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Original Research Article

A Study on Histopathological Findings of Ovarian Lesions in Southern Rajasthan

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Abstract:

Introduction: Ovarian cancer is the most common cause of surgery and hospitalization. It may occur at any age and is the site of most non-neoplastic and neoplastic lesions.

Aims and Objectives: The objective of this research was to identify the histological findings of ovarian lesions.

Materials and Methods: From January 2023 to January 2024, 202 cases of ovarian lesions were examined in this study which was conducted at the pathology department at the Pacific Institute of Medical Sciences in Udaipur. The specimens were received by the histopathology department in a container filled with formalin, and they underwent standard grossing and H and E staining procedures.

Results: Neoplastic ovarian lesions occurred 24.75% of the time. The majority of ovarian cancers (68%) were found to be surface epithelial tumors, with germ cell tumors (26%) coming in second. High-grade serous carcinoma (10%) was the malignant tumor type, and serous cystadenoma (40%) was the most common benign tumor type according to histopathology**.** Non neoplastic lesions accounts for 75.25 where simple cysts accounted for the majority of non-neoplastic ovarian lesions (29%), with follicular cysts coming in second (25.65%).

Conclusion: The incidence rate increasing with age, with the fourth and fifth decades showing the highest number of new cases detected. The oldest patient in our study was over 60 years old, and the youngest was only 5 years old.

Keywords: Ovarian lesions; Non-neoplastic; Neoplastic; Histopathological study.

Introduction

The ovary is the most common site for both benign and malignant lesions. It can develop at any age and is the main reason for surgery and hospital stays. [1] The ovary is composed of multipotent mesenchymal cells and totipotent sex cells. It can therefore turn neoplastic and give rise to nearly any kind of tumor. [2] The term "ovarian neoplasms" refers to a broad category of benign and malignant tumors that may originate from germ cells, stroma, or epithelium.

The majority of ovarian cancers cannot be differentiated from one another only by clinical or physical features. [3] Some of non-neoplastic ovarian lesions may appear as a pelvic mass and misdiagnosed as ovarian tumors. Appropriate classification and diagnosis at an early stage are necessary for treatment. [4] Ovarian cancer ranks eighth globally in terms of cancer-related deaths. In some regions of India, it is responsible for as much as 8.7% of cancer cases. [5,6] Despite being less common than breast cancer, ovarian cancer is three times more mortal than breast cancer, and by 2040, the death rate from this disease is predicted to be increase drastically. Ovarian cancer has a high death rate because of its prolonged onset of symptoms, and inadequate screening, which leads to an advanced stage diagnosis. [7,8]Due to the diverse histological appearance of ovarian cancers, treatment options such as chemotherapy and surgery are sometimes limited by the time, an advanced stage of the tumor is detected. [9]

Women under 40 who have ovarian tumors have a better prognosis than those who are older. Most women who have ovarian cysts don't have any symptoms, and the cysts are frequently discovered by an accident during a routine pelvic check or ultrasound. Malignant ovarian cysts, on the other hand, usually do not exhibit symptoms until they reach an advanced stage. Certain cysts, on the other hand, could lead to a variety of symptoms, some of

which can be serious. On the contrary, malignant ovarian cysts usually do not show any signs until they have progressed to an advanced stage. [10] However histologic grade also has an impact on prognosis especially in terms of recurrence, and the stage at diagnosis which is also a major predictor of prognosis. .It might be challenging to differentiate a non-neoplastic lesion from a neoplastic lesion in a clinical setting. The objective of the study was to find out the histopathological findings of ovarian lesions based on age and different histological types.

Materials and Methods

The current study which was cross-sectional in nature was carried out from January 2023 to January 2024 in Department of Pathology at the Pacific Institute of Medical Science, Udaipur, Rajasthan. The formula 4pq/l2 was used to determine the sample size of 50. [10] Following approval of institutional ethical committee clearance, the study was carried out.

The study included all hysterectomy specimens with unilateral or bilateral adnexa, as well as cases involving solitary salpingo-oophorectomy specimens, either unilateral or bilateral, and all ovarian cystectomy specimens. The study did not include any cases having metastatic lesions from other locations. The specimen from oncosurgery, obstetrics, and gynecology will be delivered in a formalin-filled container to the histology department. For 24 hours, the specimen was preserved in 10% formalin.

Following that, tissue will be removed for grossing, which will be completed in accordance with the department's standard operating procedure and include a piece from the tumor as well as all of its margins.

Paraffin blocks will be prepared, and sections will be cut out at a thickness of 4-5 mm using a microtome. The sections will then be stained with hematoxylin and eosin and examined under a light microscope.

An Excel spreadsheet from Microsoft version 2007 was used to evaluate the data. For continuous data, mean and standard deviation were computed. Quantitative data was evaluated for significance using the t-test, whereas qualitative and categorical data were expressed as percentages. P -value less than 0.05 was seen as significant.

Results

The age range was 5 to 65. In the present study, the age group of 40–59 years accounted for 98 (48.51%) of the cases, followed by 20–39 years 97 (48.01%). 5 (2.47%) of the patients were older than 60 years, and 2 (1%) were younger than 20 years old.

There were 50 (24.75%) neoplastic ovarian lesions and 152 (75.25% non-neoplastic) lesions in total. Simple cysts were found in 44(29%), where Follicular cysts were 39(25.69%) of the 152 non-neoplastic ovarian lesions. These were followed by hemorrhagic cysts in 20(13.15%), luteal cysts in 42(27.63%), and endometriotic cysts in 7 (4.60%). The majority of non-neoplastic ovarian lesions in the study were simple cysts (29%) and follicular cysts (25.69%). (Table 1) For the 50 neoplastic ovarian tumor cases, 34 (68%) had surface epithelial tumors identified, followed by germ cell tumors 13 (26%), mesenchymal tumors 1 (2%), and sex cord stromal tumors 2 (4%). (Table 2) Serous cyst adenoma (40%) and mature cystic teratoma (22%) were the most common histological benign tumors in our sample (Figure 1 & Figure 2), followed by mucinous cystadenoma (8%), serous cystadenofibroma (2%), myxoma (2%), and fibroma (4%). Additionally, two cases (4%) of borderline seromucinous tumors were discovered (Table 2). High grade serous carcinoma (10%) was the most common entity in malignant lesions (Figure 3), with mucinous carcinoma (4%) and Dysgerminoma (4%) and granulosa cell tumor (2%) (Figure 4 & Figure 5) following closely in order (Table 2). In both groups, the majority of cases were observed in the 40–59 age range. Compared to the non-neoplastic group, the neoplastic group contained more elderly (over 60) cases Out of 202, 98 cases, or the majority, were observed in the 40–59 age range. 25 of the 78 cysts were simple cyst, while 20 of the 78 follicular cysts were observed in the 40–59 age range. (Table 1). 9 out of the 20 cases of serous cystadenoma were in the 40–59 age range, and the remaining 9 were in the 20–39 age range. Ages 40–59 accounted for 3 out of 5 cases of high-grade serous carcinoma. Ages 40–59 contributed to 4 of the 11 cases of mature cystic teratoma that were seen. (Table 3).

Table 1: Age wise distribution of non-neoplastic ovarian lesions

Type of Lesions	Age									
	0-19 years		20-39 years		40-59 years		≥60 years		Total	
	N	%	N	%	N	%	N	%	N	%
Endometriotic cyst	0	0.0	7	9.0	0	0.0	0	0.0%	7	4.60
Follicular Cyst	1	50.0	18	25.0	20	25.70	0	0.0%	39	25.65
Haemorrhagic Cyst	0	0.0	9	12.5	11	14.10	0	0.0%	20	13.15
Luteal Cyst	0	0.0	20	27.77	22	28.20	0	0.0%	42	27.60
Simple Cyst	1	50.0	18	25.0	25	32.0	0	0.0%	44	29.00
Total	1	100.0	72	100.0	78	100.0	0	0.0%	152	100.0

Table 2: Histopathological Categorization of various ovarian tumours

Site of origin	Grade	Histopathological category	N	%
Surface epithelial tumour	Benign	Serous cystadenoma	20	40.0
		Mucinous cystadenoma	4	8.0
		Serous cyst adenofibroma	1	2.0
	Borderline	Seromucinous Tumour	2	4.0
	Malignant	Mucinous Carcinoma	2	4.0
		High grade serous carcinoma	5	10.0
Germ cell tumour	Benign	Mature cystic teratoma	11	22.0
	Malignant	Dysgerminoma	2	4.0
Mesenchymal tumour	Benign	Myxoma	1	2.0
Sex cord stromal tumour	Benign	Fibroma	1	2.0
	Malignant	Granulosa cell tumor	1	2.0
Total			50	100

Table 3: Age-wise distribution of neoplastic ovarian lesions

	Age									
	0-19 years		20-39 years		40-59 years		>60 years		Total	
	N	%	N	%	N	%	N	%	N	%
Serous cystadenoma	0	0.0	9	36.0	9	45.0	2	40.0	20	40.0
Mucinous cystadenoma	0	0.0	2	8.0	2	10.5	0	0.0	4	8.0
Serous cyst adenofibroma	0	0.0	1	4.0	0	0.0	0	0.0	1	2.0
Seromucinous Tumour	0	0.0	2	8.0	0	0.0	0	0.0	2	4.0
Mucinous Carcinoma	0	0.0	1	4.0	1	5.0	0	0.0	2	4.0
High grade serous carcinoma	0	0.0	0	0.0	3	15.0	2	40.0	5	10.0
Mature cystic teratoma	0	0.0	7	28	4	20.0	0	0.0	11	22.0
Dysgerminoma	0	0.0	2	8.0	0	0.0	0	0.0	2	4.0
Myxoma	0	0.0	1	4.0	0	0.0	0	0.0	1	2.0
Fibroma	0	0.0	0	0.0	1	5.0	0	20.0	1	2.0
Granulosa cell tumor	0	0.0	0	0.0	0	0.0	1	20.0	1	2.0
Total	0	100.0	25	100.0	20	100.0	5	100.0	50	100.0

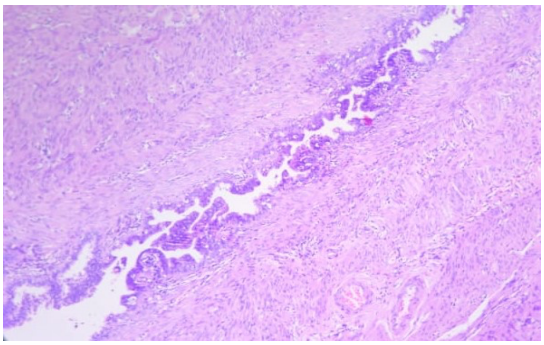

Figure 1: Serous cyst adenoma. (H&E 20X) The slit like cystic space showing benign appearing cuboidal to columnar, ciliated cells

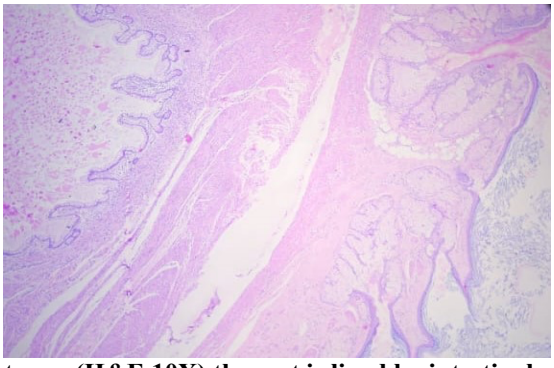

Figure 2: Mature cystic teratoma. (H&E 10X) the cyst is lined by intestinal goblet cell. Muscle tissue and dermal adnexal structure identified

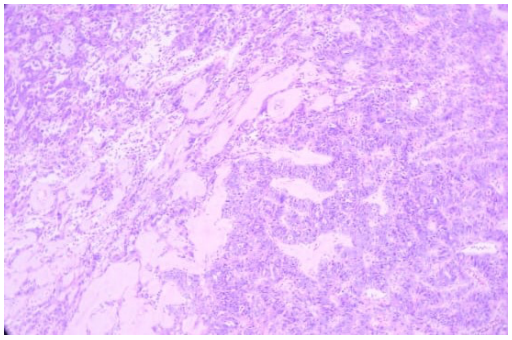

Figure 3: High grade Serous adenocarcinoma, invasive. (H&E 20X) show solid masses of malignant cells with high grade nuclear atypia and complex papillary serous proliferation

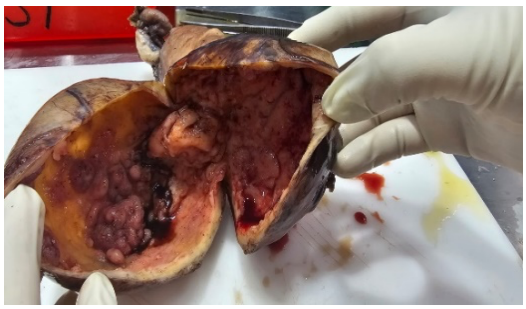

Figure 4: Granulosa cell tumor (cut open gross specimen)

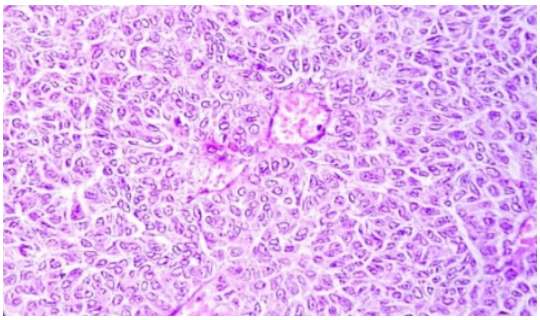

Figure 5: Granulosa cell tumor. (H&E 40X) A tumor cell show diffuse growth pattern along with Call-Exner bodies where round spaces are filled with eosinophilic material surrounded by tumor cells

Discussion

Ovarian cancer emerges as the second most common cause of death among all gynecological malignancies. The ovaries are the most prevalent site of both neoplastic and non-neoplastic lesions. Distinct cell types are created by the on-going cyclical changes from puberty to menopause, and each of these alterations can result in a different type of tumor. [11] Ovarian cancers varied histopathology is a reflection of their different cell origins. [6] According to recent epidemiological studies, monitoring, and lifetime risk assessments, 1 in 55 women will be diagnosed with ovarian cancer in their lifetime. Ovarian cancers are hard to find until they are in an advanced stage since the disease's signs are indistinct and develop gradually. [12]

The diagnosis, prognosis, and therapy of ovarian malignancies depend on the identification of distinct histological features of ovarian tumors. These days, immunohistochemistry is becoming a valuable diagnostic tool for ovarian tumors. [13] In the current study, patients in the age category of 40–59 years comprised the majority (51.31%), followed by those in the age group of 20–39 years (47.36%). Comparable results were noted in the research conducted by Tushar K et al., [14] which revealed that 46.25% of patients fell into the 40–59 age range and 41.7% into the 20–39 age group. Other studies conducted by Pilli GS et al., [15], Bhavana B et al., [16], and Ramachandran et al.,17, and 37.3%, 50.3%, and 30.0%, respectively of patients aged 40–59 years, 20–39 years, and 20–39 years. Other studies conducted by Pilli GS et al., [15], Bhavana B et al., [16], and Ramachandran et al., [17] and 37.3%, 50.3%, and 30.0%, respectively, of patients aged 40–59 years, 20–39 years, and 20–39 years. Among the 202 ovarian lesions that were examined in our study, 152 (75%), were non-neoplastic, and 50 (%) were neoplastic. The percentage of non-neoplastic

lesions was more than that of studies conducted by Martinez-Onsurbe P et al. [18] and Kreuzer et al. [19] who reported 82 (40.39%) and 132 (41.67%) non-neoplastic lesions, respectively.

Of the 152 non-neoplastic lesions, 44 (29%) had simple cysts and 39 (25.6%) had follicular cysts. Follicular cyst and simple cyst were also noted as the most often occurring conditions in non-neoplastic lesions in the research conducted by Sawant et al. [1] and Bhavana B et al. [16] Surface epithelial tumors (68%), germ cell tumors (26%), mesenchymal tumors (2%), and sex cord stromal tumors (4%), are the broad classifications for these lesions. Our findings are consistent with previous research indicating that surface epithelium is the most frequently reported site of tumor genesis. [20] Out of the 50 neoplastic lesions found in this study, the majority were benign (76%), followed by malignant (20%) and borderline (4%) grade lesions. According to histopathology, 38 out of 50 (76%) neoplastic lesions were benign tumors. This percentage is comparable to that of other researchers (Pachori et al., 72.3%) and Pilli et al., 76%. [15,20]

The present study revealed that mature cystic teratoma (22%; 11/50 of benign neoplastic lesions) was the second most common benign neoplasm seen, behind serous cystadenomas (40%; 20/50 of benign neoplastic lesions). Another study revealed that a decreased percentage of mucinous cystadenoma (6%), mature cystic teratoma (13%), and serous cystadenoma (28%).21The study by Yasmin et al. showed that serous cystadenoma accounts for 24% of cases, while mature teratoma accounts for 18%. [22] Similar findings were reported by Bhavana B et al., which revealed that serous cystadenoma is the most common (30%), followed by mature teratoma (26%) and mucinous cystadenoma (21%). [16]

Limitations of the study

This study was carried out in a single tertiary healthcare facility with a relatively small patient population.

Conclusion

Any age can develop an ovarian tumor, including early childhood and adolescence. In our research, we found that the incidence rate increased with age, with the majority of new cases being diagnosed after the 4th and 5th decade. Due to its lack of symptoms until an advanced stage, ovarian cancer is sometimes referred to as a "silent killer." Despite the fact that histological analysis of ovarian cancers is still regarded as the gold standard method, our observations and findings provided useful baseline data on the frequency and pattern of ovarian tumors in our setup and will be used as a guide for further research.

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