e-ISSN: 0975-1556, p-ISSN:2820-2643

Available online on www.ijpcr.com

International Journal of Pharmaceutical and Clinical Research 2024; 16(6); 1353-1356

Original Research Article

Histopathological Assessment of Ovarian Tumor over a Period of 2 Years in A Tertiary Care Centre

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Received: 15-03-2024 / Revised: 13-04-2024 / Accepted: 16-05-2024
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Conflict of interest: Nil

Abstract:

Background: Ovarian tumors represent a significant health concern due to their potential for malignancy and impact on women's health. Histopathological examination remains the gold standard for diagnosing and classifying ovarian tumors. This study aims to assess the histopathological profiles of ovarian tumors over a two-year period in a tertiary care center.

Materials and Methods: A retrospective study was conducted over a period of two year from January 2018 to December 2019. A total of 80 patients who underwent surgical intervention for ovarian masses were included in the study. Histopathological examination of the excised ovarian tissues was performed using standard staining techniques, including hematoxylin and eosin (H&E) staining. The tumors were classified according to the World Health Organization (WHO) classification system. Data on patient demographics, tumor size, histological type, and grade were collected and analyzed.

Results: Out of the 80 ovarian tumor cases, 57.5% were benign, 31.25% were malignant, and 11.25% were borderline. The most common benign tumors were serous cystadenomas (41.3%) and mature cystic teratomas (32.6%). Among the malignant cases, serous carcinoma was the most prevalent (44%), followed by mucinous carcinoma (24%) and endometrioid carcinoma (16%). The average age of patients with benign tumors was 35 years, whereas those with malignant tumors had an average age of 55 years. Tumor sizes varied significantly, with benign tumors averaging 5.2 cm in diameter and malignant tumors averaging 10.6 cm.

Conclusion: Histopathological assessment remains crucial in the accurate diagnosis and management of ovarian tumors. The findings highlight a higher prevalence of benign ovarian tumors, with serous cystadenomas being the most common. Malignant tumors, although less frequent, predominantly consisted of serous carcinomas. Early detection and accurate histopathological evaluation are essential for improving patient outcomes.

Keywords: Ovarian tumors, histopathology, benign, malignant, WHO classification.

Introduction

Ovarian tumors are among the most significant gynecological health concerns, given their potential for malignancy and substantial impact on women's health. The global incidence of ovarian cancer is approximately 295,000 new cases annually, making it the seventh most common cancer in women and the eighth leading cause of cancer death [1]. Despite advancements in diagnostic techniques, the overall survival rate for ovarian cancer remains low, primarily due to late-stage diagnosis [2].

Histopathological examination is the cornerstone for diagnosing and classifying ovarian tumors. It provides critical information regarding the tumor type, grade, and stage, which are essential for guiding treatment decisions and prognostication [3]. The World Health Organization (WHO) classification system is widely used for categorizing ovarian tumors based on their histological features [4]. Ovarian tumors can be broadly categorized into benign, borderline, and malignant. Benign tumors, such as serous cystadenomas and mature cystic teratomas, generally have an excellent prognosis and are often managed with surgical excision [5]. Borderline tumors exhibit atypical cells with low malignant potential and require careful monitoring and management [6]. Malignant ovarian tumors, including serous carcinoma, mucinous carcinoma, and endometrioid carcinoma, are associated with poor prognosis and necessitate aggressive treatment modalities [7].

The distribution and prevalence of different histopathological types of ovarian tumors vary widely across populations and geographical regions. Studies have shown that benign ovarian tumors are more common in younger women, while

the incidence of malignant tumors increases with age [8]. The histopathological profile of ovarian tumors also provides insights into the epidemiological trends and helps in planning public health strategies for early detection and management [9].

This study aims to evaluate the histopathological characteristics of ovarian tumors diagnosed over a two-year period in a tertiary care center. By analyzing the demographic data, tumor types, and histological features, this study seeks to contribute to the existing knowledge and improve the understanding of ovarian tumor pathology in the studied population.

Materials and Methods

Study Design and Setting: This retrospective study was conducted over a period of two years from January 2018 to December 2019 in the department of Pathology, Nalanda Medical College, Patna.

Study Population: The study included 80 patients who underwent surgical intervention for ovarian masses within the specified period. Patients of all age groups and both inpatient and outpatient settings were included. Exclusion criteria were patients with incomplete medical records or those who had undergone previous ovarian surgery.

Data Collection: Patient data were collected from medical records, including demographic information (age, gender), clinical history, and preoperative imaging findings. The excised ovarian tissues were subjected to histopathological examination.

Histopathological Examination: The ovarian specimens were fixed in 10% formalin, processed, and embedded in paraffin blocks. Sections of 3-4 micrometers thickness were cut from the paraffin blocks and stained with hematoxylin and eosin (H&E) for histopathological analysis. Additional special stains and immunohistochemical studies were performed as required for further characterization of the tumors.

Tumor Classification and Grading: The histopathological classification of ovarian tumors was carried out according to the World Health Organization (WHO) classification system [1]. Tumors were categorized into benign, borderline, and malignant.

Benign tumors included serous cystadenomas, mucinous cystadenomas, and mature cystic teratomas. Borderline tumors exhibited atypical proliferative features without stromal invasion. Malignant tumors were graded and staged based on histopathological features and the International Federation of Gynecology and Obstetrics (FIGO) staging system [2].

Data Analysis: The collected data were entered into a structured database and analyzed using statistical software (SPSS version 25.0). Descriptive statistics were used to summarize the demographic data and the histopathological characteristics of the tumors. Continuous variables were presented as mean ± standard deviation, and categorical variables were presented as frequencies and percentages.

Results

Demographic Characteristics: The study included a total of 80 patients who underwent surgical intervention for ovarian masses. The age of patients ranged from 15 to 75 years, with a mean age of 45 ± 12 years. The majority of patients (60%) were in the age group of 30-50 years.

Distribution of Ovarian Tumors: Out of the 80 ovarian tumor cases, 46 (57.5%) were benign, 25 (31.25%) were malignant, and 9 (11.25%) were borderline tumors.

Table 1: Distribution of Ovarian Tumors

Tumor Type	Frequency (n)	Percentage (%)
Benign	46	57.5
Malignant	25	31.25
Borderline	9	11.25
Total	**80**	**100**

Histopathological Types of Benign Tumors: Among the benign tumors, serous cystadenomas were the most common, accounting for 19 (41.3%) cases, followed by mature cystic teratomas with 15 (32.6%) cases.

Table 2: Histopathological Types of Benign Tumors

Tumor Type	Frequency (n)	Percentage (%)
Serous cystadenoma	19	41.3
Mature cystic teratoma	15	32.6
Mucinous cystadenoma	9	19.6
Fibroma	3	6.5
Total	46	**100**

Histopathological Types of Malignant Tumors: In the malignant category, serous carcinoma was the most prevalent, representing 11 (44%) cases. Mucinous carcinoma and endometrioid carcinoma accounted for 6 (24%) and 4 (16%) cases, respectively.

Table 3: Histopathological Types of Malignant Tumors

Tumor Type	Frequency (n)	Percentage (%)
Serous carcinoma	11	44
Mucinous carcinoma	6	24
Endometrioid carcinoma	4	16
Dysgerminoma	3	12
Clear cell carcinoma	1	4
Total	**25**	**100**

Tumor Size Distribution: The tumor sizes ranged from 2 cm to 20 cm. The average size of benign tumors was 5.2 ± 2 cm, while malignant tumors had an average size of 10.6 ± 3 cm.

Table 4: Tumor Size Distribution

Tumor Type	Mean Size (cm) ± SD
Benign	5.2 ± 2
Malignant	10.6 ± 3
Borderline	7.7 ± 2

Age Distribution: The average age of patients with benign tumors was 35 ± 10 years, whereas those with malignant tumors had an average age of 55 ± 15 years. Borderline tumor patients had an average age of 45 ± 12 years.

Table 5: Age Distribution of Patients

Tumor Type	Mean Age (years) ± SD
Benign	35 ± 10
Malignant	55 ± 15
Borderline	45 ± 12

Discussion

The present study provides a comprehensive histopathological analysis of ovarian tumors over a two-year period at a tertiary care center. The findings underscore the importance of histopathological examination in the diagnosis and management of ovarian tumors.

Our study revealed that 57.5% of the ovarian tumors were benign, 31.25% were malignant, and 11.25% were borderline. This distribution aligns with previous studies, which also report a higher prevalence of benign ovarian tumors compared to malignant ones [1]. The predominance of benign tumors in our study is consistent with the literature, which suggests that benign ovarian tumors are more common and often diagnosed at an earlier age [2].

Among the benign tumors, serous cystadenomas were the most common, followed by mature cystic teratomas. This finding is in agreement with other studies, which have reported serous cystadenomas as the most frequent benign ovarian neoplasms (3). The high prevalence of mature cystic teratomas also concurs with existing data, highlighting their significance in the spectrum of benign ovarian tumors [4]. In the malignant category, serous carcinoma was the most prevalent, accounting for 44% of the cases. This is consistent with global trends, where serous carcinoma is reported as the most common histological type of ovarian cancer [5]. The substantial proportion of mucinous and endometrioid carcinomas observed in our study is also in line with other histopathological studies, which identify these subtypes as significant contributors to ovarian malignancies [6].

The average size of benign tumors was significantly smaller than that of malignant tumors, reflecting their earlier detection and less aggressive nature. The average size of malignant tumors (10.6 cm) in our study is comparable to previous reports, which indicate larger tumor sizes at diagnosis for ovarian cancers [7]. Age distribution analysis revealed that patients with benign tumors were younger, with a mean age of 35 years, while those with malignant tumors had a mean age of 55 years. This age disparity is well-documented in the literature, as benign tumors are typically diagnosed in younger women, whereas the incidence of malignant tumors increases with age [8]. The findings of this study have significant clinical implications. The high prevalence of benign tumors highlights the importance of conservative management and the potential for fertility-sparing

surgical options in younger patients. For malignant tumors, the predominance of serous carcinoma underscores the need for targeted therapeutic strategies and early detection efforts. Histopathological evaluation remains crucial in guiding the treatment and management plans for ovarian tumors, ensuring appropriate therapeutic interventions based on tumor type and grade.

This study is limited by its retrospective nature and the single-center setting, which may not fully represent the broader population. Future research should focus on multicenter studies to validate these findings and explore potential regional variations in the histopathological profiles of ovarian tumors. Additionally, integrating molecular and genetic analyses with histopathological data could provide deeper insights into the pathogenesis and progression of ovarian tumors, leading to more personalized treatment approaches [9].

Conclusion

In conclusion, this study highlights the diverse histopathological spectrum of ovarian tumors, with benign tumors being more prevalent than malignant ones. Serous cystadenomas and serous carcinomas are the most common benign and malignant histological types, respectively. The age and tumor size distribution further emphasize the differences between benign and malignant ovarian tumors. Histopathological examination remains an essential tool in the accurate diagnosis and management of ovarian tumors, contributing to improved patient outcomes.

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