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Histopathological Spectrum of Ovarian Lesion in a Tertiary Care Hospital in Vindhya region

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ABSTRACT

BACKGROUND: Ovarian tumours are one of the major causes of gynaecological problems in females and present marked variation in their histological types. Distinguishing non-neoplastic lesion from a neoplastic lesion on the basis of clinical, radiological or gross characteristics alone is a challenge, thus histopathological examination is must as it is also important in guiding therapy.

OBJECTIVE: To find out frequency of various histological patterns of ovarian tumors, their classification and relative distribution of these lesions in Vindhya region.

MATERIAL AND METHOD: This is a retrospective study of ovarian lesion specimen that was received in Department of Pathology, Shyam Shah medical college, Rewa from Obstetrics & gynaecology department over a period of 3 years and 8 months from April 2017 to December 2020. These cases were investigated and surgically treated. The formalin fixed specimens (simple oophorectomy or hysterectomy with unilateral/bilateral salpingo-oophorectomy) were examined grossly, processed routinely and the sections were stained with H& E stain. The microscopic findings were noted and interpreted according to WHO classification of ovarian tumour.

RESULT: In a total of 210 cases of ovarian masses, in women of age ranging from 14 to 75 years were seen in the study. Out of 210 cases, 65 (30.9%) were non-neoplastic and 145 (69.04%) were neoplastic. Among neoplastic lesions, 80% (116/145) were benign, 8.3% (12/145) were borderline and 11.7% (17/145) were malignant. The commonest non-neoplastic lesion was follicular cyst (30/65) followed by corpus leuteal cyst (18/65). The commonest benign tumour was Serous cystadenoma (52/145) followed by Benign cystic teratoma (22/145). The commonest malignant tumour was serous cystadenocarcinoma (07/145) followed by mucinous cystadenocarcinoma (04/145).

CONCLUSION: Neoplastic lesions were more common than non-neoplastic lesions, while benign tumours out numbered the malignant ones. The commonest benign tumour was serous cystadenoma and the commonest malignant was serous cystadenocarcinoma. The commonest non-neoplastic lesion was follicular cyst. Among histological types of ovarian tumours, surface epithelial tumours dominated the other types.

Keywords: Ovarian tumours, Luteal cyst, Serous cystadenoma, Cystadenocarcinoma.

INTRODUCTION

Ovaries are a pair of primary reproductive organ that lies in the true pelvis on either side of uterus. Their main function is to produce eggs or ova and production of reproductive hormones estrogen and progesterone. Although they are small organ but they are common site of lesions of diverse morphological

spectrum that may develop from neonatal period to post-menopause.[1] These lesions are generally categorized into non-neoplastic and neoplastic lesions, that are further sub-categorized into a variety of lesions depending on multiple factors. Non-neoplastic lesion predominantly consists of functional cyst (Corpus luteal cyst, Follicular cyst) and other non-neoplastic pathology including endometriotic cyst, tubo-ovarian abscess, cyst of polycystic ovarian syndrome, inflammatory lesions, surface epithelial inclusion cyst etc. Functional cysts are frequently seen in young female in their second decade due to failure of ovulation.[2,3,4] However, fewer cases could also be seen in perimenopausal and postmenopausal women. In most cases they resolve spontaneously. Surgical treatment is required only for large, persistent, or painful ovarian cysts. Therefore these lesions are less in histological studies as compared to neoplastic lesions. Neoplastic lesions are categorized into Benign, Borderline and Malignant. The histogenesis of ovarian tumours revolves around the four main components namely Surface epithelium, Germ cell, Sex cord and Ovarian stroma. There are also histologic differences in the type of tumors found in the younger and older populations. Germ cell neoplasms predominate in prepubertal children and young adults, whereas lesions of epithelial origin are rare in this age group but are predominantly seen in elderly and postmenopausal women. Even non-neoplastic cystic lesions are also frequently responsible for a pelvic mass and associated with abnormal hormonal manifestations often mimicking a neoplasm thus causing diagnostic confusion. They are easily diagnosed on histopathology. Ovarian cancer accounts for 2.5% of all malignancies among females but 5% of female cancer deaths because of low survival rates, largely driven by late stage diagnosis. Ovarian cancer usually has a relatively poor prognosis since it lacks early detection or screening tests, implying that most cases are not diagnosed until they have reached advanced stages. Improving prevention and early detection is a research priority because disease diagnosed at a local stage has a 5- year relative survival rate of 93%.[5,6,7,8] Knowing the above facts about the broad spectrum of presentation of ovarian lesion and importance of histological diagnosis for proper management, this study was conducted to find out frequency of various histological patterns of ovarian tumors, their classification and relative distribution of these lesions.

MATERIALS AND METHODS

This retrospective study was conducted in the Department of Pathology, Shyam Shah Medical College, Rewa over a period of three years and eight months from April 2017 to December 2020. A total of 210 cases were taken. Clinical data was retrieved from histopathology requisition form/ hospital records of patients presenting with ovarian lesion. All the specimens (biopsies/surgical specimens) that were received in our histopathology section of Department of Pathology were fixed in 10% formalin, embedded in paraffin, sectioned at 3-5µ and stained with Hematoxylin and Eosin. Descriptive statistical measures were utilized to present the data. Histologically ovarian lesions were classified into non-neoplastic masses and neoplastic masses. Non-neoplastic masses were further subdivided into different types of cysts, other lesions, and neoplastic masses were divided as benign, borderline and malignant lesions.

RESULTS AND OBSERVATION

Out of the 210 ovarian tumours, 65 cases (30.95%) were non neoplastic, 145 cases (69.04%) were neoplastic. Among non-neoplastic lesions, follicular cyst was commonest followed by corpus leuteal cyst. Surface epithelial tumour was the commonest tumor as per histomorphology. Among the malignant surface epithelial tumours, the incidence of serous cystadenocarcinoma was 3.4% and mucinous cystadenocarcinoma was 1.37%. Serous cystadenoma was the commonest tumour in benign category. In germ cell tumour category, benign cystic teratoma was commonest. 10 case of sex cord stromal tumour (7 fibroma, 2 Granulosa cell tumor, 1 case of lipid cell tumor) and 4 cases of metastatic tumor. Most of the benign ovarian tumor presented as cystic mass while malignant ovarian tumor presents as solid as well as solid admixed with cystic. Most common age group affected in non-neoplastic lesions is 20-39, and in neoplastic lesion most common age group affected was 40-59. Most common clinical complaint was Lump abdomen in Neoplastic lesions and Menstrual irregularties in non neoplastic lesions.

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Table 1: Distribution of Non-neoplastic lesions of ovary (n=65)

Lesion	No. of cases	Percentage
Follicular cyst	30	46.2%
Corpus leuteal cyst	18	27.7%
Hemorrhagic cyst	08	12.3%
Salpingo-oophritis	05	7.6%
Inclusion cyst	02	3.1%
Endometriosis	02	3.1%
TOTAL	65	100%

Table 1 show that among non neoplastic lesions of ovary, follicular cyst was the most common lesion (46.2%), followed by corpus leuteal cyst (26.7), Hemorrhagic cyst (12.3%), salpingo-oophoritis (7.6%), inclusion cyst (3.1%) and endometriosis (3.1%).

Table 2: Classification of various type of Neoplastic lesions (n=145)

Classes of Ovarian Tumor	No. of cases	Percentage%
Surface Epithelial Tumor	95	65.5
Germ cell tumor	36	24.8
Sex cord stromal Tumor	10	6.9
Other(Metastatic)	04	2.8
TOTAL	145	100%

Table 2 shows that Neoplastic tumor was divided in to 4 groups, namely Surface Epithelial Tumor, Germ cell tumor, Sex cord stromal Tumor and Others (Metastatic). Surface Epithelial Tumor was most common type(65.5%),followed by Germ cell tumor(24.8%), Sex cord stromal Tumor(6.9%) and Metastatic tumor(2.8%).

Table 3: Distribution of Neoplastic lesion of ovary (Total- 145)

Tumors	No. of cases	Percentage (%)
Surface Epithelial tumours		
BENIGN		
i. Serous Cystadenoma	52	35.9%
ii. Mucinous Cystadenoma	20	13.8%
BORDERLINE		
iii. Borderline Serous	07	4.8%
iv. Borderline Mucinous	05	3.4%

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MALIGNANT		
v. Serous Cystadenocarcinoma	07	4.8%
vi. Mucinous Cystadenocarcinoma	04	2.7%
Germ Cell tumours		
vii. Benign Cystic Teratoma	22	15.2%
viii. Dermoid cyst	12	8.3%
ix. Dysgerminoma	02	1.4%
Sex cord stromal tumours		
x. Fibroma	07	4.8%
xii. Granulosa cell Tumor	02	1.4%
xiii. Lipid cell tumour	01	0.7%
Other		
xiv. Metastatic	04	2.8%
TOTAL	145	100%

Table 3 shows that among neoplastic lesions (n=145), most common histological class is Surface epithelial tumor 65.5% (95/145), followed by germ cell tumor 24.1% (36/145). Among all Benign neoplastic tumor (n=95) Serous cystadenoma (54.7%) was commonest, while Benign cystic teratoma (23.2%) is 2nd most common lesion.

On the other hand, amongst all malignant lesions (17), Serous cystadenocarcinoma 41.2% (7/17) was most common, followed by Mucinous Cystadenocarcinoma 23.5%(4/17).

In Germ cell tumor (36), Benign cystic teratoma (61.1%) was most common followed by dermoid cyst (33.3%). Most common malignant germ cell tumor was Dysgerminoma.

In sex cord stromal tumor (10), Fibroma (70%) was most common benign lesion, followed by lipid cell tumor(10%). Granulosa cell tumor (20%) was most common malignant lesion.

Four cases of malignant tumor (krukenberg tumor) were found.

Table 4: Distribution in various age-groups of patient with both non-neoplastic and neoplastic ovarianmass

Age (yrs)	Non-Neoplastic	Benign	Borderline	Malignant	Total
<19	13 (20%)	20 (17.2%)	0 (0%)	1 (5.8%)	34 (16.2%)
20-39	50 (76.9%)	81 (69.8%)	2 (16.6%)	2 (11.9%)	135 (64.2%)
40-59	2 (3.1%)	8 (6.9%)	7 (58.4%)	10 (58.8%)	27 (12.9%)
>60	0 (0%)	7 (6.1%)	3 (25%)	4 (23.5%)	14 (6.7%)
Total	65 (100%)	116 (100%)	12 (100%)	17 (100%)	210 (100%)

Table 4 shows benign tumor common in age 20-39 years of age, whereas both borderline and malignant were common in 40-59 years of age.

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Overall most common age group is 20-39 years followed by 40-59 years.

The youngest patient was 14 years of age and oldest was 75 years of age.

Table 5: Clinical presentation of non-neoplastic cases (n=65)

Clinical presentation	No.of cases	Percentage
Pain in abdomen	18	27.7
Menstrual Irreguralities/Abnormal vaginal bleeding	25	38.5
Pain in abdomen with white discharge per vagina	08	12.3
Pain in abdomen with mass per abdomen	07	10.8
Mass per abdomen	04	6.4
Pain in abdomen with Menstrual Irreguralities /Abnormal vaginal bleeding	03	4.5
TOTAL	65	100

Table 5 shows that in non neoplastic lesion of ovary, most of the patient presented with Menstrual Irreguralities/Abnormal vaginal bleeding (38.5%) followed by pain in abdomen (27.7%). Many patients also presented with more than one complain.

TABLE 6: Clinical presentation of Neoplastic cases (n=145)

Clinical symptom	Benign neoplasm	Borderline neoplasm	Malignant Neoplasm	TOTAL
Lump in abdomen	75(64.4%)	05(41.7%)	07(41.2%)	87(60%)
Pain in abdomen	32(27.9%)	03(25%)	04(23.4%)	39(26.9%)
GIT complaint	08(6.9%)	01(8.3%)	02(11.8%)	11(7.5%)
Loss of weight / loss of appetite	01(0.8%)	02(16.7%)	02(11.8%)	05(3.5%)
Ascites	0(0%)	01(8.3%)	02(11.8%)	03(2.1%)
TOTAL	116(100%)	12(100%)	17(100%)	145(100%)

Table 6 shows that in neoplastic lesions, most common clinical presentation was lump abdomen (60%), followed by pain in abdomen (26.9%), GIT complaint (7.5%), loss of weight/appetite (3.5%) and ascites (2.1%).

Table 7: Consistency of Neoplastic lesions (n=145)

Lesion	Solid	Cystic	Solid + Cystic
Benign	0(0%)	99(68.3%)	17(11.72%)
Borderline	6(4.1%)	2(1.3%)	4(2.7%)

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Malignant	8(5.5%)	0(0%)	9(6.2%)
Total	14(9.65%)	101(69.65%)	30(20.7%)

Table 7 shows that benign cases were predominantly cystic (67.59%) while few cases were solid as well as cystic type (11.72%).Majority of borderline and Malignant were solid and solid+cystic.

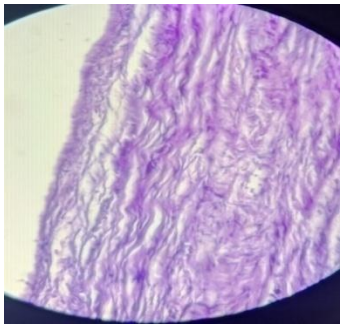

Fig 1: Serous cystadenoma

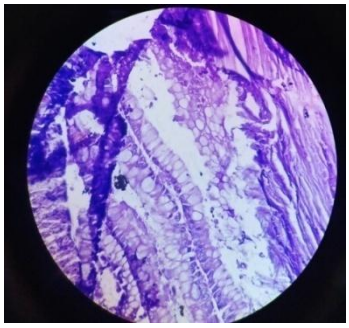

Fig 2: Mucinous cystadenoma

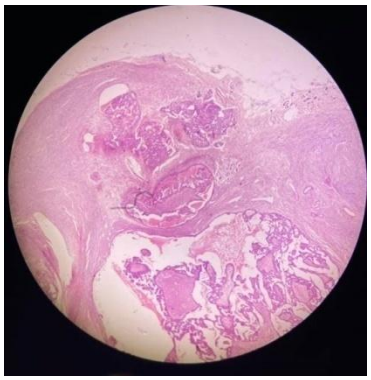

Fig 3: Serous cystadenocarcinoma(LP)

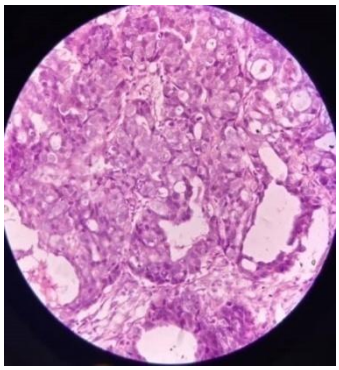

Fig 4: Serous adenocarcinoma(HP)

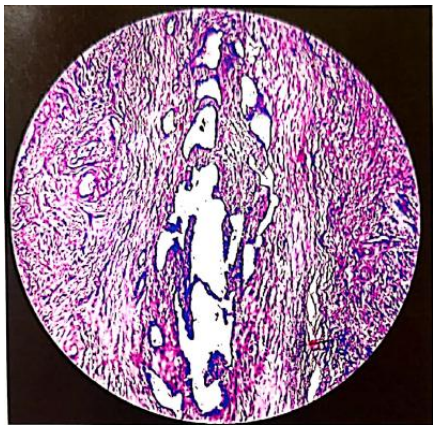

Fig 5: Endometriosis

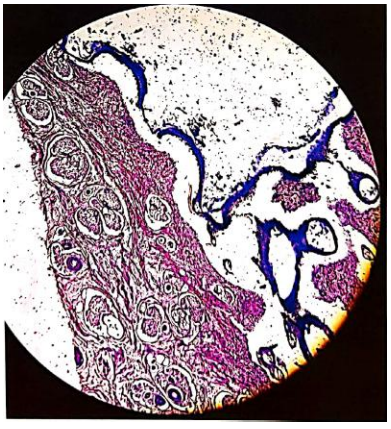

Fig 6: Mature Teratoma

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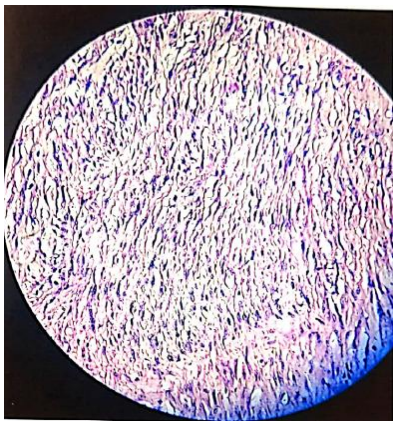

Fig7: Fibroma

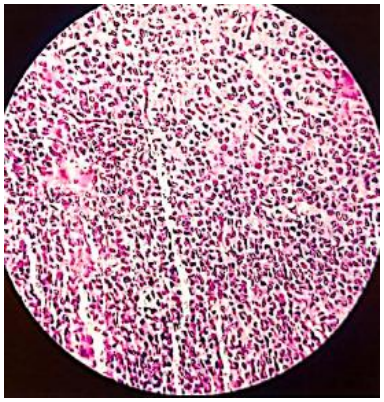

Fig 8: Granular cell Tumor

DISCUSSION

The ovarian tumour is diagnosed as benign, borderline or malignant; depending on the presence of predominant cell type, pattern of growth, amount of fibrous stroma and cellular atypia with invasiveness [1].Ovarian cancer is the second leading cause of mortality among all gynaecological cancer [9].Due to similar clinical presentations there is confusion in the diagnosis of non neoplastic and neoplastic lesion of ovary although it is diagnosed as cystic mass lesion in USG and hence removed prophylactically in routine oopherectomies and hysterectomies [10]. In current study 210 ovarian lesions were studied to find out frequency of various histological patterns of ovarian tumors, their classification and relative distribution of these lesions. Among them 65 were non neoplastic and 145 were neoplastic.

Histologically, surface epithelial tumors (65.5%) were the commonest followed by germ cell tumour (24.8%), sex cord stromal tumour (6.9%) and metastatic tumour (2.8%), which is consistent with findings of Mondal SK et al, Pilli et al, Couto F et al and Bhuvnesh et al [5,11,12.13]. However the germ cell tumours were the commonest ovarian neoplasm followed by surface epithelial tumours in most parts of world [7]. The proportion of mature teratoma was higher in present study, being the second most common benign tumor (after serous cystadenoma).

In present study out of 210 cases, benign ovarian lesions were 80% while malignant lesions were 11.7%. Only 8.3% cases were diagnosed as borderline ovarian tumour. In study conducted by Gupta et al. benign lesions were 72.9%, borderline were 4.1% and malignant tumors were 22.9% [6]. The major fraction of ovarian neoplasm in the study done by Mondal SK et al (2011) comprised benign tumors (63.1%), followed by malignant (29.6%) and borderline tumors (7.3%) [5]. In study conducted by Pilli et al [11], Saxena et al [14] and Couto F et al [12] it was found that 75.2%,76.4% and 78.57% had benign neoplasm while 21.8%, 23.6% and 20% cases had malignant ovarian neoplasm respectively. The results of these studies are in concordance with present study in which most of the lesions are benign followed by malignant lesions.

In present study, maximum number of case were in 3rd to 4th decade of life (Table 4) which is in concordance with Pilli et al [11] , Randhawa I et al [15] and Ramchandran et al.[16]

In Neoplastic ovarian neoplasm, lump in abdomen was most common complaint followed by pain in abdomen, gastrointestinal disturbance with loss of weight/ appetite and ascitis in our study (Table 6). These results were in accordance with Jagadeshwari et al,[19] Bhuvnesh et al, [13] and Kuladeepa A et al. [20]

In study conducted by Mishra RK et al [17] and Gupta SC et al, [18] majority of the benign lesions were cystic in consistency and majority of malignant lesions were having mixed consistency. These results were similar to those of our study (Table 7).

CONCLUSION

This study gives the most comprehensive picture of the current status of ovarian lesions, its incidence and histopathologic pattern in Vindhya region. Neoplastic lesions present more commonly for surgical removal than non-neoplastic lesions, while

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benign tumours out-numbered the malignant ones. The commonest benign tumours were surface epithelial tumors. The commonest non-neoplastic lesion was follicular cyst. Most of the benign ovarian tumor presented as cystic mass while malignant ovarian tumor presents as solid as well as solid admixed with cystic. Most common age group affected in non-neoplastic lesions is 20-39, and in neoplastic lesion most common age group affected was 40-59. Most common clinical complaint was Lump abdomen in Neoplastic lesions and Menstrual irregularties in non neoplastic lesions.

Ovarian malignancies often present in advance stages. Many times non-neoplastic and neoplastic ovarian lesions present with similar clinical and radiological findings. So awareness among health workers and female population, educating them, surveillance and screening programme for even trivial complaints like lump abdomen or menstrual irregularties will be helpful in early detection of ovarian lesions.

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