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ORIGINAL ARTICLE

To Study Clinicopathological Spectrum of Ovarian Tumour and Tumour Like Lesions in a Tertiary Health Care Centre of North India

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Abstract

Introduction: Variety of primary ovarian neoplasms reflects the complex function of the ovary. The study was conducted to know distribution of ovarian lesions, analyse their mode of presentation and distribution of various morphological pattern of ovarian neoplasms. **Methods:** A systematic search identified 205 ovarian lesion specimens submitted in the department over a time period of three years (January 2018-December 2020). The tumours were classified according to World Health Organization (WHO) classification 2016. **Results:** There was a wide age range from 11 years to 72 years. Among neoplastic ovarian lesions peak was seen in the fourth decade, mean 48.1 years. Sonographic appearance showed a prominent solid component (32/32,100%) in all malignant cases. Non-neoplastic cysts were more common (107, 52.2%) than neoplastic tumours (98, 47.8%). Among the neoplastic tumours (62) 63.3% were benign. Four borderline tumours (4.1%) were noted in the study. Surface epithelial tumours were the commonest histomorphological type 67 (68.4%). Granulosa cell tumour (4/32, 12.5%) was the commonest sex cord stromal tumour. **Conclusion:** Ovarian lesion possess wide gamut of histology. Non neoplastic ovarian lesions occur more frequently when compared to neoplastic lesions. Major proportion of malignant ovarian tumours was contributed by surface epithelial tumours.

Key Words

Ovarian Tumour, Serous Cystadenoma, Surface Epithelial

Introduction

Ovary being a complex organ is known to be involved by a wide variety of lesions. The etiology of ovarian cysts or adnexal masses ranges from functional (follicular or luteal cysts) to ovarian malignancies. This has been due to the presence of many cell types including some cells which are multipotent to totipotent which can further give rise to a galaxy of neoplasms.[1] Ovarian cancer ranks third after cervical and uterine cancer and is a leading cause of mortality among all gynaecological cancers. The five-year survival rate is around 25.4% for ovarian malignancy.[2] Indian cancer registry data project ovary as a crucial site of cancers in women comprising up to 8.7% for cancers in several parts of the country. More than thirty types of ovarian masses are characterized by various subcategories.[3] Ovarian neoplasms behave in diverse way posing a great challenge to the gynaecologists because in its early stage it generally escapes the detection due to its nonspecific symptoms. On the other hand, ovarian tumours attain greater size at advanced

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stage and are easy to diagnose but associated with poor prognosis.[4] Few non-neoplastic lesions presenting as pelvic mass with similar clinical, radiological and abnormal hormonal manifestations also mimic potentially as malignancy. [5] Adnexal masses present a special diagnostic challenge in part because benign adnexal masses greatly outnumber malignant ones.[6] Borderline tumours which represent non-invasive tumours of uncertain malignant potential also exists in addition to primary benign and malignant neoplasms.

Materials and Methods

After obtaining Institutional Ethical Committee approval (IEC/GMC/Cat C/2022/734 dated 03/01/2022), this cross-sectional descriptive study was carried out in the Department of Pathology, GMC Jammu, India. Data of all ovarian tissues following hysterectomy with unilateral or bilateral adnexa, oophorectomy and /or cystectomy and review blocks submitted to pathology department in 3 years (January 2018-December 2020) were retrieved retrospectively, and a concise clinical history was reviewed from the archival material in the pathology department. The ovarian pathology was broadly classified into neoplastic or non-neoplastic lesions and the tumours were classified as per WHO criteria (2016) into surface epithelial tumours. Data collected was entered and analysed using MS excel.

Results

A systematic search identified 205 ovarian lesion specimens submitted in the department over a time period of three years. There was a wide age range from 11 years to 72 years. Overall, the peak was seen at 31-40 years of age. The youngest patient in our study was diagnosed as mature cystic teratoma, ovary. Median age at which diagnosis was made is 33 years for benign tumour, 39 years for low malignant potential tumour and around 48 years for malignant tumour.

USG scan appearance findings were available in 173 cases including all malignant (32) cases. In all the malignant neoplasms, prominent solid component (32/32, 100%) was noted. However commonest radiologic finding was solid-cystic mass lesion (145/173, 67.58%).

The most common clinical presentation was pain abdomen. Maximum patients presented with unilateral lesion (192, 93.6%).

Non-neoplastic cysts were more common (107, 52.2%) than neoplastic tumours (98 , 47.8%).

The commonest non-neoplastic cyst was follicular cyst (61, 57%) followed by corpus luteal cyst (42, 39.2%) followed by 4 cases of (3.7%) endometriosis. A single case of tuberculosis was noted in the present study. Among the neoplastic tumours (62) 63.3% were benign followed by 32.6% malignant tumours. 4 borderline tumours (4.1%) were noted in the study.

Among the benign tumours, commonest was serous cystadenoma 22 (35.5%) followed by dermoid cyst and mucinous cystadenoma (Figure 1) which were 20 (32.2%) and 16 (25.8%) respectively. A single case of benign Brenner tumour and two cases of fibrothecoma were seen.

Histopathologically, the most common were surface epithelial tumours 67 (68.4%) followed by germ cell tumour 25 (25.5%) and sex cord stromal tumours 6 (6.1%) (*Table 1*).

Serous cystadenocarcinoma was the most common malignant neoplasm (15) 43.7% followed by mucinous cystadenocarcinoma (10) 31.25%. Granulosa cell tumour (4/32, 12.5%) was the commonest sex cord stromal tumour (*Table 2*).

Discussion

A total of 205 non-neoplastic and neoplastic ovarian lesions were seen during three-year study period. In the index study, non-neoplastic lesions were found to be more common (107, 52.2%) than neoplastic tumours (98, 47.8%). In the study by Zaman *et al.* [7] 343 (68.87%) out of 498 lesions were non-neoplastic cysts and 155 (31.12%) were neoplastic tumours. Kreuzer *et al.* [8], Kanasagara *et al.* [9] and Martinez-Onsurbe et al. [10] reported 82/203 (40.39%), 58% and 55 /132 (41.67%) non-neoplastic lesions in their respective studies.

Physiological or functional ovarian cysts are benign and may occur either because of failure of follicular rupture or because the corpus luteum failed to regress. In the current study 107 cystic lesions were reported out of which (61, 57%) follicular followed by (42, 39.2%) corpus luteal cyst, 4 cases of (3.7%) endometriosis and a single case of tuberculosis was noted. Gupta *et al.* [11] reported follicular and corpus luteal cyst (80.2%) as commonest non-neoplastic lesions. Kreuzer *et al.* [8] reported 55% Follicular cyst and 45% corpus luteal cyst. Prakash *et al.* [12] found similar results with 45.5% follicular cysts followed by corpus luteum cysts (25%).

Endometriosis affects 10-15% of all women of

Table 1 Frequency of main histological types of ovarian tumours.

Type	Number of cases	Percentage
Surface epithelial tumours	67	68.4%
Germ cell tumours	25	25.5%
Sex cord stromal tumours	6	6.1%
Total	98	100%

Table 2 Distribution of Ovarian Tumours According to Histopathological Type

	Nature of tumour	No. of cases	Percentage
	I. Surface Epithelial Tumours	67	68.4%
A	Serous tumours		39.7%
	Serous Cystadenoma	22	22.4%
	Serous Borderline Tumour	3	3.0%
	Papillary Serous Carcinoma	14	14.3%
	B. Mucinous Tumours Carcinoma		27.5%
	·Mucinous Cystadenoma	16	16.3%
	·Mucinous Borderline Tumour	1	1.0%
	·Mucinous Cystadenocarcinoma	10	10.2%
C	·Benign Brenner Tumour	1	1.0%
	II. Sex Cord Stromal Tumours	6	6.1%
	· Fibroma- Thecoma	2	2.0%
	·Granulosa cell tumour	4	4.1%
	III.Germ Cell Tumours	25	25.5%
	· Dysgerminoma	2	2.0%
	· Yolk Sac Tumour	1	1.0%
	·Mature Cystic teratoma	20	20.4%
	.Monodermal sinus tumour (Struma ovarii)	1	1.0%
	· Immature teratoma	1	1.0%
	TOTAL	98	100%

Table 3 Distribution of Ovarian Tumours in various studies

Ovarian tumours	Present Study	Mondal *et al* [22]	Pilli *et al* [21]	Agarwal *et al* [4]	Bhagyalaxmi *et al* [23]
Surface Epithelial tumour	68.4%	67.9%	70.9%	72.1%	80%
Germ cell tumour	25.5%	23.1%	21.2%	19.2%	14.2%
Sex cord stroma tumour	6%	5.6%	6.7%	7.1%	4.1%

reproductive age and 70% of women with chronic pelvic pain. In our study, four cases of (3.7%) endometriosis were reported. Similar findings 2.67% were reported by Kanthikar *et al.* [13] In the present study, the tumours were studied in the age group from 11 to 72 years (median age 42 years). Maximum number of benign ovarian tumours

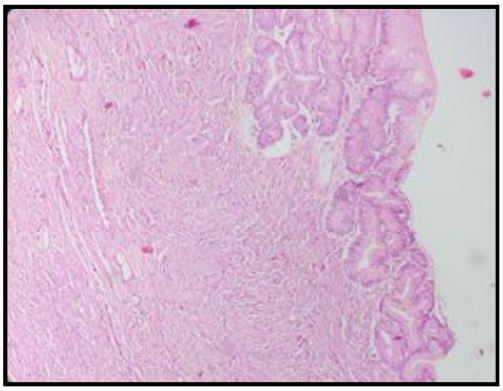

Fig. 1 Mucinous cystadenoma (H&E 100X)

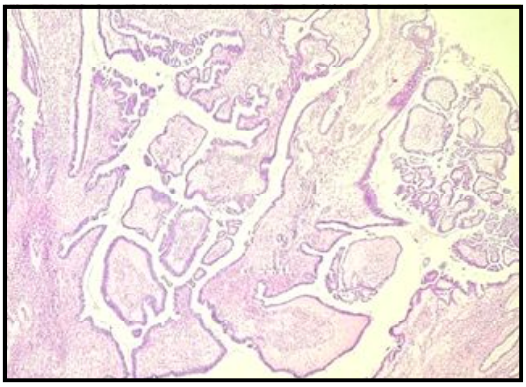

Fig. 2 Borderline serous cystadenoma (H&E 400 X

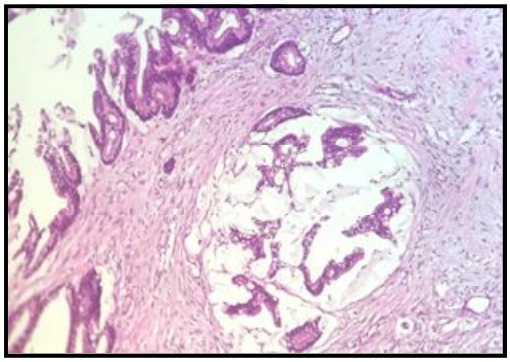

Fig. 3 Mucinous cystadenocarcinoma (H&E 400 X)

were in the 21-40year age group while malignant neoplasms (32.6%) were in 41-60 years age group. Findings are in accordance with the study by Upreti *et al.* [14] where maximum number of cases (25.6%) were seen in child bearing age group of 21-30 years. Benign tumours were more in the age group of 21-30 years (28.2%). The malignant neoplasms (36.3%), were seen more commonly in the age group of 51-60 years. Our findings also agreed with the findings of Mankar *et al.* [15] who found majority of ovarian tumour diagnosed in 21-40 years age-group. Wills et al. [16] found that maximum number of benign ovarian tumours were in the 21-40year age group. All the malignant tumours (100%) were in the 41-60year age group. Observation of 30.85% cases in the 5th decade was also reported by Valson *et al.* [17] in their study.

Pain abdomen was the most common clinical presentation found in this study followed by followed by menstrual irregularities. This agrees with observation of Dhende *et al.* [18] and Patel *et al.* [19] (48.8%)

Out of the 98 cases of ovarian tumours, 63.3% were benign, 4.1% were borderline and 32.6% were malignant. Similar results were observed by Gupta *et al.*, Sharma *et al.* and Pilli *et al.* [11,20,21] where benign tumours constituted 71.9%, 66.91%, 75.2% in each study, borderline tumours constituted 4.4%, 4.6%, and 2.8%, and malignant tumours constituted 23.7%, 28.4%, and 21.9% of tumours respectively.

Surface Epithelial tumours were the commonest variety constituting 68.4% of all the ovarian tumours, majority burden of malignant tumours is contributed by this group followed by germ cell tumours (25.5%) and sex cord stromal tumours (6%) (*Table 3*).

Among individual tumours, serous tumours (39.7.9%) were the commonest, followed by mucinous tumours (27.5%), teratomas (22%), granulosa cell tumours (6%), dysgerminomas (2. %) and yolk sac tumour (1.77%).

The most common benign ovarian tumour in present study was benign serous cystadenoma seen in 22.4% cases which is comparable to the studies of Agarwal *et al*, Mondal *et al* and Bhagyalaxmi *et al.* [5,22,23] Mature cystic teratoma was found to be the second common benign tumour similar to the study of Mondal *et al.* [22] but in discordance with Agarwal *et al.* [5]

Out of the four borderline surface epithelial tumours seen, three were of serous type (*Fig 2*).

Serous cystadenocarcinoma was the most common malignant surface epithelium tumour (43.7%, 14/32) followed by mucinous cystadenocarcinoma (Figure 3) which was in concordance with the results of Kumar *et al.* [24] (39.1%) Mankar *et al.* [15]. In the present study germ cell tumour were 25 (25.5%) in which benign cystic teratoma comprised maximum number of cases 21 (21.4%). Similar to results (23.1%) of Mondal *et al.* [22] Sex-cord stromal tumors were 6.1% in which granulosa cell tumor (4/6) comprised maximum number of cases. The results were in agreement with the observations of

Wills *et al.* [16] and Bhagyalaxmi *et al.* [23]

Conclusion

Ovarian lesions, both non-neoplastic and neoplastic ovarian often present with similar clinical and radiological characteristics. Ovarian tumours exhibit a wide histolmorphological pattern owing to its histogenesis. Benign surface epithelial tumours and their malignant counterparts were the most common histologic type followed by germ cell tumours. Histopathological examination of the ovarian tumour is however gold standard for establishing the nature of the tumour and so also planning further treatment. Hence, the combined efforts of gynaecologist, radiologist and pathologist is essential in reaching an early diagnosis and timely treatment.

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Conflicts of Interest

There are no conflicts of interest.

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