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## Solid tumors of ovary: 1 Year institutional study

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#### Abstract

Majority of ovarian tumors arise from surface epithelium, germ cell layers and stromal tissue. They give a wide spectrum of tumours which account for fifth most common cause of cancer related deaths in women. Fortunately most of the ovarian tumours are cystic and benign in nature. Solid tumours of ovary are histopathologically very complex and most of metastatic tumours and surface epithelial carcinoma are solid in nature. Solid ovarian tumours can see in all age groups. In our study we found Germ cell tumors were the commonest followed by sex cord stromal tumors. In the view of their complexity and malignant nature clinicians and radiologists should require special attention while exploring the solid ovarian tumours.

**Keywords:** Benign and malignant tumours, Incidence, Histopathology, solid ovarian tumours

#### 1. Introduction

Ovarian neoplasms are the most common tumor among the women and fortunately 90% of them are benign<sup>[1]</sup>. Solid Ovarian tumors are wide spectrum of neoplasm with complex histomorphological patterns<sup>[1, 2]</sup>. Most of solid ovarian tumours are malignant in nature. They can arise from epithelial tissues, mesenchymal tissues, and specialized hormone secreting germinal and embryonic cells<sup>[3, 4, 5]</sup>. Main etiology behind solid ovarian tumors is risk factors that are increasing age, positive family history, increase the age of reproduction, high socioeconomic classes, and null parity<sup>[2, 4, 5]</sup>.

#### 1.1 Aims and Objectives

Aim of the present study is to access the incidence, age distribution, gross and microscopic features of solid ovarian tumors in the view of WHO classification.

#### 2. Material and Methods

Present study is a retrospective study carried out in the department of pathology, Guntur medical college, Guntur, for a period of one year i.e. from January 2018 to December 2018. After thorough gross examination, representative bits were routinely processed and stained with eosin and hematoxylin. Special stains were done wherever required.

#### 2.1 Inclusion Criteria

All the solid tumors and predominantly solid tumors of ovary are included.

#### 2.2 Exclusion Criteria

Inadequate samples and cystic tumors of ovary are excluded.

#### 3. Results

The overall incidence of solid ovarian tumors was 24% of all the ovarian tumors studied. Twenty three solid ovarian tumors were diagnosed in 3 years.

Most common age group is 41-50 yrs accounting for 8(34%) cases and next common age group is 51-60 yrs (21%) (Table 1).

**Table 1:** Age distribution

Age group	No of cases
0-10	2
11-20	1
21-30	2
31-40	3
41-50	8
51-60	5
>60	2
Total	23

The overall incidence of solid ovarian tumors was 24% of all the ovarian tumors studied. Four (17.4%) are bilateral among all the solid ovarian tumours

Out of 23 cases 3(13.04%) are epithelial tumors, 6(26.03%) are sex cord and stromal tumors, 9(39.1%) germ cell tumors and 3(13.07%) are metastatic tumours (Table 21).

In surface epithelial tumors 2 (66%) are serous carcinomas (Figure 1) and 1(34%) are mucinous carcinomas (Figure 2). In sexcord stromal tumors 3 are fibromas (Figure 3), 2 are thecomas, 1 is benign sertoli - leydigcell tumour. In germ cell tumors 4 are dysgerminomas (Figure 4), 4 mature teratoma and other is mature teratoma with gliomatosis peritonei (Figure 5).

Metastatic tumours accounts for three Krukenberg tumours (Figure 6), miscellaneous tumours includes small cell carcinoma and a case of Lymphoma

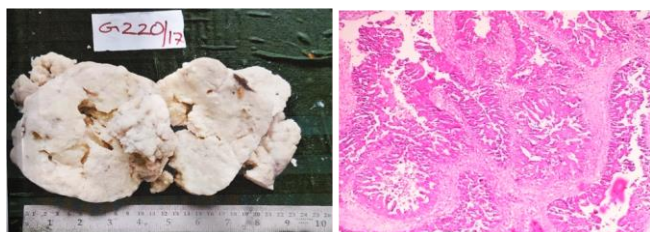
**Table 2:** Histomorphological pattern of solid ovarian tumours

WHO Morphological type	No of cases	Percentage
Epithelial tumours	3	13.04%
Sex cord-stromal tumours	6	26.03%
Germ cell tumours	9	39.1%
Metastatic tumours	3	13.04%
Miscellaneous	2	8.7%

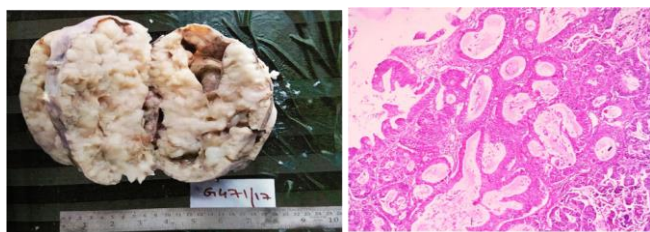
Majority of cases were malignant in nature account for 12(52.2%) cases and 11(47.8%) cases were benign (Table 3).

**Table 3:** Nature of solid ovarian tumors

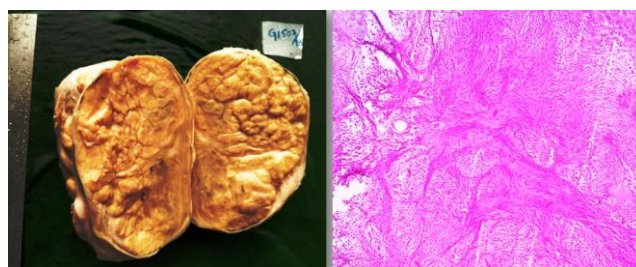
Nature of Tumour	No of cases
Benign	11(47.8%)
Malignant	12(52.2%)
Total	23(100%)



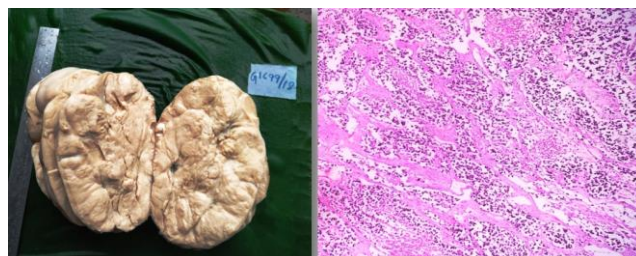
**Fig 1:** Gross and microscopy of serous carcinoma of ovary



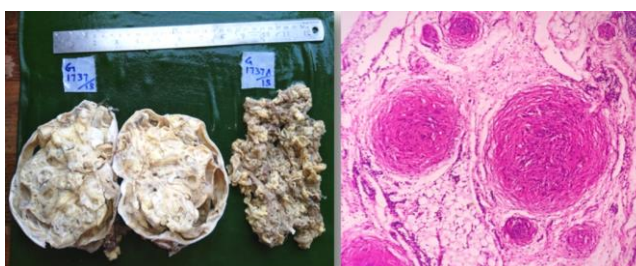
**Fig 2:** Gross and microscopy of mucinous carcinoma of ovary



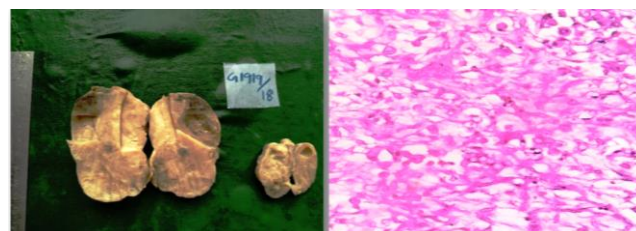
**Fig 3:** Gross and microscopy of Fibrothecoma of ovary



**Fig 4:** Gross and microscopy of Dysgerminoma of ovary



**Fig 5:** Gross and microscopy of mature teratoma with gliomatosis peritonei



**Fig 6:** Gross and microscopy of Kruken berg tumour of ovary

**4. Discussion**

In our study we have noted most common age group is 41-50 years accounting for 8(34%) cases and next common age group is 51-60 yrs (21%). Tyagi SP *et al.* the average age ranged between 42 and 45 years, but it was comparatively low for germ cell tumours (26.8 years) [6].

Andrés MM *et al.* Solid ovarian tumours are uncommon in childhood with a median age of 9.2 years (range 0.9-14.2), were registered [7, 8]. Tyagi SP *et al.* Four cases of immature teratoma and two cases of granulosa cell tumour was diagnosed below 15 years [6]. In our study only two cases were noted with 8.6% below 10 years

Matt A. Morgan *et al.*, Tyagi SP *et al.* study have mentioned overall incidence of solid ovarian tumours was 23.4% of all the ovarian tumours [6]. Pradhan, A *et al.* has mentioned 13.2% and Kancherla J *et al.* has given 16% of solid ovarian tumours among all ovarian tumours studied in their study [9, 10]. In our study the overall incidence of solid ovarian tumors was 24% among all the ovarian tumors studied.

In our study four (17.4%) are bilateral among all the solid ovarian tumours. Tyagi SP *et al.* study, bilateral tumours were seen in 22 cases (23.2%) out of 95 cases observed [6].

Tyagi SP *et al.* noted that among solid ovarian tumours 16.2% were benign and 83.8% were malignant. In our study majority of cases were malignant in nature account for 12(52.2%) cases and 11(47.8%) cases were benign [6]. Chandanwale SS *et al.* in their study of malignant ovarian tumours 50 cases noted 21(42%) were solid in nature [11].

Tyagi SP *et al.* noted that among all solid ovarian tumours 28.2% were Epithelial tumours which were the commonest followed by 22.2% germ cell tumours, 21.4% sex cord stromal tumours, 19.7% were metastatic tumours and non-specific tumours were 8.5% [6].

We have noted that out of 23 cases of solid ovarian tumours germ cell tumours were commonest, 9(39.1%) followed by 6(26.03%) are sex cord and stromal tumors and 3(13.07%) are epithelial tumors, 3(13.07%) are metastatic tumours.

Incidence of individual solid tumours basing on WHO classification of ovarian tumours Tyagi SP *et al.* noticed 6.8% of Dysgerminoma, 11.1% of Granulosa cell tumour, one case of immature teratoma with Gliomatosis peritonei [6].

In our study among surface epithelial tumors 2 (66%) are serous carcinomas and 1(34%) are mucinous carcinomas. In sexcord stromal tumors 3 are fibromas, 2 are thecomas, 1 is benign sertoli - leydigcell tumour. In germ cell tumors 4 are dysgerminomas, 4 mature teratoma and other is mature teratoma with gliomatosis peritonei. Wang J *et al.* described mature teratoma with gliomatosis peritonei as predominantly solid tumour [12].

Tyagi SP *et al.* noted 23(19.6%) cases of metastatic tumours [6]. In our study metastatic tumours accounts for 13.04%, all are Krukenberg tumours. Kiyokawa T Krukenberg tumors of the ovary were typically solid and firm to edematous to gelatinous [13].

In our study miscellaneous tumours includes small cell carcinoma and a Lymphoma. Kumar N *et al.* and Ekanayake CD *et al.* reported Primary Ovarian Lymphoma as large solid ovarian masses [14, 15].

## 5. Conclusion

Incidence of solid ovarian tumours is comparatively low in childhood and majority of solid ovarian tumours were seen among the age group of 40-60 years with mean age of 47 years. The youngest patient of our series was a girl of 9 years with mature teratoma with Gliomatosis peritonei and the oldest patient was 82 years, a case of High grade serous carcinoma of ovary. In our study we found Germ cell tumors were the commonest followed by sex cord stromal tumors. The incidences of solid epithelial tumours were found to be low in our study. In the view of their complexity and malignant nature clinicians and radiologists should require special attention while exploring the solid ovarian tumours.

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