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## CLINICO PATHOLOGICAL  STUDY OF OVARIAN TUMORS AT A TERTIARY CARE INSTITUTE

**Pathology**

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## ABSTRACT

**Background:** Ovarian tumors are an increasing cause for morbidity and mortality world over due to late presentation.They have different cell origin and different histopathological picture.
**Objective:** To study the different histopathological types of ovarian tumors in the different age groups
**Materials and Methods:** This  retrospective study  included all histopathologically proven ovarian tumors reported in Department of Pathology MIMER Medical College Talegaon Dabhade Pune over 5 years period  from January 2013 to December 2017.All the clinical and histopathological data was obtained from records and was analyzed.
**Results :** Out of 72 ovarian tumors included, 87.50% were benign, 2.78% were borderline and 9.72% were malignant.Suface epithelial tumors were most common (75%) followed by Germ cell tumors (20.83%) Benign surface epithelial tumors comprised 76.19% of all benign tumors whereas their malignant surface epithelial tumors comprised 57.14% of all malignant tumors.
**Conclusion :** Benign tumors are more common than malignant tumors in all age groups.Surface epithelial tumors are the most common of all tumors.Serous cystadenomas were most common benign tumors where as Serous cystadenocarcinoma was the  most common malignant tumor.

## KEYWORDS

Ovarian tumors, Histopathology,Benign, Malignant

## INTRODUCTION

The ovarian neoplasm is the most fascinating tumor of the women in terms of its histogenesis,   clinical behaviour and malignant potentiality.[1]

Ovarian carcinomas represent 6th most common cancer in females and is 4th leading cause of cancer death in women.[2] The ovarian tumors manifest with a wide spectrum of clinical,morphological and histological features.[3] Many ovarian tumors are asymptomatic in the early stages and are unfortunately diagnosed late in the course of disease.The high mortality rate of ovarian cancer is due to its late detection,thus earning itself the term silent killer.[4]

Determining the histogenesis of the tumor by studying histological features is very important for effective treatment and predicting their behaviour and prognosis.[2]Certain non neoplastic lesions of ovary frequently form a pelvic mass and potentially mimic an ovarian neoplasm.Proper recognition is therefore important to allow appropriate therapy[4].Not only the primary tumors , the ovary is also the favourite site for the metastatic tumors.[5]

The present study was carried out with the aim to find out age related incidence and the different histopathological types of ovarian tumors and classify them according to WHO Classification of ovarian tumors.

## MATERIALS  AND METHODS

This  was  a retrospective study comprising of 72 ovarian tumors diagnosed in Department of Pathology, MIMER Medical College Talegaon Dabhade Pune over a time period from January 2013 to December 2017. All cystectomy, oophorectomy, salpingooo phorectomy and total abdominal hysterectomy with bilateral or unilateral oophorectomy specimens  were included in this study.The relevant clinical details were obtained from the case files.

The specimens received in the department of pathology were grossly examined after fixing them in 10% formalin. Representative sections were taken and processed with paraffin embedding.Multiple sections were taken and stained with H&E.Special stains (PAS,Mucicarmine) and IHC were done wherever required.Histopathological diagnosis was given by using WHO Classification of Ovarian tumors.

## RESULTS

A total of 72 ovarian tumors were studied which were reported between January 2013– Dec 2017.Among 72 ovarian tumors 71(98.61%) were primary ovarian tumors and remaining one (01.39%) was metastatic tumor.(Table no 1)

**Table No 1: Primary versus Secondary Ovarian tumors**

| Tumour type | No. of cases | Percentage |
|---|---|---|
| Primary Ovarian Tumors | 71 | 98.61% |
| Secondary Ovarian Tumors | 01 | 01.39% |
| Total | 72 | 100% |

Out of 72 Ovarian tumors , majority were benign 63 (87.50%), followed by malignant ones 7 (9.72%).   (Table no 2)

**Table No 2: Number of benign, borderline,malignant and mettastatic ovarian tumors**

| Nature of Tumour | No. of cases | Percentage |
|---|---|---|
| Benign | 63 | 87.50% |
| Borderline | 02 | 02.78% |
| Malignant | 07 | 09.72% |
| Total | 72 | 100% |

**Table No  3 :Age wise distribution of Ovarian tumors**

| Age in years | Total no of tumors | Benign | Borderline | Malignant |
|---|---|---|---|---|
| 0-10 | 0 | 0 | 00 | 00 |
| 11-20 | 02 | 02 | 00 | 00 |
| 21-30 | 22 | 22 | 00 | 00 |
| 31-40 | 21 | 20 | 01 | 00 |
| 41-50 | 14 | 12 | 00 | 02 |
| 51-60 | 07 | 06 | 00 | 01 |
| 61-70 | 05 | 01 | 01 | 03 |
| >71 | 01 | 00 | 00 | 01 |
| Total | 72 | 63 | 02 | 07 |

The above table shows age wise distribution of benign and malignant tumors. Majority of the tumors occurred in the reproductive age group.The youngest patient was  of  15  years of age whereas the oldest was 71  years old.Benign tumors showed a peak incidence between 21-50 years of age.Most of the malignant tumors occured beyond 50 years of age.  (Table no 3)

**Table No 4 :Clinical presentation of Ovarian tumors**

| Clinical features | No. of benign tumors | No. of borderline tumors | No. of malignant tumors |
|---|---|---|---|
| Mass per abdomen | 38 | 02 | 07 |
| Pain in abdomen | 31 | 02 | 04 |
| Menstrual abnormality | 07 | 00 | 02 |
| Gastrointestinal disturbances | 02 | 00 | 01 |
| Ascites | 00 | 01 | 02 |
| Loss of appetite/ weight | 00 | 00 | 01 |

Most common presenting symptom of ovarian tumors was mass per abdomen which was present in 38, 2 & 7 cases of benign, borderline & malignant tumors respectively.Next common symptom was pain in abdomen which was present in 31,2 & 74cases of benign,borderline & malignant tumors respectively.Ascites was present in 2 patients of malignant and 1 patient of borderline ovarian tumors.Many patients had more than one symptoms. (Table no 4)

**Table No 5 :Histological types of Ovarian tumors based on cell of origin**

| Tumor type | No of Cases | Percentage |
|---|---|---|
| Surface epithelial tumors | 54 | 75.00% |
| Germ cell tumors | 15 | 20.83% |
| Sex cord stromal tumors | 02 | 02.78% |
| Metastatic  tumors | 01 | 01.39% |
| Total | 72 | 100% |

Out of 72 ovarian tumors studied, 54   were surface epithelial tumors(75%),15 were of germ cell origin (20.83%) and 2 were of sex cord stromal tumors(2.78%).1 metastatic tumor studied was Krukenberg's tumor(1.39%).(Table no 5)

**Table No 6 : Histopathological subtypes of Ovarian tumors**

| Tumor type | No. of cases | Percentage |
|---|---|---|
| **I.SURFACE EPITHELIAL TUMORS** | | |
| A.Serous Tumors | | |
| 1.Serous Cystadenoma | 38 | 52.78% |
| 2.Serous cystadenofibromas | 02 | 02.78% |
| 3.Borderline Serous Tumor | 02 | 02.78% |
| 4.Serous Cystadenocarcinoma | 03 | 04.16% |
| B.Mucinous Tumors | | |
| 1.Mucinous Cystadenoma | 08 | 11.11% |
| 2.Mucinous Cystadenocarcinoma | 01 | 01.39% |
| **II GERM CELL TUMORS** | | |
| 1.Benign mature cystic teratoma | 14 | 19.44% |
| 2.Teratoma with malignant transformation (SCC) | 01 | 01.39% |
| **III SEX CORD STROMAL TUMORS** | | |
| 1.Granulosa cell tumor | 01 | 01.39% |
| 2.Fibrothecoma | 01 | 01.39% |
| **IV SECONDARY/METASTATIC TUMORS** | 01 | 01.39% |
| Total | 72 | 100% |

On analysing the histologic subtypes of ovarian tumors,among the surface epithelial tumors serous tumors were more common constituting 83.33 % . In benign serous tumors ,serous cystadenoma was the most frequent (84.44%). 2 cases of borderline serous tumor were seen.Mucinous tumors comprised 16.66% of all surface epithelial tumors.Serous cystadenocarcinoma was the most common malignant tumor of all ovarian tumors.  (4.16%)

Mature cystic teratoma comprised the majority of germ cell tumors.

(93.33% ). Among the sex chord stromal tumors 1 case each of granulosa cell tumor and fibrothecoma was seen.One case of metastatic tumor (Krukenberg's tumor) with primary arising from signet ring cell carcinoma of stomach was studied. (Table no 6)
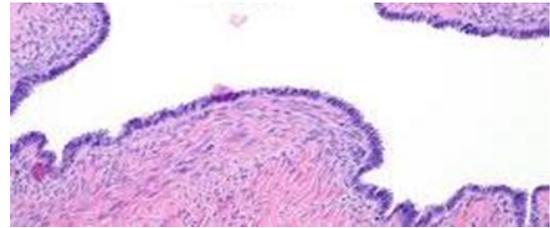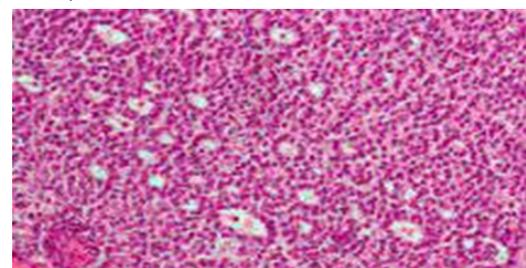


**Figure No. 1 Photomicrograph showing Serous Cystadenoma (H&E 10X)**
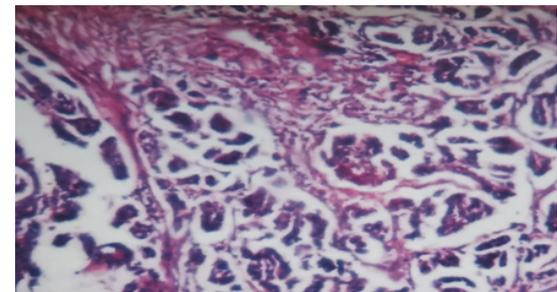


**Figure No. 2 Photomicrograph showing Serous Cystadeno carcinoma  (H&E 10X)**
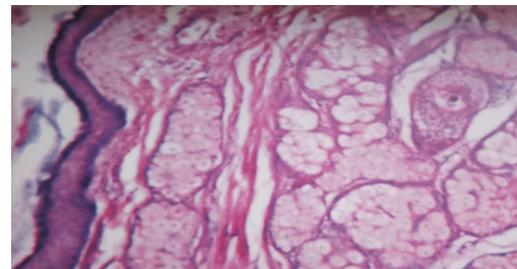


**Figure No. 3 Photomicrograph showing Mature Cystic Teratoma (H&E 10X)**



**Figure No. 4 Photomicrograph showing Adult granulosa cell tumor (H&E 10X)**
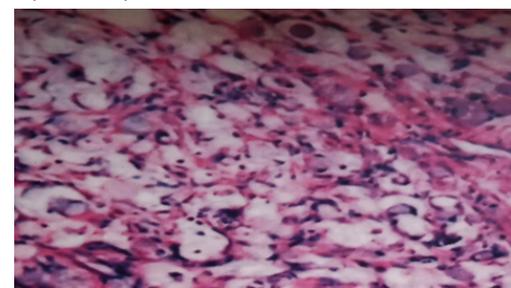


**Figure No. 5 Photomicrograph showing Krukenberg's tumor (H&E 40X)**

**DISCUSSION**
Ovarian tumors are one of the major health problems confronting the gynaecologists.Most of the ovarian tumors are detected incidentally on

imaging studies in patients who come to OPD for vague abdominal pain. In the early stages ovarian tumors remain silent.The symptoms are nonspecific like abdiminal discomfort,dyspepsia and dull aching pain.The symptoms may remain vague till the patient has an acute emergency like torsion or rupture of ovarian tumor.There is marked variation in the clinical presentation as well as histopathological types of ovarian tumors.

Majority of the ovarian tumors occured during reproductive age group.In the present study , the maximum number ( 59.72% ) of benign tumors were observed between the age group 20-40 years which is the active reproductive life where as majority of malignant tumors ( 71.42%) occurred after 50 years of age.Similar findings were noted by Vissa Shanthi et al[2], ,Monica Malli et al[6], and Vinitha Wills & Rachel Mathew.[4]

Most of the benign and malignant ovarian tumors presented with mass per abdomen and pain in abdomen which is comparable with the studies done by Vissa Shanthi et al[2]& S Kayastha[1]

Out of 72 Ovarian tumors, majority 63(87.50%) were benign, 02 ( 2.78%) were borderline and 7 ( 9.72% ) were malignant. These findings are comparable with Vissa Shanthi et al,[2] Monica Malli et al[6],Vinitha Wills & Rachel Mathew[4] ,S Kayastha[1] and Ghosh A et al[7.] In all these studies majority of the ovarian tumors were benign .

Out of 72 ovarian tumors studied,54 were surface epithelial tumors constituting the commonest type accounting for 75%.Studies done by Vissa Shanthi et al[2] (84.62%),Monica Malli et al[6] (78%),Vinitha Wills & Rachel Mathew[4] (71.42%),S Kayastha[1] (72.6%)and Ghosh A[7] (52.56%) also showed that surface epithelial tumors were the commonest among ovarian tumors.

In present study serous tumors constituted 83.33 % of surface epithelial ovarian tumors which is in accordance with studies done by Vissa Shanthi et al[2](78.78%) ,Monica Malli et al[6] (61.53%),Vinitha Wills & Rachel Mathew[4](65%) ,S Kayastha[1](55%) and Ghosh A et al[7] (67.44% ).In serous tumors,serous cystadenoma was the most common tumor (84.44%). Studies done by Vissa Shanthi et al[2](83.65%) ,Monica Malli et al[6] (72.91%),Vinitha Wills & Rachel Mathew[4] (96.15%) and Ghosh A et al[7] (76.77%) showed similar findings.Serous cyst adenocarcinoma constitued 6.66% of all serous tumors which is comparable with the studies done by Vissa Shanthi et al[2](2.88%) ,Vinitha Wills & Rachel Mathew[4](3.84%).Mucinous tumors were seen in 16.66% of surface epithelial ovarian tumors where as this figure was 20.45% & 25.58% in studies done by Vissa Shanthi et al[2] and Ghosh A et al[7] respectively.

In present study germ cell tumors constituted 20.83% of cases, and mautre cystic teratoma was the most common germ cell tumor. Similar findings were noted by Vissa Shanthi et al[2](10.90%) ,Monica Malli et al[6] (14%),Vinitha Wills & Rachel Mathew[4](23.20%) and S Kayastha[1](26.31%) .

In present study, sex cord stromal tumors constituted 2.78% of cases where as metastatic tumors comprised 1.39% of cases. Vissa Shanthi et al[2](3.84% & 0.64%),Monica Malli et al[6] (5% &3%), and Ghosh A et al[7] ( 1.95 % & 1.71%) showed similar findings.

**CONCLUSION**
Benign ovarian tumors are more common than malignant tumors for all age groups.Most common histological types are Surface epithelial tumors constituting the bulk of both benign and malignant tumors followed by Germ cell tumors.Benign ovarian tumors occur more commonly in reproductive age group. Most of the malignant tumors occur beyond 50 years of age.Mass per abdomen and pain in abdomen are the most common clinical presentation.Though the imaging techniques and clinical examination help in detecting ovarian tumors, histopathological examination is the gold standerd for the typing of ovarian tumor and its histogenesis which affects the treatment and prognosis of the tumor.

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