European Journal of Molecular & Clinical Medicine

ISSN 2515-8260 Volume 9, Issue 6, Summer 2022

ORIGINAL RESEARCH

Histopathological Spectrum of Ovarian Lesions in Surgical Pathology Specimen at Tertiary Care

[1]Ritu Sharma, [2]Rajeev Saxena, [3]Mayank Sharma, [4]Preeti Pathak

[1]Resident, [2]Senior Professor &Head, [3,4]Assistant Professor, Department of Pathology, Government Medical College, Kota, Rajasthan, India

Correspondence:
Preeti Pathak
Assistant Professor, Department of Pathology, Government Medical College, Kota, Rajasthan, India
Email: Parashardrnishant@gmail.com

ABSTRACT

Introduction: ovary being complex and unique organ include wide spectrum of neoplasm involving a variety of histological pattern.

Aim: To evaluate the incidence and distribution of different histopathological subtypes of Ovarian neoplastic and non-neoplastic lesions.

Methods: The descriptive study based on histomorphological evaluation of 150 cases of Ovarian neoplastic and non-neoplastic lesions received at the department of Pathology, Government Medical College Kota from Jan 2020 to Dec 2020.Institutional Ethics Committee permission was taken before the start of the study adopting the standard Institutional procedures.

Results: out of 150 cases 90 cases were non-neoplastic while remaining 53 cases were neoplastic. The most common nonneoplastic lesion was follicular cyst (81.11%). Out of 53 neoplastic 32(61.53%) were benign and surface epithelial lesions 34 cases (64.15%) was most common histological subtype. 50 % tumors were present in reproductive age group, mostly unilateral. The increasing incidence of malignancy with increasing age was found to be statistically significant.

Conclusion: non-neoplastic as well as neoplastic lesions of ovary often present with similar clinical and radiological features. So histopathological study is essential to diagnose ovarian tumours and predict their prognosis.

Keywords: Histopathology, Neoplastic, Non-Neoplastic Lesions, Ovarian Lesion.

INTRODUCTION

Ovary being complex and unique organ include wide spectrum of neoplasm involving a variety of histological pattern ranging from epithelial tissue, specialized hormone secreting germinal and embryonal cell.Ovarian cancer is the fifth most common malignancy among women and second most common gynecologic malignancy. It is the most common cause of death due to malignancy of female genital tract. Ovarian malignancies constitute about 4% of the total cancers in females and 25% of malignant tumors of the female genital tract. In India, the ovary is next in importance to cervix as the seat of cancer of female genital system. Surface epithelial ovarian tumors constitute two thirds of all ovarian tumors and malignant forms account for 90% of ovarian cancers. They exist in different histological patterns and exhibit varying degree of aggressiveness. The aetiology of ovarian cancer is not known, epidemiology and animal investigations have not provided clues to the aetiology of ovarian cancer.[1]

Most ovarian tumours are diagnosed late and thus have a poor prognosis. Many factors have been found to correlate with prognosis in patient with ovarian neoplasms. These include tumours stage, histologic type, tumour grade, residual disease, ascites, psammoma bodies, site of metastases, age, race, ploidy and presenting symptoms.[2]

The incidence and clinical presentation of the different ovarian tumors is extremely variable. The preoperative diagnosis of the tumors is often difficult with only clinical examination and even on exploration, though some investigations like peritoneal fluid cytology or serum LDH may help in predicting the nature of pathology. Hence one has to depend on the microscopic appearance of the tumor for further management.[3]Thus studying the histopathological spectrum of the ovarian tumors will help to understand the relative incidence of malignancy over benign, distribution of different tumors according to age. Studying the correlation of tumors with various parameters like age at menarche, menstrual status and parity can help to understand the risk factors and pathogenesis of ovarian tumors. This study can also contribute to understand the correlation of gross morphological features with histopathological diagnosis which can certainly help us to arrive at a close differential diagnosis even only with gross examination alone in future.

AIM

To evaluate the incidence and distribution of different histopathological subtypes of Ovarian neoplastic and non-neoplastic lesions.

METHODS

The descriptive study based on histomorphological evaluation of 150 cases of Ovarian neoplastic and non-neoplastic lesions received at the department of Pathology, Government Medical College Kota from Jan 2020 to Dec 2020.Institutional Ethics Committee permission was taken before the start of the study adopting the standard Institutional procedures. All ovarian lesion, irrespective of their clinical features, stage of the disease or type of surgical procedure implemented, Hysterectomy specimens with incidental ovarian tumors were included. Non neoplastic ovarian lesions like simple ovarian cyst, tubo- ovarian mass and polycystic ovaries were excluded.

Relevant data like parity, clinical presentation, age of the patient was collected in a proforma. For specimens of ovarian lesion from Jan 2020 to Dec 2020, gross observation of the specimens received was done. For proper fixation, tumors were cut serially at 1cm thickness. The specimens were fixed in 10% formalin for 24-48 hours. After fixation, sections were given from representative areas. Sections were cut at 4-5 micrometer thickness & stained with H&E. Slides and blocks were retrieved for cases from Jan 2020 to Dec 2020. All stained histopathology slides were studied in detail. Histopathology reports for each tumor were retrieved from department of pathology, Government Medical College. Special stains of PAS, Reticulin were done whenever necessary. All details of the specimen consisting of gross features, microscopic features and final diagnosis were studied. World Health Organization classification was used for classifying the tumors Analysis. Data thus collected was entered in Microsoft excel 2007 and appropriate statistical tests were applied using appropriate software, considering p value <0.05 as statistically significant.

RESULTS

Total 150 cases of ovarian pathologies were studied, in which 90 cases were non-neoplastic while remaining 53 cases were neoplastic. The majority of tumors, 130 out of 150 (90.6 %) were present between 3rd to 6th decade. Below 20 years and above 60 years only one tenth tumors were seen.

Among neoplastic lesions, majority of the cases were seen in age group of 20-39 years i.e., 50.94%.Non neoplastic lesion occurred in all age group, but majority of the incidences were seen in the age group of 40 to 59 years of age, accounting for 56.66 % of total occurrence.Most of the tumors were unilateral. 42 out of the 150 tumors (28%) had bilateral presentation.

The most common non neoplastic lesion was follicular cyst (81.11%), followed by corpus luteal cyst (15.55%), endometriosis (3.3%). In majority of cases these were the incidental findings.In histologic subtypes, surface epithelial lesions were most common and total 34 cases (64.15%) were found, followed by 15 cases (28.3%) of germ cell tumour, 4 cases (7.54%) of sex cord stromal tumour.

Surface epithelial tumors were uncommon to present in adolescent age group whereas germ cell tumors had predilection for this age group. After age of 40 years, surface epithelial was the predominating category with rare germ cell tumors.

Benign serous cystadenoma was the commonest histopathological pattern encountered in present study contributing to 30.18% followed by benign mucinous cystadenoma. Only single case each of thecoma and sex cord tumor seen. No Metastatic tumors were seen in this study.

In patients less than 20 years of age, most of the tumors were benign except malignant germ cell tumors which affected this age group most commonly.

Out of 150 cases in our study, we found neoplastic lesions of ovary in 53 cases. Among these cases 32 cases (61.53 %) were benign, 1cases (1.99%) were borderline tumours and 19 cases (31.53 %) were diagnosed malignant. Malignant tumors commonly affected older age group (>40 years) with only malignant germ cell tumors involving younger age group. On the contrary, benign tumors predominantly involved patients < 40-year age. The increasing incidence of malignancy with increasing age was found to be statistically significant.

Table 1: Age Distribution

Age	No. of Patients	%
< 20	7	4.66
21-30	25	16.66
31-40	43	28.66
41-50	47	31.33
51-60	21	14
> 60	7	4.6
Laterality		
UL	108	72
BL	42	28

Table2: Histological Type of Lesion

Nonneoplastic Lesion	No. of patients	%
Follicular Cyst	73	81.11
Corpus Leutal Cyst	14	15.56
Endometriosis	3	3.33
Neoplastic Lesion		
Surface Epithelial Tumors	34	64.15
Germ Cell Tumor	15	28.3
Sex Cord Stronal Tumors	4	7.54
Metastatic Tumors	0	0

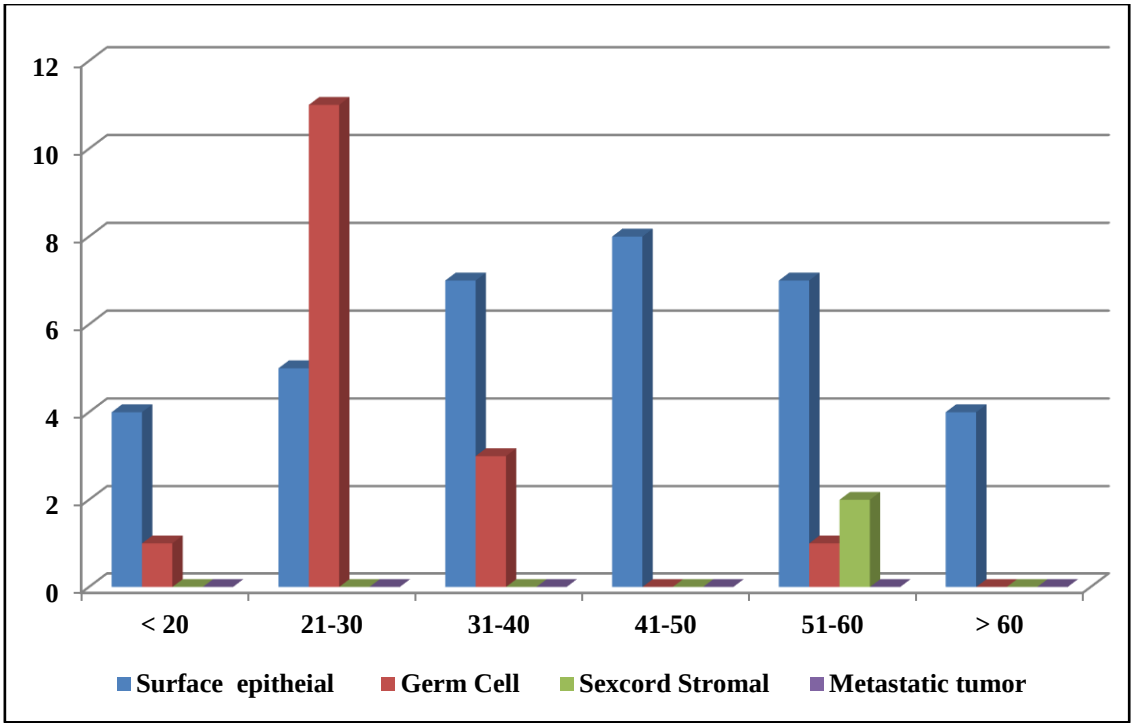

Fig: 1 Age Distribution of the Major Tumor Categories

Table 3: Age Distribution of The Various Histomorphological Types of The Tumors

Type of tumor	< 20	21-30	31-40	41-50	51-60	> 60
Serous Cystadenoma	2	2	7	4	1	1
Serous Cystadenofibroma	1	1	0	0	0	0
Mucinous Cystadenoma	0	1	1	1	1	0
Mucinous Cystadenofibroma	0	0	0	0	1	0
Endometrioid Adenofibroma	0	0	0	0	0	0
Mature Cystic Teratoma	0	7	2	0	0	1
Fibroma	0	0	0	0	0	0
Thecoma	0	0	0	0	0	0
Fibrothecoma	0	0	0	0	0	0
Granulosa Cell Tumor	0	1	0	2	0	0
Sertoli Cell Tumor	0	0	0	0	0	0
Sex Cord Tumor with Annular Tubules	0	0	0	0	0	0
Borderline Serous Tumor	0	0	0	0	1	0
Serous Cystadenocarcinoma	0	0	0	2	4	2
Borderline Mucinous Tumor	0	0	0	0	0	0
Mucinous Cystadenocarcinoma	0	0	0	0	0	0
Endometrioid Carcinoma	0	0	0	0	0	0
Clear Cell Carcinoma	0	0	0	0	0	0
Dysgerminoma	0	0	0	0	0	0
Mixed Germ Cell Tumor	0	0	0	0	0	0
Granulosa Cell Tumor	0	0	0	0	0	0
Metastatic	0	0	0	0	0	0

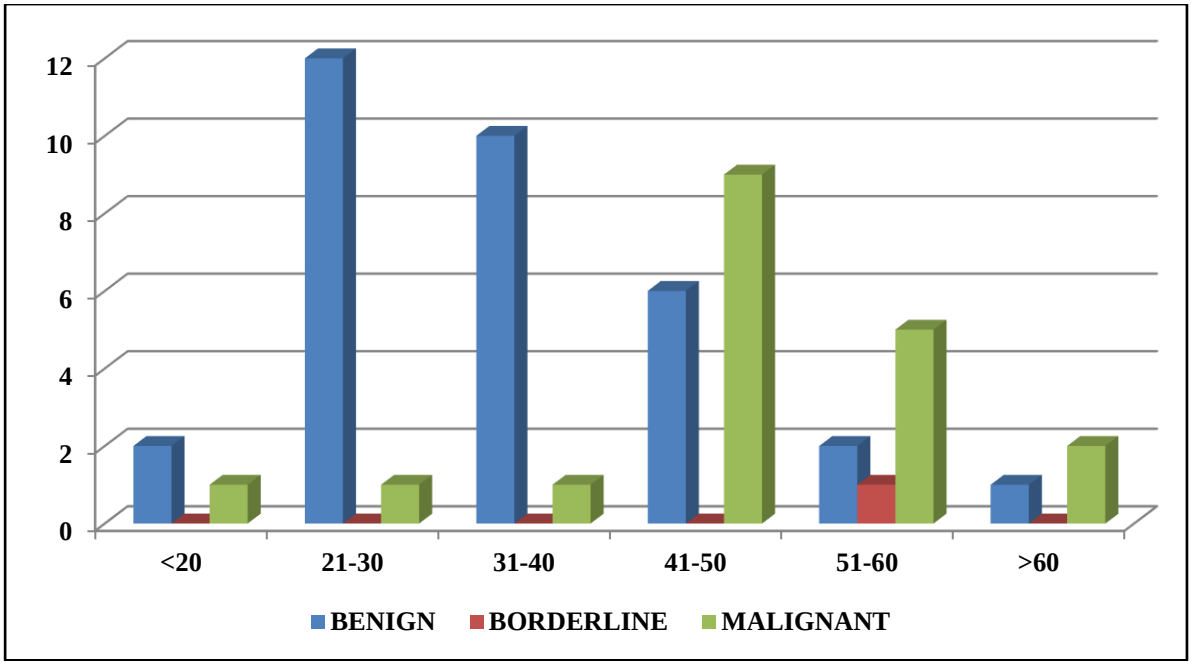

Fig 2: Age Distribution Of The Benign / Borderline / Malignant Ovarian Tumors

DISCUSSION

Ovarian tumors are common in all age groups and no age is exempted. The age range in the present study was 14 to 76 years. The youngest patient in this study was a 10-year-old girl with left sided dysgerminoma measuring 17x14x10 cms which is the most common germ cell tumor of adolescent age group. She presented with mass per abdomen. The oldest patient was a 76-year-old lady with unilateral serous cystadenocarcinoma with omental deposits. She presented with ascites and the tumor was measuring 5x4x3 cms. The maximum number of cases in present study were between 21 and 60 years. This age group included 89.7% of tumors. This was in concordance with studies in table 4.

Table 4: Comparison with other studies

Sr.No.	Age(Yr)	Presentstudy	Pilli et al[4]	R Jha et al[5]	Kayastha et al[6]	Kar et al[7]
1.	**<20**	4.66	7 %	6.8 %	6.3 %	7 %
2.	**21-30**	16.66	58 %	20.5 %	28.5 %	42 %
3.	**31-40**	28.66		26.7 %	27.4 %	
4.	**41-50**	31.33	30 %	21.1 %	26.3 %	46 %
5.	**51-60**	4.66		14.3 %	11.6 %	
6.	**>60**	16.66	5 %	10.6 %		5 %

The comparative analysis with above studies revealed similar results as present study. 2nd to 5th decade was the most common age group affected. Adolescent age group constituted 4.32 % in this study. This is also comparable to study done by Deshpande et al where the incidence of ovarian tumors in this age group was 4.2 %.[8]

Some of the ovarian tumors may be incidentally diagnosed on ultrasound whereas others may be symptomatic. Present study reveals that the presentation of the ovarian tumors is variable. If patient presented with more than one complaint, then the predominant symptom was considered as the presenting symptom. In the present study the commonest presenting symptom was pain in the abdomen 209 (69.43%) followed by mass abdomen 43 (14.28 %). Ascites was present in 23 (7.64 %) patients whereas menstrual irregularities including post menopausal bleeding in 19 (6.31 %). Asymptomatic patients were only 7 (2.32 %) with these tumors being incidentally diagnosed on ultrasound done for other cause or as a routine work up. The results comply well with a study carried out by Rashid et al, in which abdominal pain

was the commonest presenting complaint (59%) followed by abdominal mass/distension (37%).[9] Study done by Sumaria Yasmin et al showed similar findings.[10] In contrast to this, in another retrospective analysis by Jamal et al the commonest mode of presentation was bleeding per vaginum, followed by pain abdomen, pelvic mass and gastric intestinal symptoms.[11]

In the present study most of the tumors were unilateral. Only 33 out 301 tumors (constituting almost 11%) had bilateral presentation. Among bilateral tumors 21 (64%) were malignant. Thus among bilateral tumors, malignant tumors are more common. 21 out of 76 (27.63 %) malignant tumors presented bilaterally as against 12 out of 225 (5.33 %) benign tumors. This finding was similar to study done by R Jha et al who encountered only 6.7 % benign tumors and 42.3 % malignant tumors presenting bilaterally.[5] Compared to the present study, higher incidence of bilaterality was present in the study by Kar et al which showed 26.8% bilaterality.[6] Out of 12 cases of endometrioid carcinoma present in this study 6 (50%) had bilateral presentation. Serous carcinoma showed 42.85 % and mucinous carcinoma 33.33 % bilaterality. The most common benign tumor to present bilaterally was mature cystic teratoma, which showed 23.8 % bilaterality. Tumours in the sex cord stromal category are almost always confined to a single ovary, similar observation is made in this study.[10] From 32 sex-cord stromal tumors, none had bilateral presentation. As seen in study by Zhao et al most of the metastatic tumors occur in premenopausal patients and have bilateral presentation.[12] In the present study all the metastatic tumors had bilateral presentation. Ovarian dermoids can be bilateral in 15% cases.[13]

Largest dimension of the tumor was utilized to categorize the tumors according to the size. In present study tumors ranged in size from 3cms to 32 cms. Almost all the tumors i.e. 276 (91.69%) were less than 20 cms in the largest dimension. Only 24 tumors had their largest dimension between 21 to 30 cms. The largest tumor was measuring 32x25x12 cms which was unilateral benign serous cystadenoma affecting a 27-year-old lady. Bilateral endometrioid adenocarcinoma was the smallest tumor in this study measuring 3x2x1.5 cms present in a 55-year lady.This finding correlated with study by Pilli et al, In their study the largest tumor measured 33x23x22 cms and smallest one measured 3x2x1 cms.[4]

In this study WHO classification was implemented to classify the tumors. Surface epithelial tumors constituted the most common category in the present study contributing to 80.73 % of all tumors followed by germ cell tumors, sex cord stromal tumors and metastatic tumors in decreasing order of frequency as seen in other studies from India and neighboring countries like Pakistan and Nepal.

Table 5: Comparison with other studies

Histopathological type	Present study	Shahbaz et al[14]	Naseer et al[15]	Kar et al[7]	Pilli et al[4]	Kayasth et al[6]
SurfaceEpithelial Tumors	64.15	83.3%	81.0%	79%	70.9%	72.6%
Germ Cell Tumors	28.3	14.0%	10.95%	16%	21.2%	25.3%
Sex Cord Stromal Tumors	7.54	2.7%	5.03%	1.5%	6.7%	2.10%
Metastatic Tumors		-	1.58%	3.5%	0.7%	-

Benign serous cystadenoma was the commonest tumor type with 35.54% of tumors. This was followed by benign mucinous cystadenoma having incidence of 21.26%. Cases of Serous, mucinous and endometrioid cystadenofibromas were also reported. Among malignant tumors, serous cystadenocarcinoma was the most common category followed by mucinous cystadenocarcinomas. Cases of endometrioid and clear cell carcinomas were also present. In borderline surface epithelial tumor category borderline mucinous tumor dominated the category along with only 2 cases of serous borderline tumors. No transitional cell tumors were seen in this study. Benign mature cystic teratoma was the most common germ cell tumor whereas fibroma and granulosa cell tumor were the most common sex cord stromal

tumors. Some differences in incidence of certain ovarian tumors in the study population were noticed when compared to other studies. The most marked one was the higher incidence of endometrioid adenocarcinoma in the present study, with 12 cases being reported. Another important feature regarding this tumor category was high incidence of bilateral presentation which was observed in 50% cases. Another important difference was in the incidence of the borderline surface epithelial tumors with higher incidence recorded in present study. Both differences in tumor morphology, the higher incidence of endometrioid carcinoma type and borderline grade are among better prognostic criteria.

Out of 301 cases studied, majority were benign tumors [225 (74.75%)], followed by malignancy [63(20.93 %)] and [13(4.32 %)] cases of borderline malignancy were found.

Table 6: Comparison with other studies

SrNo.	Type Of Tumor	Present Study	Naseer et al [15]	R Jha et al[5]
1.	Serous Cystadenoma	30.18	42.07	27.33%
2.	Serous Cystadenofibroma	3.77		0.62%
3.	Borderline Serous Tumor	1.88	-	-
4.	Serous Cystadenocarcinoma	16.98	8.78%	7.45%
5.	Mucinous Cystadenoma	5.66	16.85%	13.04%
6.	Mucinous Cystadenofibroma	0		-
7.	Borderline Mucinous Tumor	0	-	-
8.	Mucinous Cystadenocarcinoma	1.88	12.11%	3.73%
9.	Endometrioid Adenofibroma	0	-	-
10.	EndometrioidCarcinoma	3.77	-	-
11.	Clear Cell Carcinoma	0	-	-
12.	Mature Cystic Teratoma	18.86	7.2%	40.37%
13.	Dysgerminoma	1.88	2.73%	-
14.	Mixed Germ Cell Tumors	1.88	-	-
15.	Fibroma	0	1.29%	0.62
16.	Thecoma	0	0.41%	1.86
17.	Fibrothecoma	1.88	-	-
18.	Granulosa Cell Tumor	3.77	3.6%	0.62
19.	Sertoli Cell Tumor	0	-	-
20.	SCTAT	0	-	-
21.	Metastatic	0	1.58%	1.24

(SCTAT- Sex Cord Stromal Tumor with Annular Tubules)

Table 7: Comparison with other studies

Sr.No.	Nature of Tumor	Present study	Pilli et al[4]	Naseer et al[15]	R Jha et al[5]	Kayastha et al[6]	Sumaria et al[10]
1.	Benign	61.53	75%	68.25%	83.9%	90.5%	89.71%
2.	Borderline	1.92	3%	0.72%	-	-	-
3.	Malignant	36.53	22%	30.96%	16.1%	9.5%	10.29%

These findings were similar to studies done by Pilli et al and Nasser et al other studies recorded higher incidence of benign tumors.

Underage of 20 years, benign tumors were common than malignant tumors. All the malignant tumors in this age group belonged to germ cell tumors, dysgerminoma or malignant mixed germ cell tumor. Underage of 40 years majority of the tumors were benign with malignant tumors contributing to only 14.10%. Above the age of 40 years much higher incidence of malignancy was noted with 37.88% malignant tumors.

CONCLUSION

In our study non-neoplastic ovarian lesions were more commonly seen than neoplastic lesions, benign tumours were more common than malignant. Surface epithelial tumours were most common histologic type in all age groups. while serous adenocarcinoma was most common ovarian malignancy seen. Ovarian malignancies behave like "Silent Killer" as they present in advanced stage. Both non-neoplastic as well as neoplastic lesions of ovary often present with similar clinical and radiological features. So histopathological study is essential to diagnose ovarian tumours and predict their prognosis.

REFERENCES

1. Mario M. Leito et al. Clinopathologic analysis of early-stagesporadic ovarian carcinoma. Am J Surg Pathol. 2004;28(2):1-7.
2. Ramesh Dawar et al. Surface epithelial tumors of ovary. Indian Journal Of Medical And Paediatric Oncology 2004; 25(1): 5-9.
3. Bhattacharya MM et al. A Clinicopathological analysis of 270 ovarian tumors. Journal of postgraduate medicine 1980;26.2; 103-7.
4. Ganga S Pilli, K.P.Sunitha, A.V.Dhaded, V V.Yenni. Ovarian tumors a study of 282 cases. J Indian Med Associ 2002; 100(7): 420-424.
5. R Jha and S Karki. Histological pattern of ovarian tumors and their age distribution. Nepal Med Coll J 2008; 10(2): 81-85
6. S Kayastha. Study of ovarian tumours in Nepal Medical CollegeTeaching Hospital. Nepal Med Coll J 2009; 11(3): 200-202
7. Kar Tushar, Kar Asanranthi Mohapatra PC. Intraoperative cytology of ovarian tumours, J Obstet Gynecol India 2005; 55(4): 345-349.
8. Deshpande et al. a study of ovarian enlargement in adolescent girls. J Obstet Gynaecol India 1983;33:812-16.
9. Rashid S, Sarwar G, Ali A. A clinicopathological Study of ovarian cancer. Departments of Radiotherapy and oncology Sir Ganga Ram Hospital and Mayo Hospital Lahore. J Pak Med Assoc 1998;36;117–25.
10. Sumaira Yasmin, Aiman Yasmin et al Clinicohistological Pattern Of Ovarian Tumors In Peshawar Region. J Ayub Med Coll Abbottabad 2008;20(4).
11. Jamal S, Quddusi H, Mehmood A. A Clinico Histopathologicalanalysis of 110 ovarian tumours. Pak J Med Sci 1997;14:19–23.\
12. Zhao J Z et al. Clinicopathological features and prognosis of 68 patients with metastatic ovarian tumors from the gastric cancer. Chinese journal of gastrointestinal surgery. 2010 Mar;13(2):129-32.
13. Sinha R, Sethi S et al. Multiple and Bilateral Dermoids: A Case Report J Minim Invasive Gynecol. 2010 March - April;17(2):235- 238.
14. CM Shahbaz Sarwar, Neelam Siddiqui, Rizwan Anwar Khokhar et al. Epithelial Ovarian Cancer at a Cancer Hospital in a Developing Country. Asian Pacific J Cancer Prev, 7, 595-598.
15. Naseer A Shaikh, Fazila Hashmi, Rukhsana Parveen Samoo. Pattern of ovarian tumors: report of 15 years' experience at Liaquat University Jamshoro.J Liaquat Uni Med Health Sci Jan – Apr 2007;6(1):13-5.