Journal of Pathology of Nepal (2023) Vol. **13**, 2080 -2083

Journal of
PATHOLOGY
of Nepal
www.acpnepal.com

Original Article

Histopathological study of ovarian neoplasms in a tertiary healthcare center of Madesh Province

Fahad Alam,[1] Anand Kumar Chaurasiya,[2] Brijesh Shrestha,[2] Md. Kalim Akhtar[3]

[1]*Department of Pathology, Addu Equatorial Hospital, Addu City, Maldives.*
[2]*Department of Pathology, National Medical College, Birgunj, Nepal.*
[3]*Department of Radio diagnosis, National Medical College, Birgunj, Nepal.*

Keywords:

Borderline;
Germ cell;
Mucinous;
Ovarian tumors;
Serous;
Teratoma

ABSTRACT

Background: Ovarian tumors are common form of neoplasm in women. This study was proposed to identify the spectrum of ovarian tumors and their clinicopathological features. This study aimed to analyze the histopathological spectrum of ovarian tumors in the Department of Pathology, National Medical College and Teaching Hospital, Birgunj, Nepal.

Materials and Methods: This was a hospital based cross sectional descriptive study over a period of two years. Ovarian tissue with clinical notes sent to the histopathology department in 10% formalin were received. The clinical as well as histological findings were compiled on proforma and then subjected to analysis.

Results: Total 50 patients were included in the study with the age range from 15 years to 63 years. Maximum patients were from age group 41-50 years (36%). In the present study, abdominal pain (62%) was the most common presenting complaint followed by mass per abdomen (20%) and irregular periods (10%). Majority of the ovarian tumors belonged to benign tumors (82%) followed by malignant tumors (12%). As per WHO classification, surface epithelium tumors were found to be the commonest variety (84%), followed by germ cell tumor (10%). Among the various known subtypes of ovarian tumors, serous cystadenoma (48%) was found to be the most common subtype followed by mucinous cystadenoma (20%).

Conclusions: Benign ovarian tumors are more common than malignant or borderline tumors. Among the histopathological subtypes of ovarian tumors, surface epithelial tumors are the commonest type. Differentiation between benign and malignant tumors is important to assure proper management and recovery.

Correspondence:
Dr. Fahad Alam, MD
Department of Pathology,
Addu Equatorial Hospital, Addu City, Maldives.
ORCID ID: 0000-0002-6518-0554
Email: fahadalam14@gmail.com

Received : July 10, 2023; **Accepted :** August 19, 2023

Citation: Alam F, Chaurasiya AK, Shrestha B, AkhtarMK. Histopathological study of ovarian neoplasms in a tertiary healthcare center of Madesh Province. J Pathol Nep. 2023;13(2):2080-3. DOI: 10.3126/jpn.v13i2.56517

INTRODUCTION

Ovarian tumors are very common form of neoplasm in women. Early diagnosis and management of ovariantumors is a major problem in a developing country like Nepal, due to lack of awareness and limited facilityfor investigations in all parts of Nepal. Usually, the malignant ovarian neoplasms will have already advanced too far by the time they are detected.

Ovaries measure about 4 X 2.5 X 1.5 cm in dimension and comprises of cortex and medulla. The cortex consists of a layer of closely packed stromal cells and a covering of

relatively acellular collagenous connective tissue. Follicles in varying stages of maturation are found within the outer cortex.[1]

- Tumors of the ovary arise from one of these components:
- Surface coelomic epithelium, which embryologically give rise to the mullerian epithelium from which epithelia of fallopian tube, endometrium and endocervix are derived.[2]
- Germ cells, which migrate to ovary from yolk sac and are totipotential.[2]
- Stroma of the ovary which includes the sex cords, forerunner of the endocrine apparatus of the postnatal ovary.[2]

About 70% to 80% of primary ovarian tumors are of epithelial origin, 10% of stromal origin and 5% of germ cell origin, while the remainder fall into other groups.[3]

This study is proposed to identify the spectrum of ovarian tumors and their clinico-pathological features.

MATERIALS AND METHODS

This was a hospital based cross sectional descriptive study over a period of two years, at National Medical College, Birgunj from January 2020 to December 2021. Ethical approval was taken from Institutional Review Committee of National Medical College (Ref. F-NMC /413/075 /076).

The clinical details of the patient were recorded according to the proforma. The gross examination of the tissue was performed and recorded. The tissue blocks were processed for paraffin embedding according to standard protocols.[4] Paraffin embedded tissue sections of 3 to 5 microns in thickness were stained with Hematoxylin and Eosin. After these sections were examined under light microscope.

All the ovarian tumors, irrespective of their clinical features were included. The normal ovaries and ovaries with nonspecific finding like follicular cyst, cystic follicles, surface inclusion cysts, hemorrhagic inclusion cysts, endometriosis and stromal hyperplasia of ovary were excluded from the study.

This was a descriptive study and data were tabulated and analyzed using statistical package for social sciences (SPSS) version 21.0.

RESULTS

Total 50 patients were included in the study with the age range from 15 years to 63 years. Maximum patients were from age group 41-50 years (i.e.18 cases) followed by 15 cases in 31-40 years and 10 cases in range of 21-30 cases (Table 1). In the present study, abdominal pain (62%) was the most common presenting complaint followed by mass per abdomen (20%), irregular periods (10%) and asymptomatic (5%) (Table 2). Table 2 shows that abdominal pain was the commonest presentation followed by mass per abdomen. Asymptomatic ovarian tumors were least common.

Table 1: Age distribution of ovarian tumors

Age (Years)	No. Of Cases (n=50)	Percentage (%)
<20	03	06 %
21-30	10	20 %
31-40	15	30 %
41-50	18	36 %
51-60	03	06 %
>60	01	02 %

Table 2: Presenting signs and symptoms of the patients

Symptom	No. Of Cases (n=50)	Percentage (%)
Abdominal pain	31	62%
Mass per abdomen	10	20 %
Menstrual irregularities	05	10 %
Asymptomatic	04	08 %

Among the studied samples cystic, solid and combined gross morphological features were identified. The most common gross feature was cystic (n=33; 66%) followed by solid (n=9; 18%), and mixed (n=8; 16%).

Table 3 shows the incidence of the major histopathological subtypes of ovarian tumors.

The most common histopathological pattern encountered in the present study was surface epithelial tumors followed by germ cell tumors. Metastatic tumors were the least common variety.

Table 3: Categories of ovarian tumor among the study populaiton

Microscopic Type	No. Of Cases (n=50)	Percentage (%)
Surface Epithelial Tumors	42	84 %
Germ Cell Tumors	05	10 %
Sex Cord Stromal Tumors	02	04 %
Metastatic Tumors	01	02 %

Out of 50 cases studied, majority were benign tumors 41 (82 %), followed by malignant 6 (12 %) and 3 (06 %) cases of borderline tumors.

Table 4 shows the incidence of each histomorphological subtype. Benign serous cystadenoma was the commonest histopathological pattern encountered in present study contributing to 48% followed by benign mucinous cystadenoma 24%.

DOI : 10.3126/jpn.v13i2.56517

Table 4: Histomorphological diagnosis of ovarian tumors among the study population

Type Of Tumor	No. of Cases (n=50)	Percentage (%)
Serous Cystadenoma	24	48 %
Fibroma	02	04 %
Borderline Serous Tumor	02	04 %
Serous Cystadenocarcinoma	03	06 %
Mucinous Cystadenoma	10	20 %
Borderline Mucinous Tumor	01	02 %
Endometrioid Carcinoma	02	04 %
Mature Cystic Teratoma	05	10 %
Metastatic	01	02 %

Table 5: Age-wise distribution of the ovarian tumor as per the diagnosis

Age (Yrs.)	Surface Epithelial Tumors	Germ Cell Tumors	Sex cord Stromal Tumors	Metastatic Tumors	Total
<20	03	-	-	-	03
21-30	06	3	1	-	10
31-40	12	2	1	-	15
41-50	18	-	-	-	18
51-60	03	-	-	-	03
>60	-	-	-	1	01
Total	42	5	2	1	50

DISCUSSION

Ovarian tumors may remain unnoticed for a long period of time because of their location and presentation. These tumors can cause abdominal pain and abdominal distension. These tumors were divided into benign, borderline and malignant according to histological features. Epithelial cell tumors were the commonest form followed by germ cell tumors and sex cord stromal tumors. The ovary is one of the common sites to get metastatic deposits from other abdominal malignancies.[5]

Ovarian tumors can occur in all ages. The age range in the present study was 15 to 63 years. The youngest patient in this study was a 15-year-old girl with left sided serous cystadenoma measuring 14x11x10 cm. She presented with mass per abdomen. The oldest patient was a 63-year-old lady with metastatic carcinoma. She presented with ascites and the tumor measured 8x3x3 cm. The maximum number of cases were between 21 and 50 years. This age group included 86% of tumors.

This was in concordance with following studies:

Age (Yrs.)	Present study	Pilli et al.[6]	R Jha et al.[7]	Kayastha et al.[8]	Kar et al.[9]
<20	06%	7 %	6.8 %	6.3 %	7 %
21-30	20 %	58 %	20.5 %	28.5 %	42 %
31-40	30 %		26.7 %	27.4 %	
41-50	36 %	30 %	21.1 %	26.3 %	46 %
51-60	06 %		14.3 %	11.6 %	
>60	02 %	5 %	10.6 %		5 %

Ovarian tumors may be incidentally diagnosed on ultrasound whereas others may be symptomatic. In the present study the commonest presenting symptom was pain in the abdomen 31 (62%) followed by mass abdomen 10 (20 %), whereas menstrual irregularities including post-menopausal bleeding in 5 (10 %). Asymptomatic patients were 4 (8 %) with these tumors being incidentally diagnosed on ultrasound done for other cause. 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%).[10] In contrast to this, Jamal et al observed the commonest mode of presentation was bleeding per vagina, followed by pain abdomen, pelvic mass and gastric intestinal symptoms.[11]

In the present study, 33 out of 50 (66%) tumors had purely cystic architecture. Solid tumors were 9 out of 50 and comprised 18%. Combined solid and cystic presentation was seen in 8 tumors (16 %). Study done by Kar et al had 58.21 % cystic tumors, 13.43 % solid and 28.36 % combined solid and cystic tumors.[9] Patients with solid or complex ovarian tumors are at high risk of ovarian malignancy was shown in study done by McDonald JM et al.[12]

Surface epithelial tumors constituted the most common category in the present study contributing to 84 % 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 done in neighboring countries like Pakistan and India.

Histopathological type	Present study	Shahbaz et al [13]	Naseer et al [14]	Kar et al[9]	Pilli et al [6]	Kayasth et al[8]
Surface Epithelial Tumors	84 %	83.3%	81.0%	79%	70.9%	72.6%
Germ Cell Tumors	10 %	14.0%	10.95%	16%	21.2%	25.3%
Sex Cord Stromal Tumors	4%	2.7%	5.03%	1.5%	6.7%	2.1%
Metastatic Tumors	2%	-	1.58%	3.5%	0.7%	-

Benign serous cystadenoma was the commonest tumor type with 48% of tumors. This was followed by benign mucinous cystadenoma having incidence of 24%. Among malignant tumors, endometrioid carcinoma was the most common category followed by serous cystadenocarcinoma. In borderline surface epithelial tumor category borderline serous tumor dominated the category along with only 1 case of mucinous borderline tumor. Benign maturecystic teratoma was the most common germ cell tumor whereas fibromas were also noted among sex cord stromal tumors.

Type Of Tumor	Present study	Naseer et al.[14]	R Jha et al.[7]
Serous Cystadenoma	48%	42.07	27.33%
Fibroma	04 %		0.62%
Borderline Serous Tumor	04 %	-	-
Serous Cystadenocarcinoma	06 %	8.78%	7.45%
Mucinous Cystadenoma	20 %	16.85%	13.04%
Borderline Mucinous Tumor	02%	-	-
Endometrioid Carcinoma	04 %	-	-
Mature Cystic Teratoma	10 %	7.2%	40.37%
Metastatic	02 %	1.58%	1.24

Out of 50 cases studied, majority were benign tumors 82%, followed by malignancy 12% and 6% cases of borderline malignancy were found.

Nature Of Tumor	Present study	Pilli et al [6]	Naseer et al [14]	R Jha et al [7]	Kayastha et al [8]	Sumaria et al [15]
Benign	82 %	75%	68.25%	83.9%	90.5%	89.71%
Borderline	06 %	3%	0.72%	-	-	-
Malignant	12 %	22%	30.96%	16.1%	9.5%	10.29%

These findings were similar to studies done by Jha et al and Sumaria et al. Other studiesrecorded different incidence of tumors.

CONCLUSIONS

Surface epithelial ovarian tumors was the most common category of ovarian tumors followed by germ cell tumors. Incidence of benign tumors was much higher than malignant tumors with benign serous cystadenoma being the most common benign tumor and endometrioid carcinoma being the most common malignant tumor.

Limitations of the study

In the present study, limited parameters were studied where as a study including additional parameters such as family history of ovarian carcinoma, obesity, tumor markers, socioeconomic status, age at first childbirth, use of oral contraceptive pills or other hormonal intake will be of greater value.

Conflict of Interest: None

REFERENCES

1. Kumar V, Abbas KA, Fausto N, Aster CJ. Robbin's and Cotran Pathologic Basis of Disease. 8th ed. India: Elsevier; 2008. p 1007.
2. Talerman A. Germ Cell Tumor of the Ovary. Current Opinion in Obstetrics and Gynecology. 1997;9:44-47. Crossref
3. Tindall RV. Tumors of Ovary. Jeffcoates Principles of Gynecology. 6th ed. India: Butterworths; 1994.p 454-57.
4. Bancroft DJ. Theory and Practices of Histological Techniques. 6th ed. India: Elsevier; 2008. p 83-91
5. Naseer A. Shaikh, Fazila Hashmi et al. Pattern of ovarian tumors Report of 15 years' experience at Liaquat University Jamshoro. J Liaquat Uni Med Health Sci. 2007;6(1):13-5. Crossref
6. Pilli GS, Sunitha KP, Dhaded AV, Yenni VV. Ovarian tumors a study of 282 cases. J Indian Med Assoc. 2002;100(7):420-4. Website
7. Jha R and Karki S. Histological pattern of ovarian tumors and their age distribution. Nepal Med Coll J. 2008;10(2):81-5. Website
8. Kayastha S. Study of ovarian tumors in Nepal Medical College Teaching Hospital. Nepal Med Coll J. 2009;11(3):200-2. Website
9. Kar T, Kar A, Mohapatra PC. Intraoperative cytology of ovarian tumors. J Obstet Gynecol India. 2005;55(4):345-9. Crossref
10. Rashid S, Sarwar G, Ali A. A clinicopathological Study of ovarian cancer. J Pak Med Assoc. 1998;36:117–25.
11. Jamal S, Quddusi H, Mehmood A. A Clinico Histopathological analysis of 110 ovarian tumours. Pak J Med Sci. 1997;14(1):19–23.
12. McDonald JM, Doran S, DeSimone CP, Ueland FR, DePriest PD, Ware RA, Saunders BA, Pavlik EJ, Goodrich S, Kryscio RJ, van Nagell JR Jr. Predicting risk of malignancy in adnexal masses. Obstet Gynecol. 2010;115(4):687-694. Crossref
13. Sarwar CM, Siddiqui N, Khokhar RA, Badar F. Epithelial ovarian cancer at a cancer hospital in a developing country. Asian Pac J Cancer Prev. 2006 ;7(4):595-8. Website
14. Yasmin S, Yasmin A, Asif M. Clinicohistological pattern of ovarian tumours in Peshawar region. J Ayub Med Coll Abbottabad. 2008;20(4):11-3. Website