



**ORIGINAL RESEARCH PAPER**

**Pathology**

**SPECTRUM OF HISTOPATHOLOGY OF OVARIAN TUMORS-3 YEARS STUDY**

**KEY WORDS:** Ovarian Tumor, Neoplasm, Krukenberg Tumors

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**ABSTRACT**

Ovarian tumors are relatively common and account for 6% of female malignancies. Not only primary, the ovary is also the favorite site for metastatic tumors. The benign tumors of the ovary out number the malignant tumors by a wide range. In this study an effort was made to review these tumors. **Materials and Methods:** It was a retrospective study conducted over a period of 3 years. **Results:** Out of 3124 gynecological specimens received, we diagnosed 136 ovarian neoplasms. We also reported two Krukenberg tumors. **Conclusion:** The study of macroscopic and microscopic features of different ovarian tumors will enable for categorization into exact morphological types which will help the gynecologists for proper treatment and follow up. Primary lymphoma of ovary needs confirmation by IHC which is positive for leucocyte common antigen and CD20. Immunohistochemistry is very much essential in differentiating various germ cell tumors.

**INTRODUCTION**

The ovaries are site for origin of the most complex as well as lethal neoplasm. Among cancers of female genital tract, the incidence of ovarian cancer ranks below carcinoma of cervix. The ovarian tumors manifest with wide spectrum of clinical, morphological and histological features. The incidence of different types of ovarian neoplasm has wide variations in different parts of the world and so in our country. Asian countries have a rate of 2-6 new cases per 1,00,000 women per year.

Certain non-neoplastic lesions of the ovary frequently form a pelvic mass and potentially mimic an ovarian neoplasm. Proper reorganization is therefore important to allow appropriate therapy. Not only primary, the ovary is also the favorite site for metastatic tumors. The primary purpose of a classification of ovarian neoplasms is to facilitate communication between different workers in the field of ovarian oncology, like surgeons, pathologists, radiotherapists, epidemiologists and basic scientists.

**AIM**

To know the incidence, age related occurrences of the ovarian tumors and characterize the ovarian tumors on histopathological basis.

**MATERIALS AND METHODS**

This retrospective study comprises of 136 ovarian tumors diagnosed over a period of 3 years. Specimens were 10% formalin fixed. Representative slices were taken and routinely processed with paraffin embedding. Multiple sections were taken and stained with hematoxylin and eosin and studied microscopically. The tissue samples included those of Oophorectomy and Hysterectomy with Oophorectomy specimens. The clinical history, operative findings and the details of patient were taken from the histopathology register.

**RESULTS**

In this study, a total of 3124 gynecological specimens were received over 3 years. Among them 136 did ovarian tumors constitute an incidence of 4.35%. Out of 136, 134 were primary ovarian tumors and remaining two were metastatic tumors.

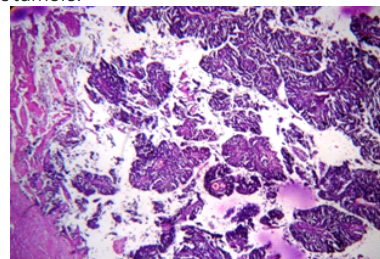
**Table 1: Primary ovarian tumors versus Secondary/ Metastatic ovarian tumors**

Tumor type	Number of Cases	Percentage
Primary ovarian tumors	134	98.53%
Secondary /Metastatic ovarian tumors	2	1.47%

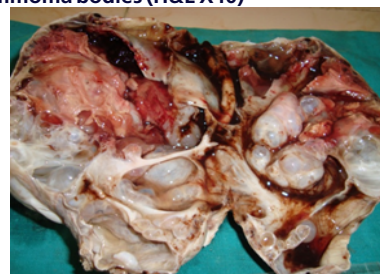
**Table 2: Number of Benign, Borderline, Malignant & Metastatic tumors**

Nature of tumor	Number of Cases	Percentage
Benign	111	81.62
Borderline	2	1.47
Malignant	21	15.44
Metastatic	2	1.47

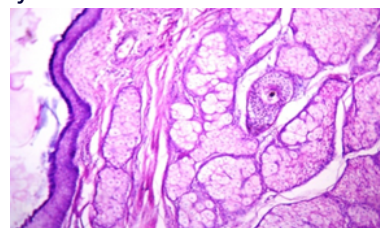
Out of 134 Primary ovarian tumors, majority of them were benign (111), followed by malignant (21), 2 were borderline and 2 were metastatic tumors.



**Figure 1: Serous cystadenocarcinoma: Branching papillae and psammoma bodies (H&E X40)**



**Figure 2: Mucinous cystadenocarcinoma: 15x12x6cm with solid and cystic areas filled with mucin.**



**Figure 3 : Benign teratoma: Epidermis, hair follicles and sebaceous glands (H&E X100)**

**Table 3: Age distribution of Benign, Borderline and Malignant ovarian tumors**

Age in years	Number of tumors	Benign	Borderline	Malignant
11-20	07	04	-	3
21-30	30	25	1	4
31-40	52	48	-	2
41-50	24	23	1	-
51-60	19	10	-	9
61-70	02	01	-	1
Over 70	02	-	-	2

Majority of the tumors occurred in the reproductive age group, youngest patient was of 12 years of age and oldest patient was of 72 years. Benign tumors peaked in between 31-40 years of age. Most of the malignant tumors occurred between 51-60 years of age.

**Table 4: Clinical presentation**

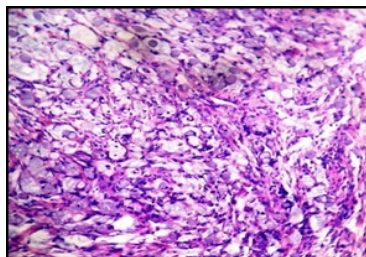
Symptoms	Benign tumors	Borderline tumors	Malignant tumors
Mass per abdomen	72	2	14
Pain abdomen	69	2	13
Menstrual irregularity / Post menopausal bleeding	18	-	2
Ascites	-	-	6
GI Disturbances	4	1	8
Urinary Symptoms	2	1	4
Infertility	1	-	-
Loss of appetite / Loss of weight	-	-	6

Most frequent presenting symptoms of ovarian tumors was mass per abdomen. Next most common symptom was pain abdomen. 6 patients of malignant ovarian tumors presented with ascites.

**Table 5: Histological types based on cell of origin**

Tumor type	Number of cases	Percentage
Surface epithelial stromal tumors	102	75.00
Sex cord stromal tumors	7	5.15
Germ cell tumors	23	16.91
Non Hodgkin's lymphoma -NHL	1	0.73
Small cell carcinoma	1	0.73
Secondary /Metastatic tumors	2	1.47

Out of 134 primary cases studied, 102 were surface epithelial stromal tumors, 7 cases were of sex cord stromal origin and 23 cases were categorized under germ cell tumors. Also diagnosed one case as Non Hodgkin's Lymphoma and one case of small cell carcinoma of the ovary. Two metastatic cases were diagnosed as Krukenberg tumors.



**Figure 4:Krukenberg tumor: Showing signet ring cells (H&E X100)**

**DISCUSSION**

Ovarian tumors are one of the major health problems confronting the general practitioners and gynecologists in particular. Ovarian tumors may either be asymptomatic, found on the routine ultrasound examination or symptoms may be vague till the patient has an acute emergency like torsion or rupture of ovarian tumor.

**Table 6:Incidence-comparative analysis of incidence of benign, borderline, and malignant ovarian tumors (including metastatic tumors).**

Study	Benign (%)	Borderline (%)	Malignant (%)
Gupta et al <sup>4</sup>	59.4	0.6	40.0
Prabhakar et al <sup>9</sup>	66.0	31.60	2.40
Couto F et al <sup>6</sup>	80.76	2.33	16.91
Pilli et al <sup>10</sup>	75.2	2.8	21.9
Present study	81.62	1.47	15.44

Similar observations were made by Couto F et al<sup>6</sup> and Pilli et al<sup>10</sup>. Majority of the ovarian tumors occurred during the reproductive age group. In the present study, the maximum number (65.76%) of benign tumors were observed between the age group 21-40 years. Similar observations were made by study conducted by Verma Kand Bhatia.A<sup>8</sup>. In our study majority of both benign and malignant tumors presented with pain and mass per abdomen, similar to other studies like Bhuvanesh et al<sup>2</sup> and Randhawa et al<sup>3</sup>.

**CONCLUSION**

The ovary is very common site of neoplasia in the female genital tract. The ovarian tumors manifest a wide spectrum of clinical, morphological and histological features. The study of macroscopic and microscopic features of different ovarian tumors will enable for categorization into exact morphological types which will help the gynecologists for proper treatment. Benign ovarian tumors are more common than malignant tumors. Most common histological types are surface epithelial tumors constituting the bulk of both benign and malignant tumors followed by Germ cell tumors. Malignant germ cell tumors are common in younger age group where as other malignant ovarian tumors are common above 40 years of age. 100% of metastatic tumors were bilateral. Histopathology is still the gold standard in diagnosing most of the ovarian tumors. However it may be supplemented by the newer techniques like IHC in problematic cases.

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