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SPECTRUM OF OVARIAN LESIONS- A HISTOPATHOLOGICAL STUDY

Pathology

Dr Laxmikant Hiwase Senior Resident, Department of Pathology, Rajiv Gandhi Medical College, Kalwa, Thane.

Dr Sandhya Bholay Professor Additional, Department of Pathology, Rajiv Gandhi Medical College, Kalwa, Thane.

ABSTRACT

Background: Ovary is a complex organ composed of a variety of cell types. It is commonly involved by neoplastic and non-neoplastic lesions of great histomorphological diversity. An early and accurate histopathological diagnosis of ovarian lesions is crucial in its management. **Aims And Objectives-** The present study was carried out to study the different histopathological patterns of ovarian lesions and to study their age distribution. **Materials and Methods:** 110 ovarian lesions were studied from January 2015 to July 2022. **Results:** The total number of ovarian lesions studied during study period was 110 cases, amongst them 43 were non-neoplastic and remaining 67 were neoplastic. The most common non-neoplastic lesion seen was corpus luteal cyst i.e 20 cases (46.51%) followed by simple serous cyst i.e 9 cases (20.93%). Amongst the 67 neoplastic lesion 56 cases (83.58%) were benign, 3 (4.47%) were borderline and 8 (11.94%) were malignant. In Benign ovarian neoplasms, most commonly seen lesions were Serous cystadenoma followed by Benign cystic teratoma. In malignant cases, maximum were of Mucinous carcinoma. **Conclusion:** The diverse morphological patterns of non-neoplastic and neoplastic lesions of ovary make it necessary to classify them accurately by histopathological features.

KEYWORDS

Benign, Histomorphological diversity, Malignant, Ovarian lesions.

INTRODUCTION

Ovaries are paired sex glands in females which are concerned with a) Germ cells maturation, storage and its release b) Steroidogenesis(1). The ovary is covered by a single layer of modified mesothelium known as ovarian surface epithelium (2). 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 a) Mullerian epithelium b) germ cells c) sex cord stromal cells. There are numerous types of ovarian tumours. About 80% are benign and these occur mostly in young women between 20 and 45 years of age, so called borderline tumours occur at slightly older ages. Malignant tumours are more common between 45 and 65 years of age(3). Factors associated with increased risk for neoplastic lesions are age, nulliparity, and family history. Parity is the most important non genetic factor affecting risk for ovarian cancer. Risk decreases with increasing number of pregnancies. Most common symptoms are abdominal bloating or pain, indigestion, urinary frequency and constipation(4). Multiple ovulations in the IVF program appear to increase the risk of ovarian malignancy in later life(5) . Ovarian neoplasms exhibit a wide variation in structure and biological behaviour (6). Both primary and secondary carcinomas of the ovary are relatively frequent and show an astounding variety of pathologic patterns (7).

Ovarian neoplasms have become increasingly important not only because of the large variety of neoplastic entities but more because they have gradually increased mortality rate in female genital cancers(8).Ovarian tumours and non-neoplastic lesions present a great challenge to gynecological oncologist. Certain non-neoplastic lesions of the ovary frequently form a pelvic mass and potentially mimic an ovarian neoplasm. Their proper recognition and classification is therefore important to allow appropriate therapy(9).

Ovarian cancer is the sixth most common female cancer and is seen predominantly after the third decade of life (10). Indian trend analysis reveal a steady increase in the age- standardized incidence rate of ovarian cancer, comprising upto 8.7% of cancers in different parts of the country (11).

MATERIALS AND METHODS

This study is an observational and descriptive Study, partly retrospective and partly prospective. The total data is collected from January 2015 to July 2022.

This study was conducted in a Tertiary care Hospital in the department of Pathology at Chhatrapati Shivaji Maharaj Hospital. All the ovarian lesions received in the department of Pathology in cases posted for total abdominal hysterectomy with unilateral or bilateral salpingo-oophorectomy or only ovarian cyst or mass removal during the study period were included. Total 110 ovarian lesions were examined by doing histopathological examination.

RESULTS

In the present study of ovarian specimens from January 2015 to July 2022 a total of 110 ovarian lesions were studied.

In our study non-neoplastic lesions constituted to 39.09%, neoplastic benign lesions constituted to 50.90%, while borderline neoplastic lesions constituted to 2.72% and neoplastic malignant lesions accounted to 7.27%. Neoplastic-benign lesions were found to be more common in our study while neoplastic-borderline lesions were least commonly found (Table 1.Chart 1)

Table 1) Type-wise Histopathological Distribution Of Ovarian Lesions

Type	Frequency	Percentage
Non neoplastic	43	39.09%
Neoplastic-Benign	56	50.90%
Neoplastic-Borderline	3	2.72%
Neoplastic-Malignant	8	7.27%
Total	110	100%

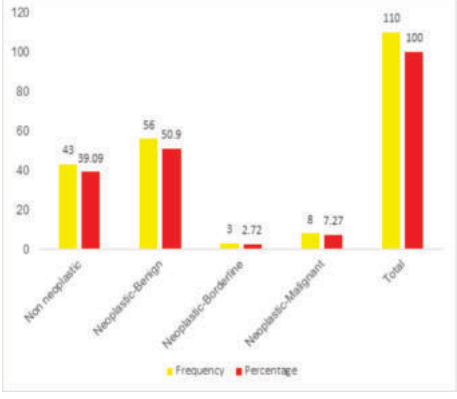


Chart 1) Type-wise Histopathological Distribution Of Ovarian Lesions

In our study, corpus luteal cyst was most common (46.51%) amongst non-neoplastic lesions, simple serous cyst accounted to 20.93%. Follicular and hemorrhagic cyst accounted to 11.62%, while lesser common were chocolate cyst (4.65%) and twisted ovarian cyst (4.65%).(Table 2)

Table 2) Distribution Of Non-neoplastic Lesions

Type	Frequency	Percentage
Corpus luteal cyst	20	46.51%
Simple serous cyst	9	20.93%
Follicular cyst	5	11.62%
Hemorrhagic cyst	5	11.62%
Chocolate cyst	2	4.65%
Twisted ovarian cyst	2	4.65%
Total	43	100%

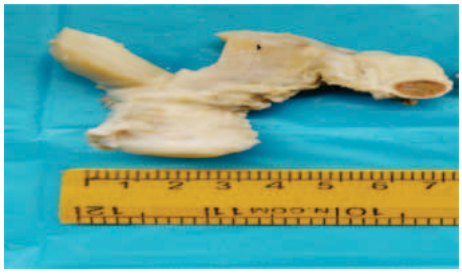


Fig 1) Gross-Corpus Luteal Cyst Showing Cyst With Yellow Appearance.

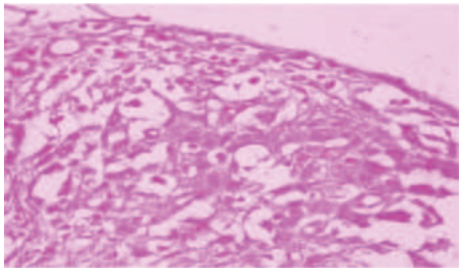


Fig 2) Microscopy-(H And E Stain, 40x) Corpus Luteal Cyst Lined By Luteinized Granulosa And Theca Cells

In our study, amongst the benign neoplastic lesions, Serous cystadenoma was the most common entity (32.14%) followed by benign cystic teratoma (25%). Mucinous cystadenoma and serous cystadenofibroma constituted to 14.28% of total benign neoplastic lesions. Seromucinous cystadenoma constituted to 8.92% and Brenner tumor constituted to 3.57% and fibroma was the least common (1.78%.). (Table 3.Chart 2)

Table 3) Distribution Of Benign Neoplastic Lesions

Type	Frequency	Percentage
Serous cystadenoma	18	32.14%
Benign cystic teratoma	14	25%
Mucinous cystadenoma	8	14.28%
Serous cystadenofibroma	8	14.28%
Seromucinous cystadenoma	5	8.92%
Brenner tumour	2	3.57%
Fibroma	1	1.78%
Total	56	100%

Chart 2) Distribution Of Benign Neoplastic Lesions

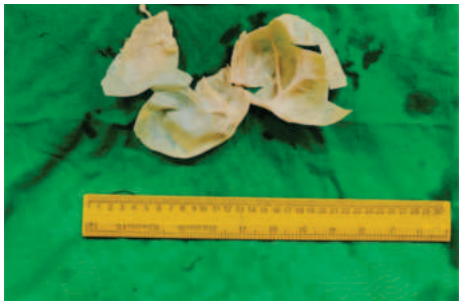


Fig 3) Gross-Mucinous Cystadenoma Showing A Multiloculated Cyst With A Glistening Smooth Surface

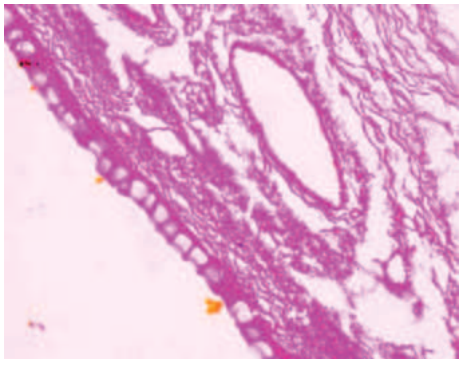
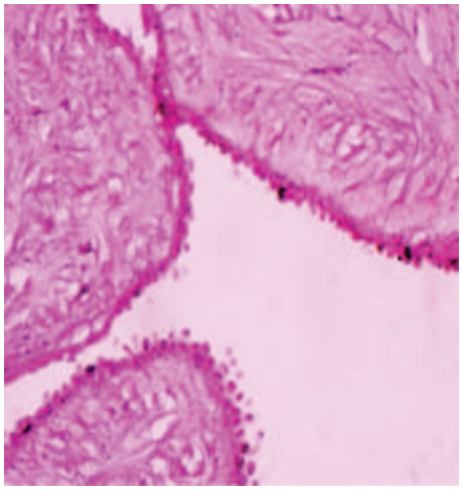


Fig 4) Microscopy (H And E Stain,40x) Mucinous Cystadenoma Lined By Single Layer Of Nonciliated Columnar Cells With Apical Mucinous Vacuoles



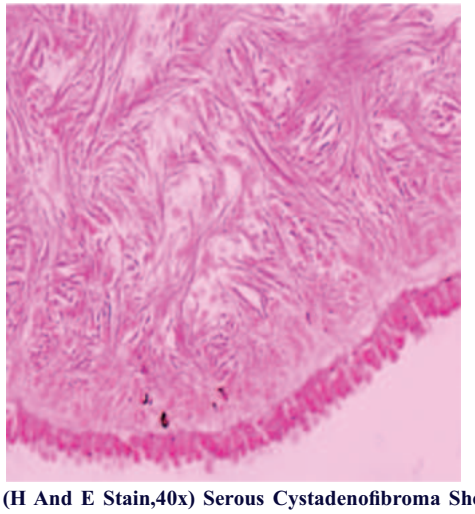


Fig 5) (H And E Stain,40x) Serous Cystadenofibroma Showing Papillary Projections Lined By Serous Epithelium And Core Of Fibrous Stroma

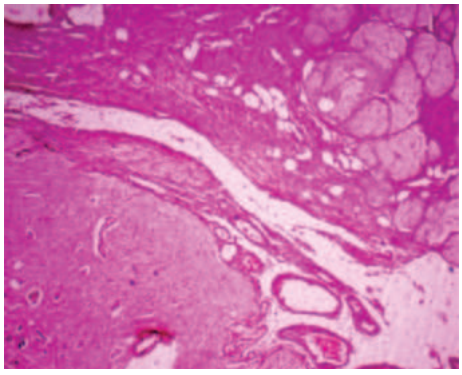


Fig 6) (H And E Stain,4x) - Dermoid Cyst Showing Lining Of Squamous Epithelium,sebaceous Glands And Brain Tissue In Wall

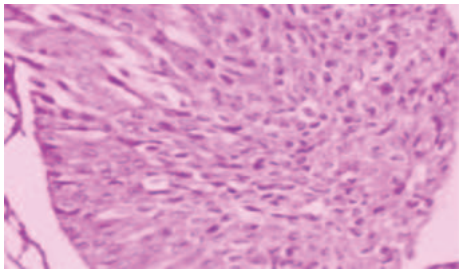


Fig 7) Microscopy (H And E Stain,40x) - Benign Brenner Tumour Showing Ovoid Nuclei With Presence Of Grooves.

In malignant lesions, Mucinous carcinoma and Adult granulosa cell tumour were most common 25% (2 cases each) followed by low grade serous carcinoma, endometrioid adenocarcinoma, serous papillary cystadenocarcinoma and malignant mixed germ cell tumour 12.5% (one case each). The borderline tumours in our study were Seromucinous borderline tumour. One of our case was a Bilateral Serous Papillary cystadenocarcinoma.

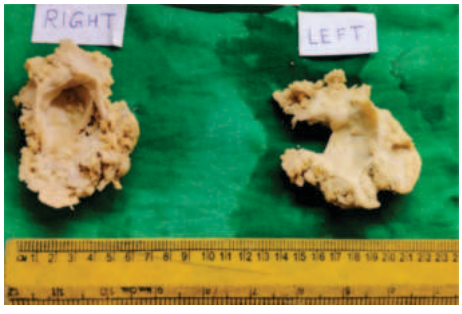


Fig 8) Gross-Cut Surface

Bilateral Serous papillary cystadenocarcinoma -Both the lesions show a large cyst in the middle and cyst wall shows small papillary projections and nodules. The surrounding tumour is composed of large papillae which are projecting out from the capsule

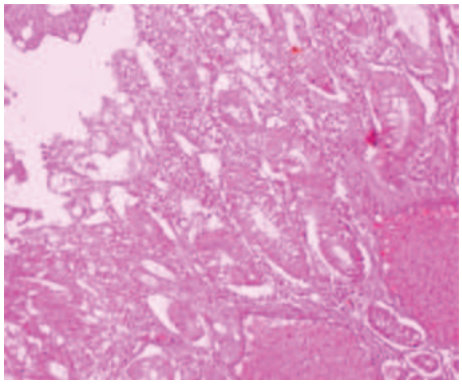


Fig 9) Microscopy (H And E Stain,10x) Mucinous Carcinoma Showing Atypical Mucinous Epithelium With Stromal Invasion

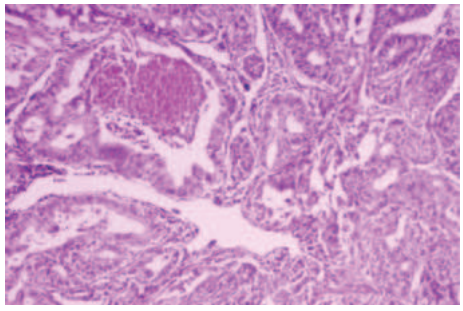


Fig 10) Microscopy-(H And E Stain,10x)- Left Ovary Endometrioid Adenocarcinoma

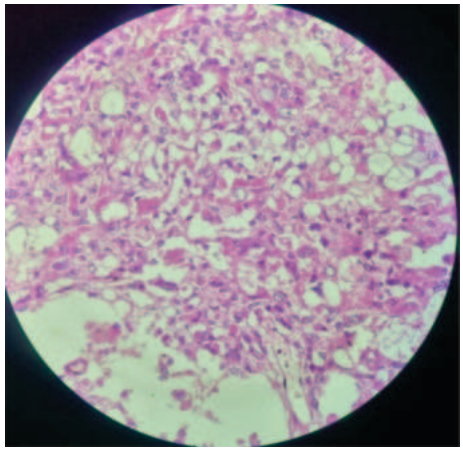


Fig 11) Microscopy- (H And E Stain) Malignant Mixed Germ Cell Tumour Showing Hyaline Globules.

Among non-neoplastic lesions most common lesions were in the age group of 21-30 years (41.86%) and no lesions were found in females lesser than 20 years and greater than 60 years.

Among age-wise distribution of neoplastic lesions most common were in the age group 31-40 (32.83%) while least common lesions belonged to the age group above 60 years (4.47%.). (Table 4)

Table 4) Age-wise Distribution of Neoplastic Lesions (years)

Age	Frequency	Percentage
‹ 20	6	8.95%
21-30	20	29.85%
31-40	22	32.83%
41-50	9	13.43%
51-60	7	10.44%
›60	3	4.47%
Total	67	100%

In our study most of the lesions were cystic (72.72%) while solid and cystic lesions are 21.81%. (Table 5)

Table 5) Gross Features

Gross features	No of cases	Percentage
Cystic	80	72.72%
Solid	06	5.45%
Solid and cystic	24	21.81%

DISCUSSION

A wide variety of non-neoplastic and neoplastic lesions occur in the ovary. Non neoplastic lesions can have similar clinical presentation as neoplasms and can mimic neoplasms. In our study, of the 43 non neoplastic lesions,Corpus luteal cyst accounted for 46.51%, simple serous cyst were 20.93%, follicular cyst accounted for 11.62% and hemorrhagic cyst accounted for 11.62%. Simple serous cyst lesions in our study are comparable to findings of Singh M et al (12) (18.2%), and Gaikwad SL et al(13) (24.7%)

Relative percentage of benign, borderline, and malignant tumors in our study was 83.58%, 4.47% and 11.94% respectively. Relative percentage of benign tumours were comparable with studies done by Koonings et al (14) (75.4%), Pilli et al (15) (76%), M. Yogambal et al

(16) (78.6%), R Jha et al (17) (83.9%), Kayastha et al (18) 90.5%, Sushama et al (19) (76.67%), Gaikwad SL et al (13) 88.1%. Relative percentage of malignant lesions were comparable with Kayastha et al (18) 9.5%, Sumaira et al (20) 10.29% and Gaikwad SL et al (13) 9.5%. Here in our study the benign lesions comprised the majority of tumours which is comparable to all the studies (13,14,15,16,17,18,19).

Relative percentage of different histological types of ovarian tumours in our study accounted as surface epithelial tumours were 73.13%, germ cell tumours were 22.38% and sex cord stromal tumours were 4.47%. Relative percentage of surface epithelial tumours were comparable with studies done by Samina et al (21) (68.4%), Kayastha et al (18) 72.6% and Gaikwad SL et al (13) 75%.Germ cell tumours were comparable with studies done by, Samina et al (21) 23%, Kayastha et al (18) (25.3%) and Gaikwad SL et al (13) 20.2% .Sex cord stromal tumours were comparable with Gaikwad S L et al (13) 4.8%, Sawant A and Mahajan S (22) 6.1% study. Surface epithelial tumours comprised majority which is comparable to all the studies.(13,18,21)

Among laterality of the neoplastic tumours 91.04% were unilateral while 08.95% were bilateral. Percentage of the consistency of ovarian lesions in our study are cystic (72.72%), solid (5.45%), solid and cystic (21.81%). Findings of cystic consistency in our study are comparable with studies done by Gupta SC et al (23) 76.10%, Mishra RK et al (24) 78%. Findings of solid lesions (5.45%) are comparable with findings of Mishra RK et al (24) 04%. Findings of solid and cystic consistency are comparable with studies done by Mishra RK et al (24) 18% and Gupta SC et al (23) 21.50%. The percentage of cystic, Solid, and Solid-cystic tumours of 72.72%, 5.45%, and 21.81% in our study was comparable to findings of Mishra RK et al (24) of 78%, 4% and 18% respectively. In study by Gupta SC (23), Cystic tumors comprised a majority which was also a finding in our study.

Summary

A total of 110 cases were studied in which 39.09% were non-neoplastic while 60.91% were neoplastic lesions. Most common non-neoplastic ovarian lesions encountered in our study were corpus luteal cyst followed by simple serous cyst. The incidence of benign tumour was much higher than malignant with serous cystadenoma being the most common followed by benign cystic teratoma. In our study, in borderline neoplastic lesions all cases were of borderline seromucinous tumours. In malignant neoplastic lesions, most common lesions found were mucinous carcinoma and adult granulosa cell tumour. Most of the non- neoplastic ovarian lesions were in the age group of 21-30 years while neoplastic ovarian lesions were common in age group of 31-40 years. Majority of malignant tumours were found in age group 40 to 49 years. In age group less than 20 years, Surface epithelial tumours were commonest. The youngest patient with a neoplastic lesion in our study was 13 years old and had a malignant mixed germ cell tumour. The oldest patient was in age group 70 to 79 and it was a single case of Serous cystadenoma. Majority of the ovarian lesions in our study were unilateral. Among the bilateral tumours, majority were Surface epithelial tumours.

In our study, majority of the ovarian lesions were less than or equal to 10 cm. Most of the ovarian lesions were cystic in consistency in our study.

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