



ISSN: 0975-833X

Available online at <http://www.ijournalcra.com>

International Journal of Current Research
Vol. 15, Issue, 04, pp.24316-24320, April, 2023
DOI: <https://doi.org/10.24941/ijcr.45088.04.2023>

INTERNATIONAL JOURNAL
OF CURRENT RESEARCH

RESEARCH ARTICLE

HISTOPATHOLOGICAL AND CLINICAL STUDY OF OVARIAN TUMORS

Maryia Shafiki¹, Umera Ikram², *Imran Jan³ and Ruby Reshi⁴

¹Post Graduate, Department of Pathology, Govt. Medical College Srinagar, J&K; ²Post Graduate, Department of Pathology, Govt. Medical College Srinagar, J&K; ³Senior Resident, Department of Orthopedics, Govt. Medical College Anantnag, J&K. ⁴Principal, Govt. Medical College Baramulla, J&K

ARTICLE INFO

Article History:

Received 04th January, 2023
Received in revised form
10th February, 2023
Accepted 16th March, 2023
Published online 25th April, 2023

Key words:

Ovarian Tumors, Benign Serous
Cystadenoma, Epithelial Tumors, Germ
Cell Tumor.

*Corresponding Author: Imran Jan

Copyright©2023, Maryia Shafiki et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Citation: Maryia Shafiki, Umera Ikram, RubyReshi and Imran Jan. 2023. "Histopathological and Clinical Study of Ovarian Tumors". International Journal of Current Research, 15, (04), 24316-24320.

ABSTRACT

Background: Ovarian tumors are one of the leading cancers in females with variable pathological types. This study describes the distribution, clinical and pathological details of various histopathological types of ovarian tumors in a tertiary care hospital. **Aim:** To study the histopathological pattern of ovarian tumors. To determine the stage and grade of the ovarian tumors. **Material and method:** An observational study of 2 years from Aug 2019 to July 2021, for ovarian tumors submitted to the pathology department of a tertiary care hospital. Data were classified according to the latest World Health Organization (WHO) Classification into epithelial tumors, germ cell tumors, sex cord-stromal tumors, and others. **Result:** A total of 260 cases of ovarian tumors were studied, 243 were unilateral and 17 were bilateral. Epithelial tumors formed the majority in 75% of cases followed by germ cell tumors 21.15%, sex cord-stromal tumors (3.08%). Maximum number of cases in the respective groups occurred in the age groups 20-39 years. Overall, benign tumors were 80.76%, malignant tumors were 17.69%, and borderline were 1.54%. The most common histopathological type of benign and malignant tumor was benign serous cystadenoma (27.30%), serous borderline tumor (0.38%) and serous carcinoma (9.23%), respectively. **Conclusion:** In the present study, ovarian tumors were classified according to the WHO classification, epithelial and germ cell tumors were the major types of ovarian tumors. Benign epithelial tumor formed the majority with 46.2% cases. Serous cystadenoma and mature cystic teratoma were the predominant type of epithelial and germ cell tumors, respectively.

INTRODUCTION

Ovary is an important organ as it is concerned with the production of progeny.¹ Ovarian cancer is the 5th most common malignancy among women, and 5th most common form of cancer related death in females. The 2nd most common gynecological malignancy. It is the most common cause of death due to malignancy of female genital tract. Ovarian malignancies constitute about 25% of malignant tumors of the female genital tract. The poor survival is due to the fact that that do not clinically manifest early and approximately 60-70% of the neoplasm present as either stage 3 or stage 4. Approximately 7% of lesions presenting clinically as primary ovarian tumors are of metastatic origin. Natural history and response to treatment vary considerably from one group of tumors to others. As there are no screening tests for ovarian tumors and these tumors cannot be confidently distinguished from one another on the basis of their clinical, radiological or gross characteristics, it is important to determine the histological pattern of ovarian tumor to achieve the optimum treatment response as prognosis depends on the degree of differentiation.^{2-5.}

The incidence of ovarian carcinoma is greater in high income countries compared to middle and low income countries. In 2012, approximately 239,000 cases were recorded, which account for nearly 4% of all new cases of carcinoma in women (2% overall). Around the world, the incidence rate of ovarian carcinoma is 11 per 100,000 in Central and Eastern Europe, 5 per 100,000 in Africa, 11.7 per 100,000 in the US, 5.2 per 100,000 in Brazil, and 4.1 per 100,000 in China.³ In India, the ovarian cancer incidence (age-adjusted rate per 100,000) in different population-based cancer registries is reported to range from 1.7 to 15.2 for the year 2012 to 2014. An increasing trend of this cancer has been observed since 1982 to date. The projected number of cases for this cancer in India for 2015 and 2020 are 45,231 and 59,276, respectively.⁶ Most common types of lesions encountered in the ovary include functional or benign cysts and tumors.⁷ Inflammatory lesions of ovary include oophoritis, are very uncommon and on rare occasion may have an autoimmune basis (autoimmune oophoritis); the autoimmune reactions affect the ovarian follicles and may lead to infertility.⁸ Neoplastic conditions form a complicating and baffling subject in the history of oncology because of the varied histogenetic background.⁹

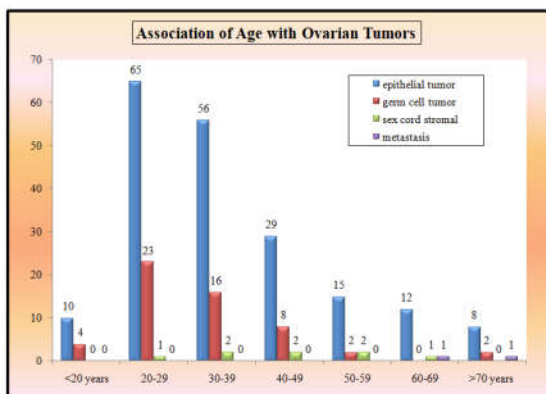
The vast majority of ovarian tumors are benign and these occur mostly in young women between the age of 20-45 years.¹⁰ Overall they fall into benign, borderline, and malignant categories. Borderline tumors occur at slightly older ages. Malignant tumors are more common in older women, between the ages of 45 and 65 years.¹¹

MATERIALS AND METHODS

The present study was an observational cross sectional study over a period of 2 years from Aug 2019 to July 2021 in the department of pathology, Govt. Medical College and Associated Hospital Srinagar. All resected ovarian specimens received by Department of Pathology were properly labeled, numbered and kept for overnight fixation in 10 percent formalin. The specimen was subjected to macroscopic description and appropriate relevant clinical and radiological details were noted down on the annexure form attached, as information was mentioned on the histopathological requisition forms. Sections of 5 microns was taken from paraffin embedded tissue blocks and stained routinely with Haematoxylin and Eosin (H&E). Standard tissue sections were examined for microscopic features. This study was followed as per Modified WHO Classification of ovarian tumors and grading by FIGO Grading Scheme.

Observation

- **HISTOLOGICAL PATTERN:** The tumors were classified according to WHO histologic classification of ovarian tumors and the incidence of different histological types noted. The surface epithelial tumors are the commonest tumors accounting for 195 cases, germ cell tumors are 55 cases, sex cord stromal tumors are 8 cases and metastatic tumors account for 2 cases.
- **DISTRIBUTION OF TUMOR:** Out of 260 cases, 210 were benign, 4 were borderline, 46 were malignant including 2 cases of metastasis.
- **AGE INCIDENCE:** The age incidence in this study, the age occurrence was ranging from 10 to 80 years. According to their age, the patients were divided into seven groups, highest incidence is seen among the aged group of 20-29 years and 30-39 years. After the age of 70 years the incidence is lowest. In <20 years age 10 cases were of epithelial tumors were seen. Maximum number of germ cell tumor were seen in age group 20-29 years i.e., 23 cases (41%) both cases of metastasis are seen in age 60 years and above. Benign tumors were most common in the age group of 20-29 years (84 cases, 40%). Only 4 cases of borderline tumors were observed in our study of which 3 were in the age group of 30-39 years and one in 20-29 years. Malignant tumors were common in age group of 40-49 years (15 cases, 32.6%) followed closely in age group of 50-59 years (11 cases, 23.9%).



- **Consistency:** The cystic consistency is seen in 167 cases, while the solid consistency was least seen 12 cases (4.62%).
- **Laterality:** Left sided tumors of ovary 122 (46.92%) were almost equal to right sided tumors 121 (46.54%). 17 (5.54%) cases were bilateral. Unilateral tumors 243 (93.46%) were seen more than bilateral involvement of ovaries 17 cases (6.5%)

- **Clinical features:** Patients presented with a variety of symptoms. Commonest symptom was abdominal pain in lower abdomen and mass per abdomen. The symptoms due to pressure on urinary bladder and rectum like retention of urine, dysuria and constipation were also encountered. Some patients also complained of constitutional symptoms like fever, backache, loss of weight and appetite. Ascites was also seen in 9 patients. Dysmenorrhoea was also seen in 10 patients (3.84%).

DISCUSSION

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 75% of all tumors followed by Germ cell tumors (21.1%), sex cord stromal tumors (3.08%) and metastatic tumors (0.77%). These results were closer to the findings of Garg N et al.¹⁴ and Maurya G et al.¹⁷

DISTRIBUTION OF TUMOR: In the present study, a total 260 ovarian tumor specimens were examined. Out of which, 210 cases (80.76%) were benign, 4 (1.54%) were borderline and 46 (17.69%) were malignant. Similar results were observed by Swati et al¹⁸ and Garg N et al¹⁴ where benign tumors constituted 80.83 and 81.2%, borderline tumors constituted 1.67% and 1.2%, and malignant tumors constituted 17.5% and 17.6% of tumors respectively. 24 cases of malignant serous tumors were seen accounting for 9.32% in the present study, which is comparable to the study done Kanthikar et al¹ (8.57%). In comparison to Patel A et al¹⁶ and Kanthikar et al¹, benign cases were more in the present study (23.83% of all ovarian tumors) while mucinous cystadenocarcinoma (5.38% of all ovarian cases) was comparable to the study conducted by Kanthikar et al¹ (4.28%).

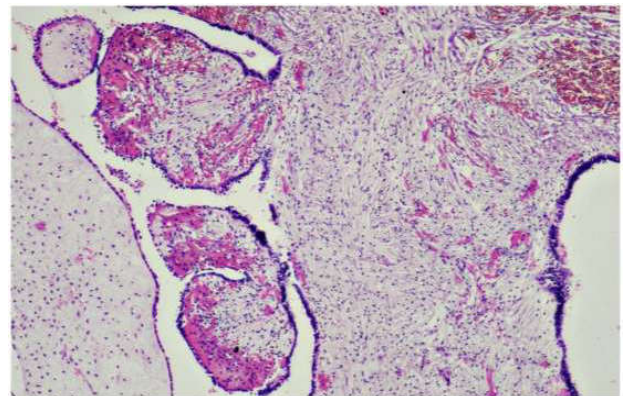


Image 1. 10x- Single Serous Lined Epithelium with Underlying Prominent Fibroblastic Stromal Component – Serous Cystadenofibroma

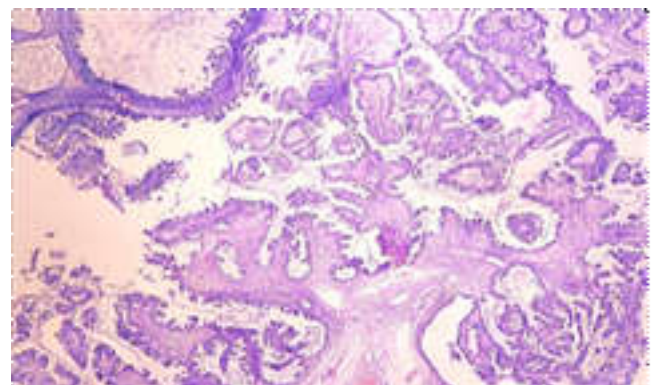


Image 2. 40x – Branching Epithelium, with Moderate Amount of Cytoplasm, Round to Oval Nuclei, Regular Nuclear Membrane with Bland Chromatin, with underlying Stroma Comprising of Fibroblast –Borderline Serous Cystadenoma Ovary

Table 1. Histopathological Distribution

Type of ovarian tumor			No of cases	Percentage
Surface epithelial	Serous	Benign serous cystadenoma	71	27.30
		Serous cystadenofibroma	14	5.38
		Border line serous cystadenoma	1	0.38
		Serous Cystadeno carcinoma	24	9.23
	Mucinous	Benign mucinous cystadenoma	60	23.07
		Border line mucinous cystadenoma	0	0
		Mucinous cystadenofibroma	1	0.38
		Mucinous cystadeno carcinoma	14	5.38
		Benign seromucinous cystadenoma	1	0.38
		Endometrotic cyst	8	3.07
Endometroid carcinoma	1	0.38		
Sex cord stromal tumor	Fibroma	1	0.38	
	Fibro thecoma	3	1.15	
	Thecoma	0	0	
	Granulosa cell tumor	4	1.54	
	Germ cell tumor	Mature cystic teratoma	51	19.61
	Immature teratoma	1	0.38	
	Dysgerminoma	2	0.77	
	Mixed germ cell tumor	1	0.38	
	Metastasis		2	0.77
Total		260	100.00	

Table 2. Distribution of tumor

Type of tumor	No of cases	Percentage
Benign tumor	210	80.76
Borderline tumor	4	1.54
Malignant tumor	46	17.69
Total	260	100.00

Table 3. Staging and grading

Stage	No of cases	Percentage
Stage I	18	40.90
Stage II	3	6.81
Stage III	8	18.18
Stage IV	15	34.09

Table 4

2 tier grading	N=24	Percentage
High grade	14	58.33
Low grade	10	41.66

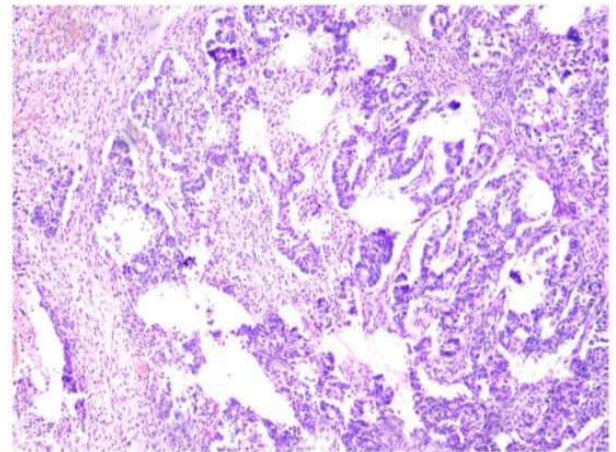


Image 4. 10x – Shows Invasion of Stromal Component by Serous Glands – High Grade Serous cystadeno Carcinoma Ovary

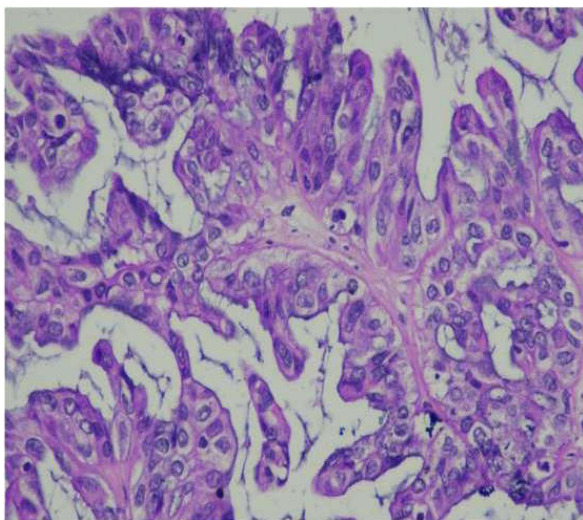


Image 3. 40 x – Image shows Stratified Columnar Epithelium with Irregularly Contoured Papillae with Fibrous Cores, the Cells are Cuboidal to Columnar with Moderate Cytoplasm – Serous Borderline Cystadenoma Ovary

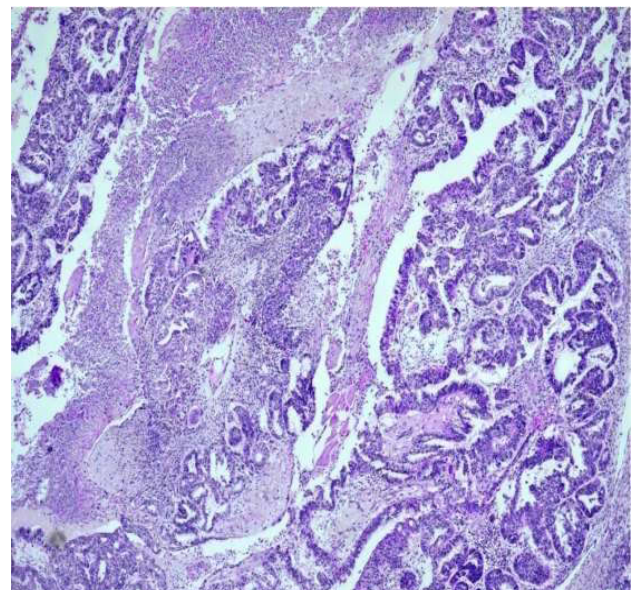


Image 5. 10x – Low Grade Serous Cystadenocarcinoma Ovary with an Invasion to Underlying Stroma

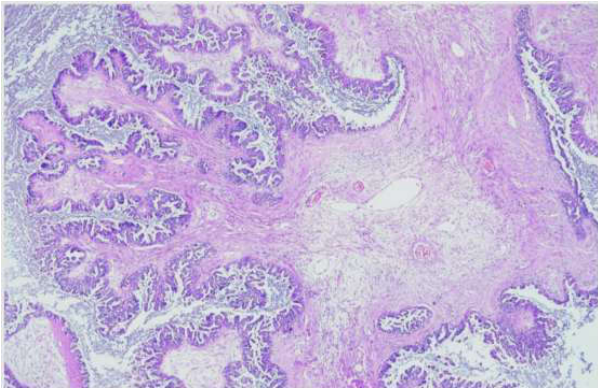


Image 6. Mucinous Cystadenocarcinoma with Underlying Ovarian Stroma Invaded

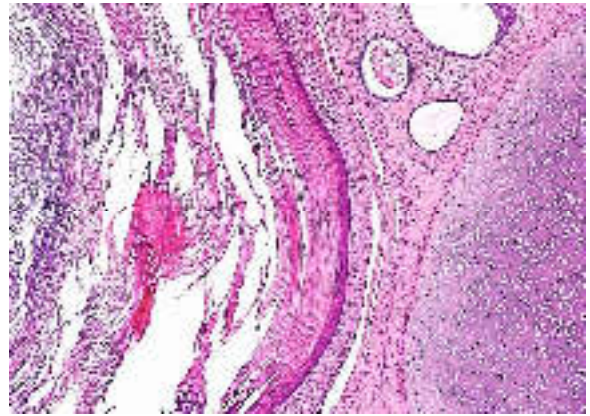


Image 9. 10 x – Shows Cartilaginous Tissue, Fibrous Tissue, Few Dilated Gland and an Intervening Ovarian Stroma – Mature Teratoma

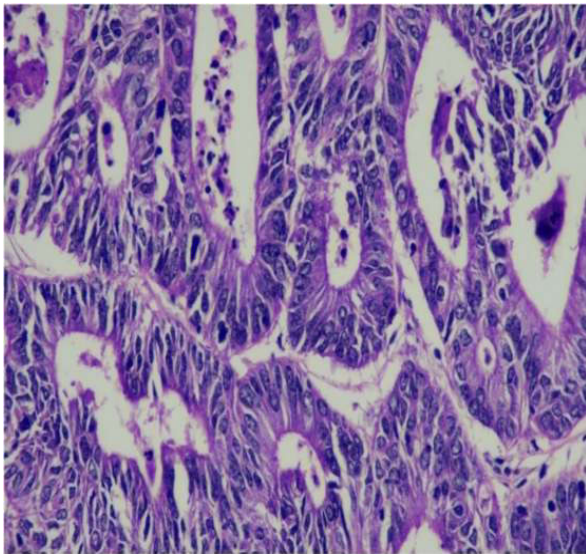


Image 7. 40x – Back to Back Arrangement of Glands with Stromal Invasion – Endometrioid Carcinoma

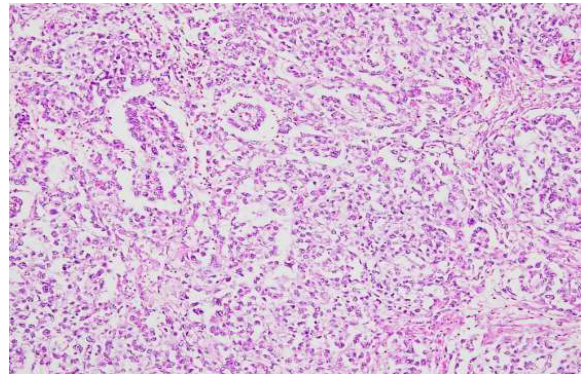


Image 10. Shows Mixed Germ Cell Tumor with Yolk Sac Component, Image showing Schiller Duval Body

SEX CORD STROMAL TUMORS

In the present study total 8 cases of sex cord stromal tumors were encountered that is 3.07 % of all ovarian tumors which is seen in a similar to a study done by Patel A et al¹⁶(3.7%).

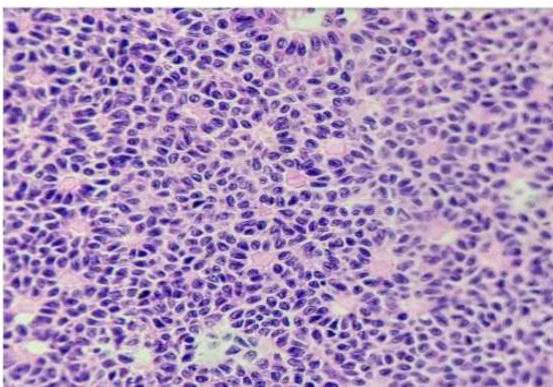


Image 8. 40x Shows - Cells Arranged in a Macrofollicular Pattern with an Eosinophilic Material in the Center, Call-Exner Bodies, Diagnostic of Granulosa Cell Tumor

GERM CELL TUMOR

In the present study 55 cases of germ cell tumor were observed which forms 21% of all ovarian tumors which is similar to the study conducted by Wills V et al¹² (23.2 %). While as a study conducted by Ashmeet et al¹³ shows (30.96%), that is slightly higher than the present study.

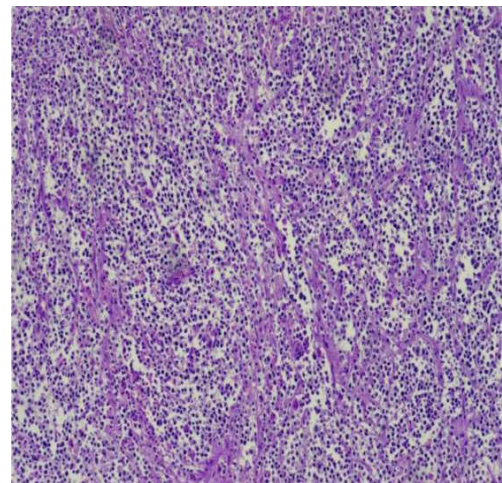


Image 11. 10x – Tumor Cells Arranged in Sheets with Intervening Fibrous Septae – Dysgerminoma

AGE
The age occurrence was ranging from 10 to 80 years, ovarian tumors were present in all age groups from childhood to elderly patients. The highest incidence is seen among the aged group of 20-29 years and 30-39 years which is similar to studies done by Maharjan et al¹⁹, Vaidya et al²⁰ and Al-Swamy et al²¹

Laterality: Bilateral tumors were 65 % in this study which is comparable to finding of Pradhan et al²² (7.7%).

CONSISTENCY: In our study majority tumors 64.23% were cystic, 31.15% were mixed and 4.62% were solid tumors which is

comparable to study done by Gupta et al.²³ with cystic 76.2%, mixed 21.55 and solid 2.4%

SIZE OF TUMOR: Ovarian tumors are variable in size. Most of the tumors were medium or large in size. Most commonly the epithelial tumors are largest in size. In the present the size ranges from 2cm to 35 cms which is comparable to the study done by Goyal B et al¹⁵.

CLINICAL FEATURES: The clinical presentation of the tumors was variable. Abdominal pain was the commonest symptom (70%) among all tumor followed by abdominal mass in 46.92% case which is comparable to other studies done by Sumaira et al²⁴ and Yogambal et al²⁵ in which abdomen pain was the commonest symptom in 70.59% and 66.92% respectively followed by mass abdomen in 14.71% and 28.11% respectively.

CONCLUSION

In conclusion, it is evident from the present study of the histopathological examination of ovarian tumors is the most important method, to differentiate between benign and malignant tumors and also in predicting the prognosis. It is also useful in typing, staging and grading in case of malignant neoplasms. The primary investigation as Ultrasonography is a useful tool for early detection of the ovarian tumors. The patients present with a wide range of the clinical symptoms in almost all age groups.

Financial support and sponsorship Nil.

Conflicts of interest: There are no conflicts of interest.

REFERENCES

- Kanthikar SN, Dravid NV, Deore PN, Nikumbh DB, Suryawanshi KH. Clinico-histopathological analysis of neoplastic and non-neoplastic lesions of the ovary: A 3-year prospective study in Dhule, North Maharashtra, India. *J Clin Diagn Res* 2014;8(8):FC04-7. doi: [10.7860/JCDR/2014/8911.4709]
- Sohail I, Hayat Z, Saeed S. A comparative analysis of frequency and patterns of ovarian tumours at a tertiary care hospital between two different study periods 2002-2009. *J Postgrad Med Inst*. 2012; 26(2):196-200.
- Pradhan A, Sinha AK, Upreti D. histopathological patterns of ovarian tumours at BPKIHS. *Health renaissance* 2012; 10: 87-97.
- Vaddati T, Reddy ES, Vahini G. study of morphological patterns of ovarian neoplasms. *IOSR-JMDS* 2013; 10:11-16.
- Female genital Tract. In: Kumar, Abbas, Aster, Robbins and Cotran Pathological Basis of Disease, 10th edition. Pg 1017.
- Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, et al. GLOBOCAN2012 v1.0, Cancer incidence and mortality worldwide: IARC Cancer Base No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013.
- Ellenson LH, Pirog EC. The Female Genital Tract. In: Kumar V, Fausto N, Aster JC, Abbas AK, editors. Robbins and Cotran Pathologic basis of disease. 8th ed. Philadelphia: Elsevier; 2010. p.1005-64.
- Kumar, Abbas, Aster, Robbins and Cotran Pathological Basis of Disease chapter: female genital tract, ovary pg 1016. 10th edition.
- Misra RK, Sharma SP, Gupta U, Gaur R, Mishra SD. Pattern of ovarian neoplasm in eastern UP. *J Obstet Gynecol India* 1991;30:242-46.
- Ghosh A, et al. Kathmandu Univ Med J(KUMJ). 2016 Apr-Jun. ovarian Tumours: Pattern of Histomorphological types- A 10 years study in a Tertiary Referral Center and Review of Literature.
- Ellenson LH, Pirog EC. The Female Genital Tract. In: Kumar V, Fausto N, Aster JC, Abbas AK, editors. Robbins and Cotran Pathologic basis of disease. 8th ed. Philadelphia: Elsevier; 2010. p.1005-64.
- Wills V and Mathew R. A study on clinico-histopathological patterns of ovarian tumours conducted by Int J Reprod Contracept Obstet Gynecol. 2016;5(8):2666-71
- Kaur A, Faujdar M, Kariya T, Gupta S. Histomorphological spectrum of ovarian tumors in a tertiary care. *Annals of Woman and Child Health* 2017;3(4): A53-A61.
- Dr. Neha Garg, Dr. AS Anand, Dr. Chaya Annigeri. Department of Pathology, Navodaya Medical College, Raichur, Karnataka, India Study of histomorphological spectrum of ovarian tumours. *Int J Med Health Res* 2017;10(2):12-20.
- Goyal B, Rao TS, Regmi S. Histopathological Study of Ovarian Tumors at a Tertiary Care Hospital of Central Nepal. *Journal of College of Medical Sciences-Nepal* 2019; 15(1): 22-29.
- Patel AS, Patel JM, Shah KJ. Ovarian tumors - Incidence and histopathological spectrum in tertiary care center Valsad. *IAIM* 2018; 5(2):84-93.
- Maurya G, Singh S, Pandey P, Chaturvedi V. Pattern of neoplastic and nonneoplastic 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.
- Singh S, Saxena V, Khatri SL, Gupta S, Garewal J, Dubey Ket al. Histopathological evaluation of ovarian tumors. *Imperial Journal of Interdisciplinary Research*. 2016; 2(4):435-39.
- Maharjan S. Clinicomorphological study of ovarian lesions. *Journal of Chitwan Medical College* 2013;3(6):17-24.
- Vaidya S, Sharma P, Vaidya SA. Spectrum of ovarian tumors in a referral hospital in Nepal. *J Pathol Nep* 2014;4:539-43.
- Swamy GG, Satyanarayana N. Clinicopathological analysis of ovarian tumors-a study on 5 years samples. *Nepal Med Coll J* 2010;12(4):221-3.
- Pradhan A, Upreti D, Sinha AK. Patterns of ovarian tumors at BPKIHS. *Health Renaissance* 2012;10(2):87-97.
- Gupta SC, Singh PA, Mchrotra TN. A clinicopathological study of ovarian tumors. *Ind J Pathol Microbiol* 1986; 29: 354-362.
- Yasmin S, Yasmin A, Asif M. Clinicohistological pattern of ovarian tumours in Peshawar region. *J Ayub Med Coll Abbotabad*. 2008;20(4):11-3.
- Yogambal M, Arunalatha P, Chandramouleeswari K, Palaniappan V. Ovarian tumours- incidence and distribution in a tertiary referral center in south India. *IOSR J Dent Med Sci*. 2014;13(2):74-80.
