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Study of Histopathological Spectrum of Ovarian Neoplasms in Tertiary Care Hospital

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Abstract: ***Background: Ovaries are common site for both benign and malignant neoplasm in all age groups right from intrauterine period to post menopausal age group. Neoplastic disorders or lesions of ovary can arise from Mullerian epithelium, Germ cells or Sex cord Stromal cells. A Total of 100 cases of diagnosed ovarian tumors are included in the study. We have included parameters like Age wise incidence, Nature of Lesion, Frequency & Laterality in this study. Results: Out of 100 cases, 93% cases were unilateral and 7% cases were bilateral. Majority of cases (48%) belong to age group of 20-39 year. 91% cases were benign, 1% case was borderline and 8% were malignant. In benign ovarian neoplasm, serous cystadenoma was the most common followed by mature cystic teratoma and mucinous cystadenoma. In malignant cases, maximum cases were of serous cystadenocarcinoma. Conclusion: Ovarian tumors include a variety of morphological features and show predominance in particular age group. Role of histopathological evaluation remains always important in both diagnosis and management of such cases, particularly in cases of Malignant Lesions in order to save the patient's life.***

Keywords: Benign, Surface epithelial tumors, Serous cystadenoma

1. Introduction

The ovary consists of totipotent sex cells and multipotent mesenchymal cells[1]. Ovaries are common site for both benign and malignant neoplasm in all age groups right from intrauterine period to post menopausal age group[2]. Almost 80% of the ovarian neoplasms are benign. It is also a common site for primary malignancy, although metastasis to ovaries can also occur[3]. Ovarian tumors are leading cause of death from gynecological malignancy.[4][5]

Neoplastic lesions of ovary can arise from Mullerian epithelium, Germ cells or Sex cord Stromal cells [6]. They are further categorized into benign, borderline and malignant [7][8].

Ovarian neoplasm behave in diverse way and generally escape the detection until they attain a larger size. Therefore, diagnosis of various histological patterns of ovarian tumors is very important in the treatment and prognosis [8][9] .

Aims and Objectives

1) To study the histopathological patterns of ovarian tumors.
2) To study age wise incidence of ovarian tumors.
3) To study the frequency of ovarian tumors in terms of benign, borderline or malignant
4) To study laterality of ovarian tumors.

2. Material and Method

The present study was carried out in the Department of Pathology, tertiary care teaching hospital, Ahmedabad over a period of three years from January 2018 to December 2020. Cases of ovarian masses which underwent oophorectomy or hysterectomy with bilateral/ unilateral salpingo-oophorectomy were sent for histopathological examination. Information regarding the age, clinical history and clinical diagnosis were obtained. All specimens were processed by routine histopathological procedure followed by H & E staining. Then microscopic examination was done and results were analysed.

3. Result

The present study included 100 cases of ovarian tumors. The histopathological categorization was done according to the site of origin: Surface epithelial tumors, germ cell tumors, sex cord stromal tumors and metastatic tumors. They were further divided into Benign, Borderline and Malignant tumors.

In present study 91 cases were Benign (91%), 1 was Borderline (1%) and 8 were Malignant (8%). Unilateral tumors (93%) were more common than bilateral tumors (8%).

The most common tumor of ovary was Benign serous cystadenoma (38%) followed by Mature cystic teratoma (22%), followed by Benign mucinous cystadenoma (20%). (Table I)

Among the Benign tumors (91%), 3% cases of Serous cystadenoma were bilateral while 1% case of Mucinous cystadenoma and 2% cases of Mature cystic terartomas were bilateral. While among the malignant tumors (7%), 1% case was bilateral which was Papillary Serous cystadenocarcinoma.

Patients in age group of 20-39 years constituted the majority of patients (50%), followed by the age group of 40-59 years (23%). (Table II) Our youngest patient was 3 months old child while the oldest patient was 82 years old female.

Histopathological categorization of various ovarian tumors are given in Table I and their age wise distribution is given in Table II.

Table I: Histopathological categorization of various Ovarian tumors

Site of origin	Benign/Borderline/malignant	Histopatological Category	Unilateral	Bilateral	Total
Surface Epithelial Tumor	Benign	Serous cystadenoma	35	3	38
		Mucinous cystadenoma	17	1	18
		Serous cystadenofibroma	7	-	7
		Seromucinous cystadenoma	1	-	1
		Brenner tumor	2	-	2
		Endometroid tumor	1	-	1
	Borderline	Mucinous tumor	1	-	1
	Malignant	High grade serous carcinoma	1	-	1
		Papillary serous cystadenocarcinoma	-	1	1
Germ cell tumor	Benign	Mature cystic teratoma (Dermoid cyst)	20	2	22
	Malignant	Immature teratoma	2	-	2
		Yolk sac tumor	2	-	2
Sex cord Stromal tumor	Benign	Fibrothecoma	2	-	2
	Malignant	Adult granulosa cell tumor	1	-	1
Metastatic tumor	Malignant	Metastatic adenocarcinoma	1	-	1

Table II: Age wise distribution of various Ovarian tumors

Category	≤19 years	20-39 years	40-59 years	≥60 years
Benign serous cystadenoma	4	16	12	6
Benign mucinous cystadenoma	-	11	6	3
Benign serous cystadenofibroma	2	3	-	-
Benign seromucinous tumor	-	-	1	-
Benign Brenner tumor	-	-	2	-
Benign Endometroid tumor	-	1	-	-
Borderline mucinous tumor	-	-	1	-
High grade serous carcinoma	-	-	1	-
Papillary Serous cystadenocarcinoma	-	-	1	-
Mature teratoma	4	13	5	-
Immature teratoma	1	1	-	-
Malignant yolk sac tumor	1	1	-	-
Fibrothecoma	-	1	-	1
Adult Granulosa cell tumor	-	-	-	1
Metastatic Adenocarcinoma	-	1	-	-
Total	12	48	28	12

4. Discussion

Ovarian cancer is the second leading cause of mortality among all gynecological cancers[11]. The structure of the ovary includes germ cells, follicular cells and the ovarian stroma. The function of the ovary is as complex as its structure. Any of these structures can give rise to a plethora of tumors.[10] The determination of these patterns is important for diagnosis, management and prognosis.

Laterality of ovarian neoplastic lesions in various studies in comparison with present study is illustrated in Table III. Majority of the cases are unilateral in Prakash et al., Maru A et al., Misra et al. and Couto F et al. study which are comparable to the present study.

Table III: Laterality of ovarian tumors in various studies in comparison to present study

Author	Laterality(percentage)	
	Unilateral	Bilateral
Prakash et al. (2017) [12]	90.8%	9.2%
Maru A et al. (2019) [13]	89%	11%
Misra et al. (1990) [14]	95.5%	4.5%
Couto F et al. (1993) [15]	91.2%	8.7%
Present study	93%	7%

The percentage distribution of patients in various age groups in comparison with other studies is illustrated in Table IV. In Prakash et al., Pilli et al., and Ramchandra et al. study the most common age of presentation is 20-39 years followed by 40-59 years. This is comparable to our present study.

Table IV: Percentage distribution of cases in various age groups in comparison with present study

Author	≤19 years	20-39 years	40-59 years	≥60 years
Prakash et al. (2017) [12]	5.7%	53.4%	36.6%	4.3%
Pilli et al. (2002) [16]	7%	58%	30%	5%
Ramchandra et al. (1972) [22]	7.9%	53%	30%	9.1%
Present study	12%	48%	28%	12%

Comparative incidence of neoplastic lesions of ovary according to site of origin shows that the most common site of origin is surface epithelium

Table V: Comparative incidence of neoplastic lesions of ovary according to site of origin

Author	Surface Epithelial Tumor	Germ cell tumor	Sex cord Stromal tumor	Metastatic tumor
Maru A et al. (2019) [13]	73.33%	23.33%	3.33%	-
Pilli et al. (2002) [16]	70.9%	21.2%	6.7%	0.7%
Bhuvanesh et al.(1978) [21]	78.57%	10.85%	7.14%	1.42%
Gupta et al (2007)[18]	65.6%	23.9%	8.3%	2%
Present study	70%	26%	3%	1%

Comparative incidence of most common benign neoplastic lesions of ovary were illustrated in Table VI. This comparision shows that majority of benign tumors are serous cystadenoma.

Table VI: Comparative incidence of most common benign neoplastic lesions of ovary

Author	Serous cystadenoma	Mature teratoma	Mucinous cystadenoma
Maru A et al. (2019) [13]	28%	13%	6%
Mondal et al. (2011) [19]	29.9%	15.9%	11.1%
Amod et al (2017) [17]	12.58%	2.09%	1.39%
Yasmin et al. (2008) [20]	24%	18%	-
Present study	38%	22%	20%

5. Conclusion

From the present study we conclude that Benign ovarian tumors are more common than the Malignant tumors. The most common age group for occurrence of ovarian tumors is 20-39 years. Among benign tumors, serous cystadenoma is common, which is frequently bilateral. While second most common is Mature cystic teratoma. Malignant neoplasms of ovary are rare as compared to Benign neoplasms but require a specific attention during diagnosis on both clinical and pathological basis in order to save the patient's life.

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