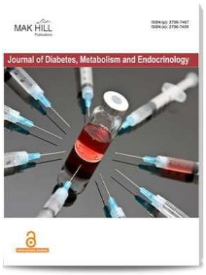

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Research Article

CLINICO-HISTOPATHOLOGICAL ANALYSIS OF OVARIAN TUMORS IN DIFFERENT AGE GROUPS.

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Abstract: ***Background:*** Ovarian tumors are a heterogeneous group of neoplasms with diverse clinical presentation, pathological behavior, and treatment implications. This study evaluated the clinicopathological spectrum of histologically confirmed ovarian tumors in different age groups.1,4,6 ***Methods:*** A retrospective cross-sectional study was conducted in the Department of Obstetrics and Gynaecology, Sapthagiri Institute of Medical Sciences and Research Centre, Bengaluru. Thirty-nine histopathologically confirmed ovarian tumors diagnosed between June 2022 and January 2025 were included. Clinical symptoms, age group, histopathological diagnosis, and available tumor marker values were recorded. ***Results:*** Abdominal pain was the commonest presenting complaint, reported in 23 patients (58.97%), followed by heavy menstrual bleeding in 7 patients (17.94%). Serous cystadenoma was the most common tumor, accounting for 25 cases (64.10%). Dermoid cysts accounted for 4 cases (10.25%) and papillary serous carcinoma for 3 cases (7.69%). Elevated CA-125 levels were documented in 6 patients (15.39%). ***Conclusion:*** Benign ovarian tumors predominated in this series, with serous cystadenoma being the most frequent histopathological diagnosis. Histopathology remains essential for definitive diagnosis, while tumor markers should be interpreted as supportive tools in clinical evaluation.

Keywords: ovarian tumors; histopathology; serous cystadenoma; CA-125; tumor markers; ovarian malignancy.

INTRODUCTION

Ovarian tumors constitute an important group of gynecological neoplasms because they range from benign cystic lesions to invasive malignancies. The ovary may give rise to epithelial, germ cell, sex cord-stromal, and metastatic tumors, each with distinct clinicopathological characteristics. In routine gynecological practice, ovarian masses are frequently detected because of symptoms, imaging findings, or incidental evaluation during surgery for unrelated conditions.1,3,4,6

The clinical presentation of ovarian tumors is often nonspecific. Abdominal or pelvic pain, menstrual abnormalities, abdominal distension, dyspepsia, urinary symptoms, and a palpable abdominal mass may occur. The non-specific nature of symptoms can delay evaluation, particularly in malignant disease. Therefore, careful clinical assessment, imaging, serum biomarker evaluation, and histopathological confirmation are important components of patient management.10,12

The World Health Organization (WHO) 5th edition classification of female genital tumors provides the current framework for the diagnosis and categorization of ovarian neoplasms. The classification incorporates histomorphological and molecular features and recognizes the heterogeneity of epithelial ovarian cancers. In particular, epithelial ovarian carcinoma is now understood as a group of biologically distinct histotypes rather than a single disease entity.1,2,3,7

Although imaging modalities such as ultrasonography, computed tomography, and magnetic resonance imaging assist in the assessment of ovarian masses, histopathological examination remains the standard for final diagnosis. Serum tumor markers, particularly CA-125, may assist in risk assessment and follow-up, but their diagnostic value is limited by lack of specificity. Other markers such as CEA, CA19-9, AFP, beta-human chorionic gonadotropin (beta-hCG), and LDH may be useful in selected clinical situations.1,11,12

The present study was undertaken to describe the clinical presentation, age distribution, histopathological spectrum, and tumor marker profile among women with histologically confirmed ovarian tumors treated in a tertiary care teaching hospital.

Aim: To evaluate the clinico-histopathological spectrum of ovarian tumors across different age groups and correlate clinical presentation, histopathological diagnosis, and available tumor marker profile.

Objectives: To study the age-wise distribution of ovarian tumors; to describe the clinical presentation of patients with ovarian tumors; to determine the histopathological spectrum of ovarian tumors; and to assess the distribution of available serum tumor markers including CA-125, CEA, CA19-9, AFP, beta-hCG, and LDH.

MATERIALS AND METHODS

Study design and setting: This retrospective cross-sectional study was conducted in the Department of Obstetrics and Gynaecology, Sapthagiri Institute of Medical Sciences and Research Centre, Bengaluru, Karnataka.

Study period: Medical records from June 2022 to January 2025 were reviewed. The duration of study analysis was three months.

Study population: All histopathologically confirmed ovarian tumors managed during the study period were included. A total of 39 eligible cases were identified and analyzed.

Inclusion criteria: All histologically confirmed ovarian tumors, including tumors diagnosed during pregnancy, were included.

Exclusion criteria: Normal ovaries and ovaries with nonspecific findings such as follicular cysts, surface inclusion cysts, hemorrhagic inclusion cysts, and endometriosis were excluded. Tumor-like lesions such as stromal hyperthecosis, stromal hyperplasia, fibromatosis, and massive ovarian edema were also excluded.

Data collection: The case records were reviewed for age, presenting symptoms, histopathological diagnosis, and available preoperative tumor marker values. Data were entered into Microsoft Excel after data cleaning.

Operational definitions: A benign ovarian tumor was defined as a histopathologically confirmed non-invasive ovarian neoplasm. A malignant ovarian tumor was defined as a histopathologically confirmed invasive ovarian malignancy. CA-125 level above 35 U/mL was considered elevated. Other serum marker values were interpreted according to institutional laboratory reference ranges.

Statistical analysis: Descriptive statistics were used. Categorical variables are presented as frequencies and percentages. The analysis was descriptive because of the retrospective design and the small number of cases in individual pathological groups. Ethical considerations: Institutional ethical clearance was obtained. Patient confidentiality was maintained throughout the study, and only de-identified data were used for analysis.

RESULTS

A total of 39 histopathologically confirmed ovarian tumors were included. The presenting clinical complaints were not mutually exclusive, as some patients had more than one symptom. Abdominal pain was the most common presenting complaint, occurring in 23 patients (58.97%). Heavy menstrual bleeding was reported in 7 patients (17.94%). Irregular menstrual cycles were present in 2 patients (5.13%). Amenorrhea, dysuria, serous vaginal discharge, and abdominal mass were each observed in one patient (2.56%).

Table 1. Clinical features of ovarian tumors (n = 39)

Clinical feature	Number of cases	Percentage (%)
Abdominal pain	23	58.97
Heavy menstrual bleeding	7	17.94
Irregular menstrual cycles	2	5.13
Amenorrhea	1	2.56
Dysuria	1	2.56
Serous vaginal discharge	1	2.56
Abdominal mass	1	2.56

The symptom profile illustrates that ovarian tumors may present with nonspecific abdominal and gynecological complaints. In the present series, abdominal pain was distinctly more common than other symptoms. The presence of heavy menstrual bleeding and irregular cycles also suggests that menstrual complaints may coexist with ovarian masses, especially in women in the reproductive and perimenopausal age groups.[10,12]

One malignant ovarian tumor was noted incidentally during evaluation for an unrelated condition. This observation emphasizes that some ovarian lesions may remain clinically silent or may not produce symptoms that specifically suggest ovarian pathology.[10,12]

Results: Histopathological Spectrum

Serous cystadenoma was the most common histopathological diagnosis, accounting for 25 cases (64.10%). The largest number of serous cystadenomas occurred in the 40-49 year age group. Seromucinous cystadenoma was diagnosed in 3 cases (7.69%), while mucinous cystadenoma was diagnosed in one case (2.56%).

Papillary serous carcinoma was present in 3 cases (7.69%). One case occurred in the 30-39 year age group, while two cases were diagnosed in women aged 60 years or above. Dermoid cysts accounted for 4 cases (10.25%), with cases occurring in the 20-29 and 40-49 year groups. Mature cystic teratoma was diagnosed in two cases, both in the 30-39 year age group. A single Brenner tumor was diagnosed in the 40-49 year age group.

Table 2. Age-wise distribution of histopathological diagnoses (n = 39)

Diagnosis	10-19	20-29	30-39	40-49	50-59	>=60	Total n (%)
Serous cystadenoma	1	4	5	11	3	1	25 (64.10)
Seromucinous cystadenoma	0	0	1	2	0	0	3 (7.69)
Mucinous cystadenoma	0	0	0	1	0	0	1 (2.56)
Papillary serous carcinoma	0	0	1	0	0	2	3 (7.69)
Dermoid cyst	0	2	0	2	0	0	4 (10.25)
Mature cystic teratoma	0	0	2	0	0	0	2 (5.12)
Brenner tumor	0	0	0	1	0	0	1 (2.56)
Total	1	6	9	17	3	3	39 (100)

Overall, benign tumors formed the majority of the study population. The pattern of disease suggests a predominance of benign epithelial tumors, particularly serous cystadenoma, with malignant lesions occurring less frequently and mainly in older patients.

Results: Serum Tumor Markers

CA-125 data were available in all 39 cases. Six patients (15.39%) had elevated CA-125 levels, while 33 patients (84.61%) had values within the reported normal range. CEA and CA19-9 were available in all 39 cases and were elevated in one patient each (2.56%).

AFP values were available only for four cases, of which three were within the normal range and one was elevated. Beta-hCG was available in one case and was elevated. LDH values were available in two cases, and both values were within the normal range. Because AFP, beta-hCG, and LDH were not measured in all patients, these markers are presented as absolute numbers rather than percentages of the entire cohort.

Table 3. Distribution of serum tumor markers

Tumor marker	Normal	Elevated	Remarks
CA-125	33 (84.61%)	6 (15.39%)	Available for all 39 cases
CEA	38 (97.44%)	1 (2.56%)	Available for all 39 cases
CA19-9	38 (97.44%)	1 (2.56%)	Available for all 39 cases
AFP	3	1	Available for 4 cases
beta-hCG	0	1	Available for 1 case
LDH	2	0	Available for 2 cases

The tumor marker findings highlight the importance of interpreting biochemical tests in the clinical context. CA-125 was elevated in a minority of patients, and the other marker assays were selectively performed according to the clinician's assessment of the individual ovarian mass.

DISCUSSION

The present retrospective study evaluated 39 histopathologically confirmed ovarian tumors. The major finding was the predominance of benign ovarian tumors, particularly serous cystadenoma, which represented 64.10% of the total cases. This

finding is consistent with numerous hospital-based studies that report benign epithelial tumors as the most common ovarian neoplasms.4,5

Serous cystadenoma was observed across a broad age range, but the maximum number of cases occurred in the 40-49 year age group. This pattern is clinically relevant because women in this age group may present with menstrual symptoms or abdominal discomfort that require evaluation for possible adnexal pathology. Although most lesions were benign, careful preoperative assessment remains essential to identify women who may require oncological referral or staging procedures.

Dermoid cysts accounted for 10.25% of cases. Mature cystic teratoma and dermoid cyst are well-recognized benign germ cell tumors that often occur in younger women. In the present study, dermoid cysts were identified in women aged 20-29 and 40-49 years, whereas mature cystic teratomas occurred in the 30-39 year group.9

Papillary serous carcinoma accounted for 7.69% of all tumors. Two of the three cases were observed in women above 60 years of age. This trend supports the established association between increasing age and epithelial ovarian malignancy. Although the number of malignant cases was small, the age distribution reinforces the need for a higher index of suspicion in postmenopausal women with an adnexal mass.4,6,11

Abdominal pain was the commonest clinical symptom in this study. This is in agreement with the non-specific abdominal and pelvic symptom complex typically associated with ovarian tumors. Pain may result from tumor enlargement, torsion, hemorrhage, pressure effects, or associated pelvic pathology. However, symptoms alone cannot reliably distinguish benign from malignant masses.10,12

Heavy menstrual bleeding was the second most common presenting symptom. This may reflect coexisting uterine or endocrine pathology in some patients, particularly in the perimenopausal age group. Irregular menstrual cycles were present in two patients. These observations show that menstrual symptoms may coexist with ovarian masses and should prompt a complete pelvic assessment when clinically indicated.

CA-125 was elevated in six patients. CA-125 is widely used in the evaluation and monitoring of epithelial ovarian cancer, but it should not be interpreted as a stand-alone diagnostic test. A normal CA-125 value does not exclude malignancy, and an elevated value can be observed in several benign conditions. The present data therefore support the use of CA-125 as one component of multimodal clinical assessment rather than a substitute for imaging and histopathological diagnosis.6,10,11

The availability of AFP, beta-hCG, and LDH was limited to selected patients. These markers are particularly useful when germ cell tumors are suspected. Retrospective studies commonly encounter incomplete marker data because the investigation panel is tailored to the patient's age, clinical features, imaging findings, and suspected tumor type.6,11

The strengths of this study include the inclusion of histopathologically confirmed cases and the simultaneous review of symptoms, age, pathological diagnosis, and available marker values. The study also provides local institutional data that may be useful for teaching and future comparison.

The limitations include the retrospective design, single-center setting, small sample size, and incomplete availability of selected marker assays. The study was descriptive and was not powered to establish statistically significant associations between age, tumor type, and marker status. Future prospective studies with larger samples, standardized imaging reporting, and complete biomarker evaluation would provide stronger evidence.

CONCLUSION

Benign ovarian tumors were more common than malignant tumors in this retrospective series. Serous cystadenoma was the predominant histopathological diagnosis, and abdominal pain was the most frequent presenting symptom. Papillary serous carcinoma was more commonly observed in older women. Histopathological examination remains the cornerstone of definitive diagnosis, and serum tumor markers should be used as supportive tools in the overall evaluation of ovarian masses.

Declarations

Ethics approval: Obtained from the Institutional Ethics Committee. Funding: None. Conflict of interest: None declared. Data availability: De-identified data may be made available by the corresponding author on reasonable request and subject to institutional approval.

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