1	0.625%
Chocolate Cyst	1	0.625%
Theca Lutein Cyst	1	0.625%
Stromal Hyperthecosis	1	0.625%
Torsion of Ovary	10	6.25%
Total (Non-Neoplastic)	160	100%

Table 4: Association of Age with Type of Lesion

Age	Neoplastic		Non-Neoplastic		Grand Total	
	Number	Percentage%	Number	Percentage%	Number	Percentage (%)
<=20	14	11.67	5	3.13	19	6.79
21-30	34	28.33	38	23.75	72	25.71
31-40	27	22.50	54	33.75	81	28.93
41-50	20	16.67	50	31.25	70	25.00
51-60	13	10.83	9	5.63	22	7.86
>60	12	10.00	4	2.50	16	5.71
Total	**120**	100.00	**160**	100.00	**280**	100.00

Table 5: Association of Parity with type of lesion

Age	Neoplastic		Non-Neoplastic		Grand Total	
	Number	Percentage%	Number	Percentage%	Number	Percentage%
Nulliparous	14	11.67	7	4.38	21	7.50
1	7	5.83	6	3.75	13	4.64
2	21	17.50	38	23.75	59	21.07
3	29	24.17	49	30.63	78	27.86
4	35	29.17	52	32.50	87	31.07
5	12	10.00	7	4.38	19	6.79
6	2	1.67	1	0.63	3	1.07
Total	**120**	**100.00**	**160**	**100.00**	**280**	**100.00**

Table 6: Association of the laterality with type of lesion

Laterality	Neoplastic		Non Neoplastic		Grand Total	
	Number	Percentage%	Number	Percentage%	Number	Percentage%
Bilateral	9	7.50	22	13.75	31	11.07
Left sided	56	46.67	62	38.75	118	42.14
Right sided	55	45.83	76	47.50	131	46.79
Total	**120**	**100.00**	**160**	**100.00**	**280**	**100.00**

References

1. Karl P, Kilitci A. Evaluation of the histopathology results of patients operated due to ovarian mass. J Gynecol Res Obstet. 2019;5(1):1-4.
2. Prat J. Female reproductive system. In: Damjanov I, Linder J, eds Anderson's pathology. St Louis, Missouri: Mosby, 1990, 2231-309.
3. Ellenson LH, Pirog EC. The female genital tract. Kumar V, Abbas AK, Fausto N, Aster JC. (Eds): Robbins and Cotran Pathologic Basis of disease. 10th ed. Philadelphia, Elsevier Saunders, 2021, 985-1036.
4. Novak. Gynaecologic and obstetric pathology with clinical and endocrine relation. 8th ed. W.B. Saunders company, 1979.
5. Rosai J. Female reproductive system, classification of ovarian tumours. In: Rosai and Ackerman Surgical Pathology. 9th ed. China: Elsevier, 2004, 1659-709.
6. Young RH. The Ovary. In: Sternberg S. diagnostic Surgical Pathology. 17th Ed. New York: Raven Press, 1994, 2195.
7. Ajeet K, Suryajita KS, Anju S, Bipin K, Amit K. Assessment of ovarian tumours concerning clinicopathological aspects in Indian population. Int J Med Health Res. 2018;4(11):118-20.
8. Sah SP, Uprety D, Rani S. Germ cell tumours of the ovary: a clinicopathologic study of 121 cases from Nepal. J Obstet Gynaecol Res. 2004;30(4):303-8.
9. Maurya G, Sanjeev KS, Pinki P, Vineet C. Pattern of neoplastic and non-neoplastic lesions of ovary: a five-year study in a tertiary care centre of rural india. International Journal of Research in Medical Sciences. 2018;6(7):2418-2422.
10. Gupta AK, Sanghmitra Singh, Uday Raj Singh. Ovarian tumor, incidence, neoplastic ovarian lesions, non-neoplastic lesions, histopathology. International Journal of Scientific Study. 2018 Dec; 6(9):21-28.
11. 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.
12. Agarwal D, Kaur S, Agarwal R, Gathwal M. Histopathological Analysis of Neoplastic lesions of the ovary: A 5 year retrospective study at Tertiary healthcare centre. Int J Contemp Med Res. 2018;5(5).
13. Bohara S, Jain S, Khurana N, Shangpliang DM, Agarwal S, Gandhi G. Intraoperative cytology of ovarian neoplasms with an attempt to grade epithelial tumours. J Cytol. 2018;35:1-7.
14. Bello U, Gambo UA, Ibrahim H, Abbas A, Haruna MS, Mohammad U, *et al*. Indian J Pathol Oncol. 2021;8(4):492-496.
15. Karl P, Kilitci A. Evaluation of the histopathology results of patients operated due to Ovarian Mass. J Gynecol Res Obstet. 2019;5(1):1-4.
16. Shadab S, Mitra T. Histopathological diagnosis of an ovarian mass. J Pathol Nep. 2018;8:1261-4.