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Clinicopathological correlation of ovarian neoplasms: A 3 years retrospective study at Silcahr Medical College And Hospital, Silchar

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Abstract:
Background: *Ovarian neoplasms present with a wide spectrum of clinical and histopathological features. The main aims and objectives of the study are to study the different histopathological types of ovarian neoplasms, to analyze the clinical data of the patient in regarding ovarian neoplasms and to establish the correlation between the clinical features and histopathological findings.*
Materials and methods*: This retrospective study of three year duration from 2018 to 2021 were conducted in pathology department of Silchar Medical College and Hospital, Silchar, Assam. Total 156 cases with ovarian lesion were studied. Both asymptomatic and symptomatic cases with clinical features such as pain in abdomen, lump in abdomen, anorexia/weight loss, ascites, menstrual abnormalities and their related information about age, bilaterality, gross appearance, size of lesions and histopathological types were collected from records.*
Results: *In the present study 156 cases with ovarian lesion were studied out of which non neoplastic lesions were 95 (60.89%) cases and neoplastic were 45 cases (39.1%). Among neoplastic lesions majority were benign tumours 40/61 (65.57%) then malignant tumors 18/61 (29.5%). Surface epithelial tumours (73.77%) were common histopathological findings with most of the patient present clinically with pain in abdomen in the reproductive age-group(21-40 years).*
Conclusion: *Ovarian neoplasms are one of most researched topics in gynecological pathology. Proper clinical and histopathological correlation of and categorization according to WHO classification of ovarian neoplasm help in early diagnosis as well as prognosis of ovarian neoplasms. Histopathological analysis remains the gold standard for diagnosing ovarian neoplasms.*
Key words: *Ovarian neoplasms, histopathological types, clinical features, clinicopathological correlation, WHO classification*

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I. Introduction

Ovarian pathology is the widest and most complex problems in modern gynecology mainly through ovarian neoplasms[1]. WHO classifies the ovarian neoplasms based on tissue of origin. There are mainly 2 groups of ovarian neoplasms i.e primary or secondary(metastatic). It is the third most common site of primary malignancy in female genital tract after cervix and endometrium[2]. Primary neoplasms of ovary mainly arise from one of the three ovarian components i.e surface epithelium, germ cells or stromal cells. Primary neoplasms comprise mainly benign and malignant lesions; borderline tumours also found in surface epithelial tumours(SET) group. About 80% are benign and these occur mostly in young women. Borderline tumours occur at slightly older ages. Malignant tumours are more common in older women. Ovarian cancer accounts for 3% of all cancers in females and is the fifth most common cause of death due to cancer in women in united states[3]. It is associated with an overall mortality of 75%, but can be cured in up to 90% of cases if diagnosed while still limited to the ovaries. Ovarian neoplasms are often difficult to detect until they are advanced in stage or size, as symptoms are vague and insidious. Around 80% of the cases are diagnosed in advanced stages[4,5]. Identification of various histologic patterns of ovarian neoplasms is important for diagnosis as well as prognosis. Despite the new techniques in imaging and genetics, the diagnosis of ovarian tumours is primarily dependent upon histological examination.

II. Materials and Methods

It is a type of retrospective study conducted in the Department of Pathology, Silchar Medical College and Hospital for a period of 3 years with 156 cases of any age with ovarian lesions.

Study Design: retrospective study
Study Location: Department of Pathology, Silchar Medical College and Hospital, Cachar, Assam, India.
Study Duration: 01/06/2018 to 31/05/2021
Sample Size: 156 cases
Subject selection- Any sample with ovarian lesion sent to the Histopathology section of Department of Pathology,
Inclusion criteria:

1. Patient of any age with ovarian lesion.

Exclusion criteria

1. All non-neoplastic lesions of ovary.
2. All tumour like lesions of ovary.

Procedure methodology: Specimens were received in the form of biopsies or tumor masses resected from operation from the Department of Obstetrics and Gynecology, Silchar Medical College and Hospital. The clinical data of all patients were analyzed to gain as much information as possible and also from the record section of the institute. Specimens received were studied thoroughly to note the gross findings.
All different sections taken from mass and other tissues were put in 10% formalin. The tissues after complete processing were embedded in paraffin, blocks prepared and cut into sections of 5 micron thickness. The sections then stained by routine Hematoxylin and Eosin (H&E) stain. These tumors were classified as per World Health Organization (WHO) classification of ovarian tumors depending on their most probable cell of origin and histopathological findings.

Statistical Analysis: Significant data were entered into a computer. Descriptive statistical analysis has been carried out in the present study. The results were summarized in frequency distribution tables and were interpreted based on the study objectives. The results of categorical data are presented in number (%). **Statistical software:** SPSS version 18 were used for analysis of data and Microsoft Excel and Word have been used to generate graphs and table.

III. Results and Observation

In our study 156 cases with ovarian lesions were studied during 3 years from 2018 to 2021. Among the 156 cases, non neoplastic lesions were found in 95 (60.89%) cases, and neoplastic lesions were in 61 cases (39.1%). Among neoplastic lesions benign lesions were more common 40(65.57%) then malignant 18(29.5%) and 3(4.91%) were borderline tumors. In present study, majority of ovarian neoplasms were unilateral 52 (85.25%) and 09 (14.75%) were bilateral. Out of 61 neoplastic lesions 45 were surface epithelial tumours (73.77%), 12 cases of germ cell tumours (19.67%) and 02 cases of sex cord-stromal tumour (3.28%) and 02(3.28%) cases were metastatic. Surface epithelial tumours comprised 70% (28/40) of all benign tumours, 77.77% (14/18) of all malignant tumours. They were the most common benign and borderline tumours across all age groups, while germ cell tumours were the most common malignant tumours up to 20 years of age. Most germ cell tumours, both benign and malignant were seen in women upto 40 years. All sex-cord stromal tumours (100%) occurred in women above 40 years of age. Malignant tumours were most common between 41-60 years [Table 7]. The most common clinical presentation was pain in abdomen in 37 cases(60.65%) followed by lump in abdomen in 28 cases(45.9%). Most women reported symptoms for a period over 6-12 months, which often progressed gradually. A significant proportion of cases (24.59%) were asymptomatic at presentation and were only incidentally diagnosed [Table 8]. Out of 61 cases of ovarian neoplasms,33 cases including 20 cases of benign tumors, 3 cases of borderline tumors and 10 cases of malignant tumors were observed in the size range of 6-10 cm as shown in Table 5. Largest tumor was Dysgerminoma with diameter of 24 cm. In the present study majority of ovarian tumors were cystic (63.93%), followed by solid(24.59%) and partly solid & cystic (11.48%). Benign tumors were commonly presented with having cystic spaces in 35 cases, partly solid and cystic in 5 cases whereas malignant tumors were commonly presented as solid masses in 15 cases as shown in Table 4. It was observed that contents of cystic spaces in ovarian tumors were serous fluid (24 cases) followed by mucinous fluid (18 cases) , hemorrhagic material (14 cases), and hairy / cheesy material (5 cases).

Table 1: Nature of ovarian lesions(n=156)

Nature of lesion	**Number of cases**	**Percentage**
Non neoplastic	95	60.89%
Neoplastic	61	39.1%
Total	**156**	**100%**

Table 2: Category of ovarian neoplasms (n=61)

Category	Number of cases	Percentage
Benign	40	65.57%
Borderline	3	4.91%
Malignant	18	29.5%
Total	**61**	**100%**

Table 3: Laterality of ovarian neoplasms (n=61)

Laterality	Benign	Borderline	Malignant	Total (61cases)
U/L	36(90%)	2(66.67%)	14(77.78%)	52(85.25%)
B/L	4(10%)	1(33.33%)	4(22.21%)	9(14.75%)

Table 4: Gross appearance of ovarian neoplasms(n=61)

Category	No. of cases	Cystic	Solid	Partly solid & cystic
Benign	40	35	0	5
Borderline	3	2	0	1
Malignant	18	2	15	1
Total (%)	**61(100%)**	**39(63.93%)**	**15(24.59%)**	**7(11.48%)**

Table 5: Size of ovarian neoplasms(n=61)

Category	No. of cases	1-5 cm	6-10cm	11-15cm	16-20cm	21-25cm
Benign	40	14	20	6	0	0
Borderline	3	0	3	0	0	0
Malignant	18	1	10	5	1	1

Table 6: Histopathological types of ovarian neoplasms (n=61)

Histological type	Number of cases	Percentage
Surface epithelial tumours(**SET**)	45	73.77%
Germ cell tumours(**GCT**)	12	19.67%
Sex cord-stromal tumours(**SST**)	2	3.28%
Metastatic(**METS)**	2	3.28%
Total	**61**	**100%**

Table 7: Age-wise incidence of various histopathological types of ovarian neoplasms(n=61)

Age (years)	SET(n=45)			GCT(n=12)		SST(n=2)		METS(n=2)	
	B	BT	M	B	M	B	M	B	M
Upto 20	2	0	0	2	2	0	0	0	0
21-40	16	1	4	6	0	0	0	0	0
41-60	10	2	10	2	0	2	0	0	0
>60	0	0	0	0	0	0	0	0	2
Total	28	3	14	10	2	2	0	0	2

SET=Surface epithelial tumours, **GCT** =Germ cell tumours, **SST** =Sex cord-stromal tumours, **METS=** Metastatic;**B**=Benign,tumours; **BT**=Borderline tumours; **M**=Malignant tumours

Table 8: Clinical features of patients with ovarian neoplasms(n=61)

Clinical presentation	Benign	Borderline	Malignant	Total(%)
Pain in abdomen	20	2	15	37(60.65%)
Lump in abdomen	14	2	12	28(45.9%)
Anorexia /weight loss	6	1	8	15(24.59%)
Menstrual abnormalities	6	1	3	10(16.31%)
Ascites	3	1	4	8(13.11%)
Asymptomatic	14	1	0	15(24.59%)

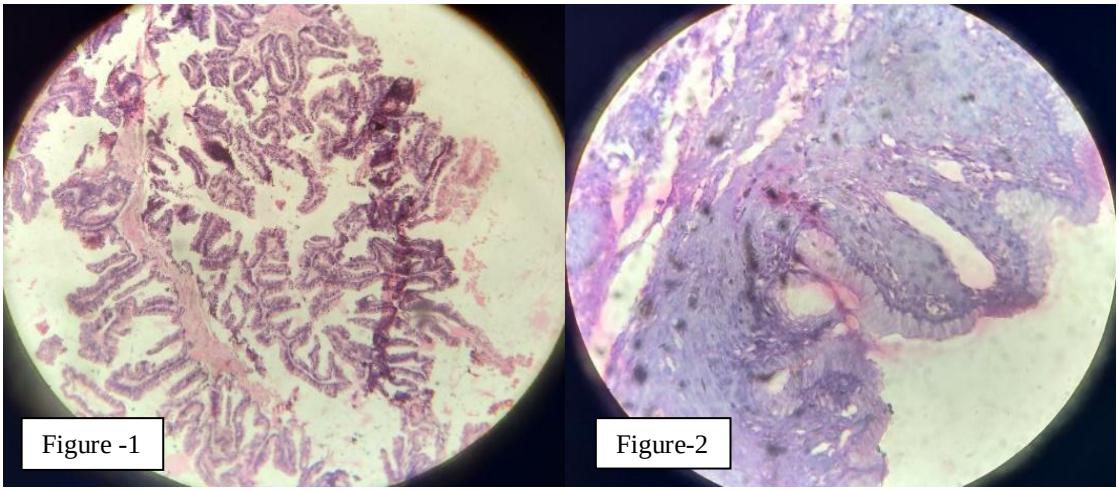

Figure 1: Serous Cystadenoma(Papillary)(100X,H & E), Figure 2: Mucinous Cystadenoma(400X,H & E)

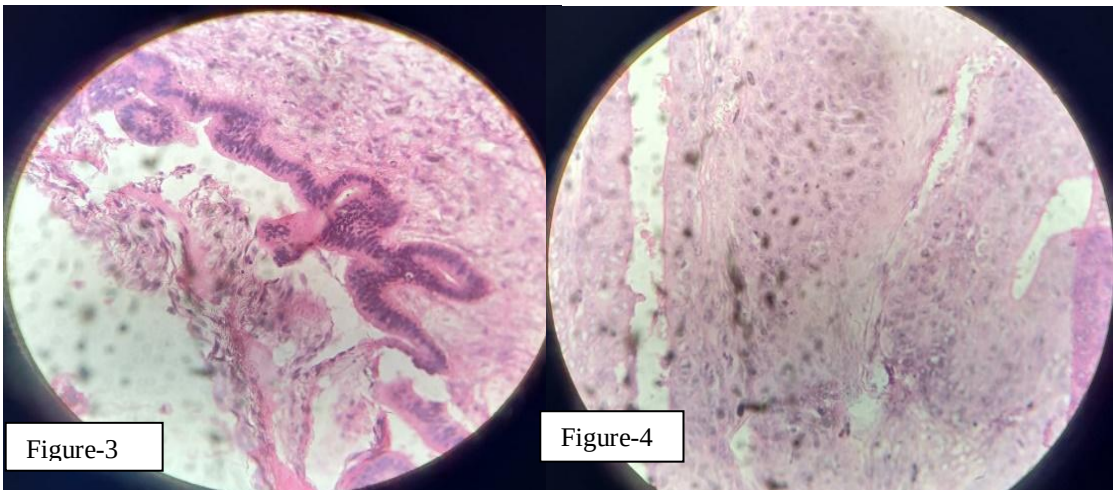

Figure 3:Serous Borderline tumours(100X,H & E), Figure 4: Serous cystadenocarcinoma(400X,H & E)

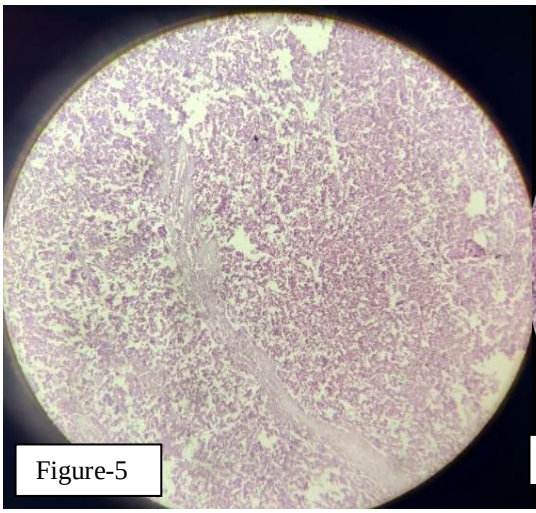

Figure 5: Dysgerminoma(100X,H & E),

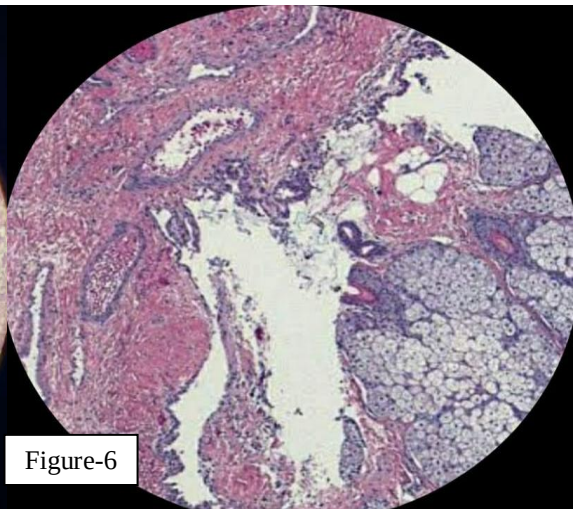

Figure 6: Mature cystic teratoma(100X,H & E)

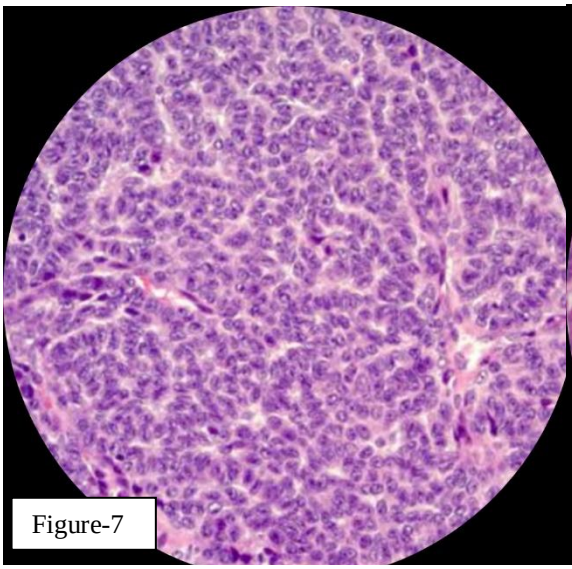

Figure 7: Granulosa Cell Tumour(400X,H & E),

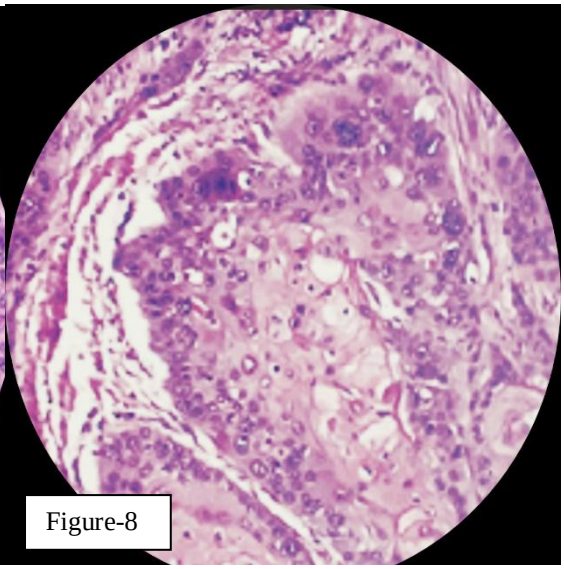

Figure 8: Metastatic(squamous cell carcinoma in mature cystic teratoma(400X,H & E),

IV. Discussion

In the present study, 65.57% tumours were benign, 4.91% were borderline and 29.5% were malignant. According to Pilli et al[6], Gupta et al[4] , Sushama et al[8] the figures were 75.2%, 2.8%, 21.9%, 72.9%, 4.10%, 22.9% and 63.04%, 5.84%, 31.12% for benign, borderline and malignant tumours respectively. The above findings are almost comparable with our study. In our study, majority of ovarian neoplasms were unilateral 52(85.25%) and 09(14.75%) were bilateral. According to study done by Sushma et al[7] and Dr Sachin Sharma et al[8] the finding were 85.25%, 14.75% and 90%, 10% respectively. Histopathologically, surface epithelial tumours were most common type 45(73.77%) followed germ cell tumours 12(19.67%). This agrees with the findings of Gupta et al[7] and others[10-12]. Surface epithelial tumours comprised 70% (28/40) of all benign tumours, 77.77% (14/18) of all malignant tumours. Among benign surface epithelial tumours, serous cystadenomas were the most common. Similar findings were found in Shah et al[10], others[11-13]. Among the malignant surface epithelial tumours, serous cystadenocarcinomas were most commonly found (7/14 i.e 50%), was comparable with the findings of Manker et al[9] (38.75%) and Jha et al[13] (46.2%). Malignant surface epithelial tumours account for 77.77% of all ovarian malignancies. This corresponds with the findings of Manker et al[9], Ahmed et al[14] and Jha et al[13] who reported incidences of 60%, 63.5% and 69.2% respectively for surface epithelial malignancies. A majority of the tumours diagnosed in our study occurred in the 21-40 years and 41-60 years age-groups [Table 7]. Similar findings were found by Pilli et al[6], Shah et al[10] and Jha et al[13] but according to the study of Dr Sachin Sharma et al[8] maximum number of cases were found in the age group of 41-60 years followed by 21-40 years. Most (12/18, 66.67%) malignant tumours were found in women above 40 years of age. Almost Similar finding was found by Dr Sachin Sharma et al[8] and Basic et al[15] . In our study , among malignant

ovarian neoplasms 33.33% found in women below 40 years but according to Basic et al[15] there was no ovarian cancers below 40 years of age. Shah et al[10] and Wasim et al[16] also found ovarian cancers were unusual before age of 40 years. The most common clinical presentation was pain in abdomen in 37 cases (60.65%) followed by lump in abdomen in 28 cases(45.9%). Most women reported symptoms for a period over 6-12 months, which often progressed gradually. A Study done by Sushma et al[7] found pain of abdomen as predominant clinical feature of ovarian neoplasms and most of them were presented with symptoms of 1-6 months duration. A significant proportion of cases (24.59%) were asymptomatic at presentation and were only incidentally diagnosed [Table 8]. In our study, Out of 61 cases of ovarian neoplasms,33 cases(54.1%) including 20 cases of benign tumors, 3 cases of borderline tumors and 10 cases of malignant tumors were observed in the size range of 6-10 cm as shown in Table 5. Largest tumor was Dysgerminoma with diameter 24 cm. According to study conducted by Gupta et al[18] , Manoja et al[19] maximum number of cases were in size range of 5–10 cm. In the present study, majority of ovarian tumors were cystic (63.93%), followed by solid(24.59%) and partly solid & cystic (11.48%). The study done by Garg et al[20] , Kanpurwala et al[21] & Gupta et[18] al had a similar observation of cystic as a most common consistency.

V. Conclusion

There is wide spectrum of clinical and pathological features of ovarian neoplasms. Clinical features, gross appearance and histopathological examination should be studied properly for clinicopathological correlation and categorization according to WHO classification ,which are important in early diagnosis, proper management and prognosis of patient. Histopathological examination remains the gold standard for diagnosing ovarian neoplasms.

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