ORIGINAL ARTICLE

# Histopathological Variants of Ovarian Tumors in Fertile Age Groups Females

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## ABSTRACT

**Objectives:** To record the histopathological variants of ovarian tumors in different decades of reproductive age group females in Nawabshah.

**Methods:** This cross-sectional study was conducted at the Pathology department, Peoples University of Medical Health & Sciences, and NORIN Cancer Hospital Nawabshah, during the period of 2 years (July2015-July2017). Total 180 cases were included in our study, 29 patients were included from NORIN, 32 were included from private hospitals and 119 patients were taken from Gynecology & Surgical units of Peoples Medical College Hospital. A proforma was filled by the researcher before surgery. After surgery the biopsy specimens were processed for Histo-pathological evaluation in the pathology department. Haematoxylin & Eosin method for staining was routinely used, while Masson Trichrome and periodic Acid Schiff staining used for undifferentiated tumors. All the data collected was statistically analyzed and the results were tabulated.

**Results**: Among all the cases of ovarian tumors, 76% were benign tumors, 1 % were borderline tumors and 23% were malignant tumors. The commonest tumors, 83% were Surface epithelial tumors. Germ cell tumors were 16%, the second common variety but less common, Sex-cord stromal tumors were 1% in frequency. Among all tumors the benign epithelial variety was commonest 58% with frequency among all benign tumors, whereas the malignant counterpart comprises of 83% among all malignant tumors of ovary. The benign tumors of ovary seen more common than malignant ovarian tumors. The benign surface epithelial tumors were more prevalent before 40 years of age, while malignant were more common in advance age. Amongst all, serous cystadenoma is seen commonest type of ovarian tumors.

**Conclusion:** The benign tumors of ovary are seen more prevalent than malignant tumors. The surface epithelial tumors were more prevalent before 40 years of age, while malignant were more common in advance age. The serous cystadenoma were commonest benign variety.

**Key Word:** Ovarian Tumors, Histopathological Variants, Reproductive Age Group.

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## INTRODUCTION:

Ovarian tumors are those arises from cells of ovary and broadly categorized into benign, borderline and malignant tumors and may involve the other parts of the body by metastasis[1]. The benign tumors are more common in reproductive age group but may occur at any point in life and represent the 80% of all ovarian tumors. The borderline and malignant tumors are common in later part of life[2]. The malignant ovarian tumors are considered as 2nd lethal gynecological malignancy worldwide and accounting for leading cause of death, due to the cancers of female genital tract[3].

The incidence for ovarian tumors were variable in developed and developing countries as the surface epithelial tumors were approximately up to 55% of all ovarian tumors while it is up to 70% in Japan[1]. The mucinous tumors were up to

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15% of all ovarian tumors in developed countries but in Japan they accounts for 30% of all ovarian tumors. The Germ cell tumors constitute 3% in western world while 30% in Japan[1].

The ovary is made up of multiple cells as totipotent sex cells, multipotent mesenchymal cells; this complex histology is responsible for diverse morphology of ovarian tumors, like Surface epithelial tumors, Germ cell tumors Sex-cord stromal tumors[4]. The incidence of ovarian tumor is increased progressively from the 3rd decade of life and peaks in the 7th decade. There are different morphological types of ovarian tumors seen in different decades of life and specific tumors may found, more commonly in few races and related geographic locations of the world[5].

Over the past years, the frequency of malignant tumors in Pakistan was seen increased[6]. In Pakistan, cancer incidence data as reported by, Cancer Registry Karachi the ovarian tumor is on the 3rd top malignancy in Karachi and top 4th malignancy in Rawalpindi[7,8]. A 5-year study in Punjab, Lahore shows that ovarian malignancy is the second commonest malignancy in females, which is 13.6% with median age was 47 years[9].

## METHODS:

This cross-sectional study was conducted at the Pathology department, Peoples University of Medical Health & Sciences (SBA), and NORIN Cancer Hospital, Nawabshah. The duration of study was 2 years from July 2015 to July 2017. The sample size is calculated by using standard formula: $n=t^2xpq\ (1-p)/m^2$. Total 180 cases were included in our study, 29 patients were taken f rom NORIN, 32 were included from private hospitals and 119 patients were included from Gynecology & Surgical units of Peoples Medical Hospital. The patient with ovarian lesion/ mass after radiological confirmation operated at gynecology department or elsewhere but specimen was processed in the department of pathology, PUMHS-W (S.B.A). The proforma filled by researcher before surgery. After surgery, the biopsy received and processed for Histopathological evaluation. World Health Organization classified the tumor according to the given discipline for classification of ovarian tumors. Haematoxylin & Eosin method for staining was routinely used, while Masson Trichrome and periodic Acid Schiff staining used for undifferentiated tumors, the data collected was statistically analyzed.

## RESULTS:

The main objective of this research work was to evaluate the different morphological/Histo-pathological varieties in different decades of reproductive age group females operated/treated at Peoples medical college hospital Nawabshah, NORIN Cancer Hospital, and Private hospitals in Nawabshah.

Out 0f the 180 ovarian tumors, (136) 76 % were benign, (42) 23% were malignant, (02) 1% was of borderline malignancy (Table-I). The age range seen in our patients was 13-49 years, with the youngest patient of 13 years old and elder patient was of 49 years old. The mean age for ovarian tumors was 34 years. This result reflects that among the total number of ovarian tumors the more than seventy six percent were of benign variety, 23 % malignant one and the remaining 1% was of borderline variety.

**Table-I: Frequency of Various Types of Ovarian Tumors.**

| TUMORS | NUMBER | PERCENTAGE |
|---|---|---|
| Benign Tumor | 136 | 76% |
| Borderline Tumor | 02 | 01% |
| Malignant Tumor | 42 | 23% |
| Total | 180 | 100 |

The benign epithelial tumors are the most common varieties found in this study. Amongst which the serous cystadenoma were (79)71%. The Mucinous cystadenoma were (33) 29%. The total numbers of benign epithelial tumors were 11 out of 180, this result shows that these are the commonest tumors among all other ovarian tumors. The frequencies are shown on table No. II. The percentage given in the text is the percentage of only benign epithelial tumors.

Among benign epithelial tumors the most common variety is serous cystadenoma followed by mucinous cystadenoma. The frequency of Malignant Epithelial ovarian tumors were (34) 19% out of all tumors in study. The statistical breakdown as shown in table - II is as under, Serous cystadenocarcinoma were (25) 73.5% .Mucinous cystadenocarcinoma were (07) 20.5%. Mixed Mullarian tumor is (02)6%.

**Table-II: Frequency of Benign/Malignant Epithelial Tumors**

| TUMORS | Number | % |
|---|---|---|
| Serous Cystadenoma | 79 | 54 |
| Mucinous Cystadenoma | 33 | 23 |
| Serous Cystadenocarcinoma | 25 | 17 |
| Mucinou Cystadenocarcinoma | 07 | 05 |
| Mixed Mullarian Tumor | 02 | 01 |
| Total | 146 | 100 |

Among all benign tumors the germ cell tumors were (24)18%, but the variety seen was only mature cystic teratoma. In this study the malignant germ cell tumors, were (6) in number, the variety was dysgerminoma (03) 50% and malignant teratoma were (02) 33%, and mixed germ cell tumor (01)17% (Table-III). The Sex-Cord stromal tumors seen in this study were only malignant variety, Granulosa cell tumor (02) 1%.

**Table-III: Frequency of Benign/Malignant Germ Cell Tumors**

| TUMORS | Number | % |
|---|---|---|
| Mature Cystic Teratoma | 24 | 80 |
| Dysgerminoma | 3 | 10 |
| Malignant Teratoma | 2 | 7 |
| Mixed Germ Cell Tumor | 1 | 3 |
| Total | 30 | 100 |

As there were 112 benign epithelial tumors reported in this study. Among them 3% of serous cystadenoma were recorded in between 13 to 20 years age group, 32% were found in between 21 to 30 years of age, 21% were in between 31 to 40 years of age and 15% tumors reported in 41 to 49 years of age. The higher incidence of serous cystadenoma was recorded between 21 to 30 years of age group, but lowest one was seen in between 13-20 years. The statistical breakdown of mucinous cystadenoma tumors relating to the age as seen in this study is 4 % in between 13 to 20 years, 12 % between 21 to 30 years of age, 7% in 31 to 40 years age group and 6% between 41 to 49 years age group. Higher incidence of mucinous cystadenoma was recorded in 21 to 30 years of age. Low incidence is seen in 13 -20 years group. In this way 07% of benign epithelial tumors are seen in between 13-20 years, 44% were recorded in 21-30 years age group, 28% were seen in 31-40 age group and 21% were documented in 41-49 year age group.

The total number of malignant epithelial tumors were 34,the total number of serous cystadenocarcinoma were( 25 )73%, among them 3%were found in 13-20 years age groups, 3% were reported in 21-30 years groups, 26% tumors documented in 31-40 years and 41% were seen in 41-49 years groups. The higher incidence of serous cystadenocarcinoma was seen in 41-49 groups. The low incidence was seen in 13-20 and 21-30 years. There were (07) 21% cases of mucinous cystadenocarcinoma reported in our study and all were found in 41-49 years groups. In this way the higher incidence of mucinous cystadeno-carcinoma was seen in 41-49 years age group. (02) 6% cases of mixed Mullarian tumors were found in 41-49 years age group. The total 3% of malignant epithelial cancer were seen in 13-20 age group, 3% cases were documented in 21-30 years age, 26% cases were reported in 31-40 group and 68% were found in 41-49 year age. The borderline tumor of ovary were (02)1%. Recorded in our study in between 21-30 years of age group (Table-IV).

**Table-IV: Frequency of Benign/Malignant Germ Cell Tumor in Different Age Groups.**

| Tumors | 13-20yrs | 21-30yrs | 31-40yrs | 41-49yrs | Percentage |
|---|---|---|---|---|---|
| Mature cystic teratoma | 12.5% | 37.5% | 29% | 21% | 100 |
| Total (Benign) | | | | | 100 |
| Dysgerminoma | - | - | 33% | 17% | 50% |
| Malignant teratoma | - | 16.5% | 16.5% | - | 33% |
| Mixed germ cell tumor | | 17% | | | 17% |
| Total( Malignant) | | 33% | 50% | 17% | 100 |

In our study the incidence of benign germ cell tumor in relation with age is as under shown in table No.V. The only benign germ cell seen in this study was mature cystic teratoma. The presentation of tumor is as:

| | |
|---|---|
| 13-20 years | (03) 12.5% |
| 21-30 years | (09) 37.5% |
| 31-40 years | (07) 29% |
| 41-49 years | (05) 21% |

In this study the distribution of tumor shows its higher incidence in 21-30 years age group, and lower incidence in 13-20 years. The frequency of malignant germ cell tumors in different age groups is as under:

| | |
|---|---|
| 13-20 years | 00- |
| 21-30 years | (02) 33% |
| 31-40 years | (03) 50% |
| 41-49 years | (01) 17% |

**DISCUSSION**:

Tumors of ovary are considered as heterogeneous group of tumors because they originate from different cells of ovary[10]. Ovarian tumors are divided according to their biological behavior as stated in WHO classification, into benign, borderline and malignant classes. In our study the benign tumors were 76%, the borderline tumor was 1%, while malignant tumor constitute 23%. In our study the mean age for the ovarian tumors was 34 years.

This institution based study shows that the ovarian tumors are quite common in general female population, ≤50 years of age. These results are in conformation with Saxena et al India[11]. In our study the Histo-pathological evaluation revealed that 76% tumors were benign, 23% were malignant and 1% were borderline tumors, out of 180 neoplasms which were received during one and half years of study. The results of our study are in conformation with data from Washington by Scully et al[12], but are in contradiction with Yasmin S et al Abbotabad[13], Ahmed z et al Karachi[14].

In our study the benign tumors are more common in all divided groups than malignant tumors of ovary. This result is in conformation with the study conducted in India, by Yogambal[15] et al India, and Zubair M et al in Rawalpindi Pakistan[16]. The borderline tumors are characterized by increased complexity of stromal papillae, with stratification of epithelium and nuclear atypia but absence of invasion of stroma[17]. In our study total 1% cases of borderline malignancy were recorded and both were sero-mucinous type. The results were similar with study conducted by Yogambal et al[15] in India, but in contradiction with Mc Cluggage WG UK[18].

The malignant tumors reported in our study were 23%. This data is similar to the results of Scully et al[12], study done at Washington and Malli et al in India[19] but these results are in contradiction with Ahmed Z et al[14] Pakistan, Yasmin S et al[13] Pakistan.

The benign epithelial tumors were the commonest 76% of all tumors in our study and the results are in concurring with study of Zubair M et al Pakistan[16], Bindal et al[20] India and scully et al[12].

The most common benign tumors were serous cystadenoma 58% and mucinous cystadenoma 24% of all benign tumors , a study by Thanikasalam K et al[21] Kuala lampur showed that serous cystadenoma is common in Indians while mature cystic teratoma were common in

Malaya and Chinese. Another study results were in contradiction with our results, done by Shaikh S et al[22] at Jammu & Kashmir.

The common malignant tumor were serous cystadenocarcinoma 59.5% mucinous cystadenocarcinoma 17%. Our results are in conformation with results of study, conducted at Belgium by Pilli et al[23], and Prabhakar et al India[24] in India but in contradiction with Maharjan et al Nepal[25]. The second most common variety of ovarian tumors reported in our study was germ cell tumors, which was 16% among all ovarian tumors, these results are in concordance with Zubair M et al[16] but in contradiction with the study conducted in Nepal by Jha et al[26]. The common benign variety was mature cystic teratoma, 83% among all germ cell tumors while others were dysgerminoma 10%, and malignant teratoma 7%. The results for mature cystic teratoma are in conformation with results of Malli et al[19].

In our study the third variety of tumors observed was sex cord stromal tumors they consists of one percent of all ovarian tumors, results are in conformation with Zubair M et al,[16] Pilli et al[23]. The variety recorded here was granulosa cell tumor but results are in contradiction with Gupta et al[27] India.

The higher incidence of benign serous epithelial tumors 44% were found in between 21 to 30 years of age were 7% were found in between 13 to 20 years of age. Similar results were found for mucinous cystadenoma. These results are in conformation with results by Tavassoli et al France[28] but in contradiction with Khan MA et al[29] Pakistan. The tumors of border-line malignancy were seen in 21-30 years of age group in conformation with Khan M A et al[29]. The serous cystadenocarcinoma were more common 40% in 41-49 years of age group while 2.8% serous cystadenocarcinoma were seen in 13 to 20 years of age, similarly the higher percentage of mucinous carcinoma were also only seen in 41-49 years of age. These results are in contradiction with Khan M A et al[29] and Saeed M et al[30] Pakistan. These results however differ from the pattern seen in Western Countries where higher incidence is in between 50 and 70 years as seen by Aria et al[31] may be due that dietary and lifestyle differences, exposure to environmental pollutants and carcinogens where account for this variation of age between the developing and developed world.

The benign germ cell tumors are more common 37.5% in 21 - 30 year age group but less common 12.5% in 13-20 year age group these results are in conformation with Mali et al[19] but in contradiction with Ahmed Z et al[14], Nayak et al[32] India.

The malignant germ cell tumors 50% were seen in 31- 40 year age group but not seen before 20 years of age. The results are in contradiction with Malli et al[19].

The granulose cell tumor variety of Sex cord stromal tumor was recorded in 21-30 years of age group. These results here are seen in conformation with Baloch S et al, Jamshoro[33] and Shaikh et al[22], at Jammun & Kashmir.

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