

ORIGINAL RESEARCH

To study the spectrum of Non-Neoplastic and Neoplastic lesions of ovary detected by Histopathology in a tertiary care Hospital, Telangana state, India

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ABSTRACT

Introduction: Ovarian cancer is the fifth most common malignancy among women and second most common gynecologic malignancy. It is the most common cause of death due to malignancy of female genital tract. In India; the ovary is next in importance to cervix as the seat of cancer of female genital tract. In normal ovulatory cycles, repeated ovulatory rupture and repair can lead to gene mutations³ which can give rise to malignancy.

Materials & Methods: Hospital based descriptive study conducted in pathology department of Asian Institute of Gastroenterology, Telangana during the period of January 2022 to December 2022. Purposive sampling technique is used as all the specimens sent for Histo-Pathological examination were studied.

Conclusion: Surface Epithelial ovarian tumors is the most common category of ovarian tumors followed by Germ cell tumors, Sex cord stromal tumors in decreasing order of frequency. Incidence of Benign tumors is much higher than malignant tumors with Benign Serous cystadenoma being the most common benign tumor and serous cystadenocarcinoma being the most common malignant tumor.

Keywords: Immunohistochemical markers (IHC), Neoplastic Lesions, Non-Neoplastic lesion, Ovarian Tumors

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Introduction

Ovarian malignancies constitute about 4% of the total cancers in females and 25% of malignant tumors of the female genital tract.² Different Ovarian tumors tend to involve different age groups preferentially, although no age group is an exception. Despite the new techniques in imaging and clinical diagnosis, the diagnosis of ovarian tumors is primarily dependent upon histopathological examination. Both primary and secondary tumors of the ovaries are relatively frequent showing a variety of histopathological patterns.⁴ Determination of various histologic patterns of ovarian tumors is very important in diagnosis as well as prognosis of ovarian tumors. Prognosis of the tumors can also be predicted from the degree of differentiation of the tumors, stage and as well as whether unilateral or bilateral. Ovarian lesions being asymptomatic in nature and very difficult to distinguish between benign or malignant by radiology or clinically, histopathological analysis becomes necessary. Studying the correlation of tumors with various parameters like age, menstrual status and parity can help to understand the risk factors and

pathogenesis of ovarian tumors. In the current study, correlation of tumors with various parameters like age, menstrual status and parity were studied and ovarian lesions are evaluated with regard to size, laterality, gross and histopathologic features. In difficult cases diagnosis of certain ovarian neoplasms were made with the help of Immunohistochemical markers (IHC). Aim of this study is to study the spectrum of neoplastic (N) and non-neoplastic (NN) lesions of ovary detected by histopathology with focus of IHC (P53, CD117, TTF1).

Materials & Methods: Hospital based descriptive study conducted in pathology department of Asian Institute of Gastroenterology, Telangana during the period of January 2022 to December 2022. Purposive sampling technique is used as all the specimens sent for Histo-Pathological examination were studied. 150 samples were studied. Inclusion Criteria : 1. All the ovarian tumors, irrespective of their clinical features, stage of the disease or type of surgical procedure implemented were included. 2. Hysterectomy

specimens with incidental ovarian tumors were also included. Exclusion Criteria: Unfixed and Autolysed samples. Relevant data like parity, clinical presentation, age of the patient was collected in through a semi-structured questionnaire. For specimens of ovarian tumors, gross observation of the specimens received was done. For proper fixation, tumors were cut serially at 1cm thickness. The specimens were fixed in 10% formalin for 24-48 hours. After fixation, sections were given from representative areas. Sections were cut at 4-5 micrometer thickness & stained with H&E. All

stained histopathology slides were studied in detail. Complete details of the specimen consisting of gross features, Microscopic features and final diagnosis were studied. World Health Organization classification was used for classifying the tumors. Analyses of the data done after spreading the data in MS excel with the SPSS Software 21.0 available in the institution. The results obtained were interpreted as Graphs & tables wherever required

Results

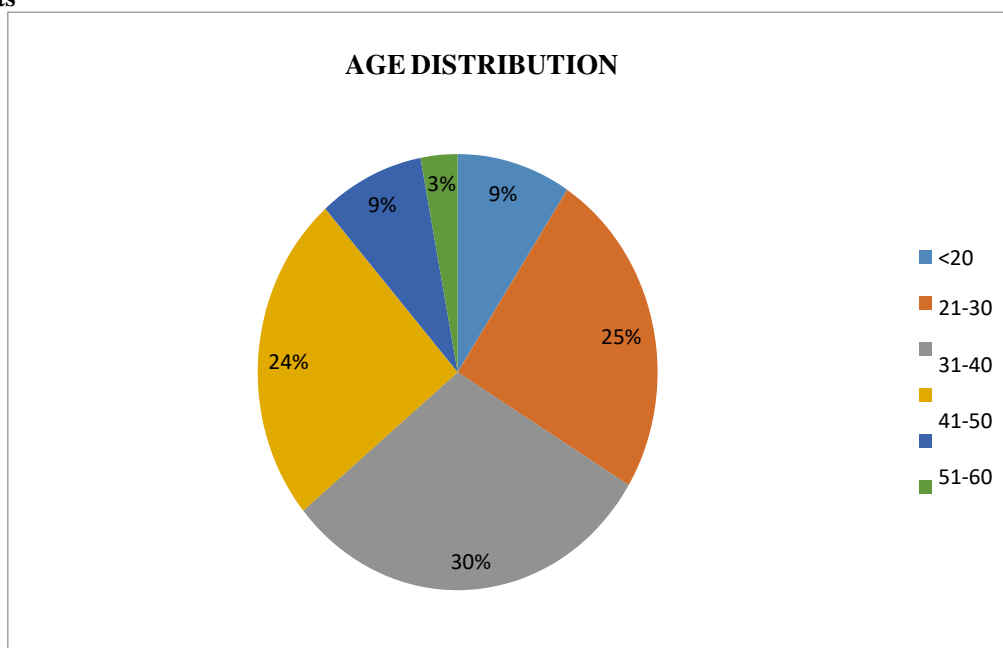


Figure 1: Showing age distribution among the studied ovarian lesions

It is observed that majority of tumors i.e., 96 (64%) were present between 3rd to 6th decade. Below 20 years and above 60 years only one tenth tumors were seen. Approximately 50 % tumors were present in reproductive age group. Above 60 years constitute 3 cases (2.3%) and Less than 20 years constitute 14 cases (9.3%). 21 to 30 years of age constitute 24.6% . 31 to 40 years constitute 30.6%. 41 to 50 years of age constitute 24.6%. 51 to 60 years of age constitute 8.6% .

Table 1: Showing Laterality among the tumors studied

Sr.No.	Laterality	No. Of Cases(n=150)	Percentage(%)
1	Unilateral	131	87%
2	Bilateral	19	13%

The incidence of unilateral and bilateral tumors. Most of the tumors were unilateral 131 cases out of 150. 19 out of the 150 tumors have bilateral presentation. Unilateral presentation was 87% . Bilateral presentation was 13%.

Table 2: Showing size tumors among the studied specimens

S.No	Size Of Tumor(cm)	No.OfCases	Percentage(%)
1	<10	65	43%
2	11-20	60	40%
3	21-30	24	16%
4	>30	01	01%

Majority of the tumors i.e. 125 (83%) were less than 20 cms in the largest dimension. Only 24 tumors had their largest dimension between 21 to 30 cms. The largest tumor was measuring 32x25x12 cms which was unilateral papillary serous cystadenoma carcinoma affecting a 68 year old. Surface glandular inclusions is the smallest tumor in this study measuring 0.5cms present in a 21 year old. 65 cases of ovarian lesions are <10cm size which contributing 43% . 60 cases of ovarian lesions are 11-20 cms in size which contributing 40%. Ovarian lesions of 21-30 cms in size contributing 16% . Only 1 case has > 30 cms in size which contribute 1%.

Table 3: Neoplastic versus Non-Neoplastic lesions in the study specimens

Type	No of Cases	Percentage
Neoplastic	71	47.3%
Non –Neoplastic	79	52.6%

It is observed that Non- Neoplastic tumors are common than Neoplastic lesions. Non –neoplastic lesions constitute 79 cases out of 150 cases. Neoplastic tumors constitute 71 cases out of 150 cases. Percentage of Non – neoplastic lesions are 52.6%. Percentage of Neoplastic lesions are 47.3%

Table 4: Histo-pathological observations in the studied specimens

S.No.	Microscopic Type	No. Of Cases(n=71)	Percentage(%)
1	Surface Epithelial Tumors	53	74.6%
2	Germ Cell Tumors	13	18.4%
3	Sex Cord Stromal Tumors	5	7%
4	Metastatic Tumors	0	0%

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. Surface epithelial tumors constitute 53 out of 71 cases; germ cell tumors constitute 13 out of 71 cases; Sex cord stromal tumors constitute 5 out of 71 cases. No Metastatic tumors are encountered in this study. Surface epithelial tumors constitute 74%; Germ cell tumors constitute 18.4%; Sex cord stromal tumors constitute 7%.

Table 5: IHC Markers Expression in various Histo-pathological subtypes of ovarian tumors in this study

Type Of Tumor	P53	CD117	TTF1
Serous Cystadenoma	N	N	N
Serous Cystadenocarcinoma	P	N	N
Mucinous Cystadenoma	N	N	N
Borderline Mucinous Tumor	N	N	N
Mucinous Cystadenocarcinoma	N	N	N
Brenner tumor	N	N	N
Endometrioid Carcinoma	P	N	N
Yolk sac tumor	P	N	N
Mature Cystic Teratoma	N	N	N
Dysgerminoma	N	P	N
Struma ovarii	N	N	P
Fibrothecoma	N	N	N
Granulosa Cell Tumor	N	N	N

The common types of tumor markers observed in the specimens were P53, CD117, TTF1 in this study.

Discussion

Ovarian neoplasms became increasingly important because of its large variety of Histo-morphological patterns and also they have gradually increased the mortality rate causing female genital cancers because of its vague symptoms and diagnosed in advanced stage. The incidence, clinical appearance and the behavior of the different types of ovarian tumors is extremely variable. It is generally impossible to diagnose the nature of the ovarian tumor just by clinical or gross examination, although it provides important diagnostic clues in

formulating a differential diagnosis. Hence, one has to depend on the microscopic appearance of the tumor for accurate typing of the ovarian tumors ^{5,6} A total of 150 cases of ovarian tumors were examined in this study , out of which Benign tumors comprised of 59 (39.3%) cases, Borderline tumor 3 (2%) cases and Malignant tumors 12 (8%) cases and Non-Neoplastic tumors of 79(52.6%) .Almost similar results were seen in many different studies where benign tumors were more common than malignant tumors. ^{7, 8, and 9}

2nd to 5th decade was the most common age group affected. Adolescent age group constituted 9.32 % in this study. This is also comparable to study done by Deshpande et al where the incidence of ovarian tumors in this age group was 4.2%.¹⁰

Nulliparity and low parity were associated with increased relative risk of ovarian tumors in the present study. In this study, tumors in Nullipara and women with low parity (two children) contributed to 59.3% of all tumors which was consistent with findings of study done by Kayastha et al.¹⁰ In this study most of the tumors were Unilateral. Only 19 out of 150 tumors (11%) had Bilateral presentation. Among bilateral tumors 8 (58.4%) were malignant. Thus among Bilateral tumors, Malignant tumors are more common. 7(11.8%) were Benign tumors and 4(5.5%) were Non- Neoplastic tumors. Similar findings were observed in study by Thakkar N, et al⁹ and study conducted by Prabakar B, et al¹⁰ Prakash A, et al.¹¹ The largest tumor was measuring 32x25x12 cms which was unilateral Papillary Serous cyst-adenocarcinoma affecting a 68 year old lady. Corpus luteal cyst is the smallest in this study measuring 0.5x0.5 cms. This finding correlated with study by Pilli et al.¹², In their study the largest tumor measured 33x23x22 cms and smallest one measured 3x2x1 cms. Non-neoplastic lesions (79) are common than neoplastic lesions (71) similar to Gupta N et al.⁶¹ Out of 71 cases studied, majority were Benign tumors [59(78.8%)], followed by Malignancy [12 (17%)] and [03 (4.2 %)] cases of Borderline malignancy were found. These findings were similar to studies done by Pilli et al.¹² and Sawan A et al⁷ and other studies recorded higher incidence of benign tumors. The most common histopathological pattern encountered in the present study was Surface Epithelial tumors followed by Germ cell tumors. Surface Epithelial tumors constitute 53 out of 71 cases; Germ cell tumors constitute 13 out of 71 cases; Sex cord stromal tumors constitute 5 out of 71 cases. No metastatic tumors are encountered in this study. Present study shows Dysgerminoma tumor cells are constrictively reactive for CD117 similar to Sever M et al¹³. Present study shows Overexpression of P53 in Serous carcinoma, Yolk sac tumor, and Endometrium carcinoma similar to Hartmann LC et al.^{14,15,16} Present study also seen that TTF 1 is positive in struma ovarii similar to Haselton PS et al.¹⁷

Conclusion

Surface Epithelial ovarian tumors is the most common category of ovarian tumors followed by Germ cell tumors, Sex cord stromal tumors in decreasing order of frequency. Incidence of Benign tumors is much higher than malignant

tumors with Benign Serous cystadenoma being the most common benign tumor and serous cystadenocarcinoma being the most common malignant tumor. Reproductive age group showed higher incidence of ovarian tumors whereas there was increasing incidence of Malignancy with increasing age group. Exception to this was the higher incidence of Malignant Germ cell tumors in adolescent age group. Although nullipara and low parity showed higher risk of malignancy. Benign tumors showed cystic morphology and there is significant increase in incidence of malignancy in tumors with complex or solid morphology. IHC markers like, CD 117 reactive in Dysgerminoma, p53 Over expression seen in Malignant tumors, TTF 1 positive in Struma ovarii.

Conflict of Interest: Non Declared

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