

A HISTOPATHOLOGICAL STUDY OF OVARIAN LESIONS

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ABSTRACT

BACKGROUND

Tumours of the ovary are common and form the third most common tumours of female genital tract next to carcinoma cervix and endometrium. Patients usually present at an advanced stage and pose difficulties to clinician as lab workup has limited role. A histopathological study is a must for final diagnosis.

The study was conducted with an aim to find the incidence of non-neoplastic and neoplastic lesions of the ovary with respect to age, reproductive period, use of OCPs and laterality. An attempt was made to study the histopathological diagnosis of the nature of the non-neoplastic lesion and in case of neoplastic lesions their origin and benign or malignant nature. Also, the prognosis in case of malignant lesions was assessed by considering the microscopic grading.

MATERIALS AND METHODS

This was a descriptive study over 18 months' duration. All surgically resected ovarian specimens were received. Relevant data like history of OCP and laterality of lesion were recorded. They were grossed, processed, examined and categorised as non-neoplastic and neoplastic lesion.

RESULTS

Out of 148 ovarian lesions studied, 98 were non-neoplastic and 50 were neoplastic. Among non-neoplastic lesions follicular cysts were common, reduction in luteal cysts were noted. Among neoplastic lesions, benign were common. On grading the six malignant lesions, five were grade 1 and one case was grade 3.

CONCLUSION

Non-neoplastic and benign lesions overshadow the malignant ovarian tumours. However, nonspecific symptomatology in malignant tumours of ovary portends a need for early detection and surgical intervention for better outcome.

KEYWORDS

Non-neoplastic, Histopathology, OCPs, Grading.

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BACKGROUND

The ovaries constitute the internal reproductive organs, which lie on either side of uterus close to lateral pelvic wall. Normal ovary varies in size, measuring upto 5 x 3 x 3 cm. Variation results from endogenous hormonal production, which varies with age and each menstrual cycle.^[1]

Although, ovaries are remarkably resistant to diseases, tumours of ovary are common. About 2/3rd of ovarian tumours were encountered during reproductive years; 80% - 85% of them are benign occurring in women between 20 and 44 years of age.^[2,3] There are less known facts about the aetiology of ovarian tumours.

A few risk factors include nulliparity heredity and few genetic syndromes like Lynch syndrome and Peutz-Jeghers syndrome.^[4]

The tumours are asymptomatic in majority of conditions, hence are noticed when tumours grow sufficiently to cause abdominal discomfort and distension. Menstrual irregularities may be present.^[5] Benign lesions occur at any age, but more common in reproductive age group. But malignant lesions come towards menopausal 50 - 60 years' age group and then decline.^[6]

Even in the era of advanced diagnostic modalities, lab workup has a limited role before surgery. USG can help in defining morphologic characteristics, but cannot differentiate hydrosalpinx paraovarian and tubal cysts.^[7] Even diagnostic laparoscopy may miss an intraovarian malignancy.^[8]

The definitive diagnosis of all ovarian cysts is made histologically.^[9] The prognosis of benign cysts is excellent compared to malignant ovarian carcinoma. Most germ cell tumours if diagnosed in early stage has good outcome.^[10] So this study has been taken up to find incidence of non-neoplastic and neoplastic lesions and to assess the prognosis considering the microscopic features.

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MATERIALS AND METHODS

This was a descriptive study conducted over a duration of 18 months from October 2013 to March 2015. The study material included all the hysterectomy and oophorectomy specimens submitted from all the units of OBG Department, and also from other peripheral hospitals to the Department of Pathology. Relevant clinical data was recorded in the case history chart.

148 ovarian masses specimens were subjected for histopathological examination. Ovarian masses were measured and appearance of external surface was noted. Then they were bivalved, nature of the fluid in cystic masses was noted. They were fixed in 10% formalin overnight. Grossing was done the next day, three sections of cyst wall were taken with emphasis on the thickened area or from the area with papillary excrescences, and in case of solid tumours one section for each centimetre of tumour was taken. A section of non-neoplastic ovary was also taken.

Sections were submitted for processing, slides were made with 5 µm thickness of tissues and stained with haematoxylin and eosin. The microscopic features were analysed. The cases were diagnosed and classified according to WHO classification of ovarian tumours.

RESULTS

Out of total 148 cases 98 were non-neoplastic (66.22%), while 50 were neoplastic (33.78%).

Out of 50 neoplastic lesions 42 were benign (84%), 2 were borderline (4%) and 6 were malignant (12%).

Distribution of Ovarian Lesions in Different Age Groups

Maximum lesions were seen in the age group of 31 to 50 years and least in 61 to 70 years' age group. Non-neoplastic lesions were more in the age group of 31 to 50 years.

Maximum number of benign lesions were seen in the age group of 31 - 50 years. Borderline lesions were seen in the age group between 51 - 60 years and malignant lesions were seen in all age groups except for 51 - 60 years.

Ovarian Lesions in Reproductive Age Group and Pregnancy

All women with history of menstruation were included in reproductive age group. Out of total 142 cases, 98 were in the reproductive age group.

In one case which was operated in pregnancy, the ovary was found to have a serous cyst. The remaining 97 cases were lesions in women in their reproductive period.

Ovarian Lesions in Oral Contraceptive Pill Users and Tubectomised Patients

In our study, more than 90% of patients were on oral contraceptive pills or had undergone tubectomy at the time of admission. Out of the 98 non-neoplastic lesions, 95.9% were using oral contraceptive pills earlier and 94.89% had undergone tubectomy. Out of 42 benign lesions, 85.71% were using oral contraceptive pills and 83.33% had undergone tubectomy. Among borderline malignancies out of the two cases one had no history of adopting any family planning methods, while the other had undergone tubectomy. Out of the 6 malignant lesions, 66.66% were on oral contraceptive pills and 83.33% had undergone tubectomy.

Unilateral/Bilateral Presentation

All neoplastic lesions were unilateral except for 3 cases of benign serous cystadenoma, which were bilateral.

Nature of Non-Neoplastic Lesions

There were lesions, 98 non-neoplastic lesions out of which majority of them were cystic.

Cell of Origin of Neoplastic Lesions

Ovarian tumours according to the cell of origin are shown in Table 1.

Sl. No.	Neoplastic Lesion	Cell of Origin of Tumours		
		Surface Epithelial	Sex Cord Stromal	Germ Cell
1	Benign	39	1	2
2	Borderline	2	0	0
3	Malignant	4	1	1
4	Total	45	2	3
5	Percentage	90%	4%	6%

Table 1. Distribution Pattern based on Origin of Neoplastic Lesions

Distribution of neoplastic lesions based on cell of origin showed 90% of tumours arising from surface epithelium, 6% of tumours from germ cell and 4% of tumours from sex cord stroma.

Prognosis of Malignant Lesion

All the malignant lesions were graded according to Shimizu-Silverberg criteria and are shown in Table 2.

Sl. No.	Lesion	Pattern	Cytologic Atypia	Mitosis	Grade
1	Well-differentiated mucinous carcinoma	1	2	1	I
2	Well-differentiated mucinous cystadenocarcinoma	1	2	1	I
3	Malignant papillary serous cystadenocarcinoma	2	1	2	I
4	Serous cystadenocarcinoma	1	2	2	I
5	Cystadenoma carcinoma	1	2	2	I
6	Teratocarcinoma	3	3	2	III

Table 2. Grading of Malignant Lesions

In our study, there were six malignant lesions and they were subjected to grading according to Shimizu-Silverberg criteria. Out of six five were under grade I, whereas one was grade III. Grade I has 5-year survival rate for about 90%, whereas grade III has only 40% chance of 5-year survival rate.

DISCUSSION

In the present study, non-neoplastic lesions were more common. Non-neoplastic lesions are important since they may mimic neoplastic lesions and confirmation by histopathological study is mandatory. This helps in distinguishing functional enlargement from neoplasia.^[11] In

concurrency with other studies, we observed that most of the ovarian lesions were found in the reproductive age group.^[12,13]

Among non-neoplastic lesions follicular cysts were seen predominantly common and were seen predominantly in the 36 to 45 years' age group, which was concordant with the study of Kanthikar et al.^[14] In our study, the percentage of non-neoplastic lesions in 31 to 40 years' and 41 to 50 years' age group was 42.35% and 43.87% respectively, making it 86.22% in 31 to 50 years' age group.

Corpus luteal cysts were stated as the most common non-neoplastic lesions in most of the studies, in which history of OCP was not specified. In our study, it was observed that in patients on OCP there was a decline in the incidence of corpus luteal cyst which is similar to the study done by Vessey M et al.^[15] These non-neoplastic lesions although functional are seen in relatively large number of cases, which indicates a possible correlation with the neoplastic lesions later in life. They may influence reproductive course, cause some other malignancies like breast carcinoma or cause obesity and other related non-communicable diseases.^[16]

In our study, 87.16% of lesions were unilateral and 12.83% were bilateral. It was similar to the study by Verma et al.^[17] and Madan et al,^[18] whereas Kanthikar et al^[14] and Bhuvanesh et al^[19] showed a higher incidence.

Bilateral lesions were seen in 19 cases, out of which 16 were non-neoplastic. Out of the neoplastic lesions, two were benign and one malignant. It was similar to the study of Parvatala et al.^[12]

In an earlier study done by Badge S A et al,^[20] the age group in which neoplastic lesions occurred were 21 to 30 years followed by 41 to 50 years' age group. In our study, malignant tumours were seen in all age groups except for two cases of borderline malignancies, which were found in the age group of 51 - 60 years. The malignant cases were seen in younger as well as in elderly age, which was concordant with the study by Badge et al.²⁰ The borderline group was in 5th decade of life, which was not concurrent with the study by Badge et al.^[20] Bhagyalaxmi et al^[21] reports an altogether different incidence of age for occurrence of neoplastic lesions in their study.

The neoplastic lesions with an exception of one case were usually seen in multipara, which was similar to the study done by Kanthikar S N et al.^[14]

In our study, 90% of women used OCPs and majority of tumours were non-neoplastic. Use of OCP is considered to be protective in prevention of ovarian malignancies. It could be attributed to reduction in risk of malignancies due to oestrogen as stated by Farghaley^[22] and Rice L W^[23] in their study.

All the neoplastic lesions were unilateral in our study except for three serous cystadenomas, whereas the study done by Parikh U et al^[24] states that malignant tumours were more often bilateral than benign tumours.

A rare case of collision tumour was reported in our study, which showed two components of serous cystadenoma and mature cystic teratoma. There are reported cases of teratoma with cystadenoma or a mucinous cyst. But combination of teratoma with serous cystadenoma is rare and only two reported cases prior to the present case were traceable in the literature.^[25] This emphasises the importance of extensive tissue sampling in cystic tumours with thickened capsule. A

case of actinomycosis of ovary was reported, which was not suspected preoperatively. On gross examination, it was a solid mass mimicking a malignant lesion, but microscopy revealed actinomycotic colonies. There was no history of intrauterine contraceptive device, but it is an important contributory history associated with actinomycosis.

All non-neoplastic lesions were arising from the Graafian follicle and some from the corpus luteum. The study done by Khan et al^[16] also states that the functional ovarian cysts, although non-neoplastic have potential to become tumour or help in the formation of tumour.

In our study, neoplastic lesions as per WHO classification were predominantly of surface epithelial in origin. The malignant as well as the borderline tumours were from surface epithelial origin. Tumours of sex cord stromal and germ cell origin encountered in our study were benign.

Origin	Bhagyalaxmi S et al (2014) ²¹	Kanthikar S N et al (2014) ¹⁴	Our Study
Surface epithelial	80.2%	65.68%	90%
Sex cord stromal	4.1%	5.7%	4%
Germ cell	14.2%	22.84%	6%

Table 3. Comparative Study of Origin of Malignant Ovarian Lesions

Grading of ovarian tumours was done based on the latest grading system by Shimizu-Silverberg, which had only three parameters and was easy to follow.^[26] Based on this, a grade III teratocarcinoma was reported. All the surface epithelial tumours in the study were grade I. Grading of tumours helps in predicting the survival rate, whereas staging helps in planning the treatment approach for the patient. The inter-observer reproducibility was also satisfactory in most of the other studies, which used alternative grading systems like FIGO for comparison.^[27]

CONCLUSION

Non-neoplastic lesions outnumber the neoplastic lesions in the ovary. Among the neoplastic lesions, benign tumours predominate. Pathologist must be vigilant to look out for rare lesions like actinomycosis and collision tumours. Careful grossing is essential, so that lesions embedded in the thickened wall are not missed out.

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