

Histopathological analysis of non-neoplastic lesions of ovary: A study at tertiary care hospital in western region of India

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Received: June 09, 2018; Accepted: July 16, 2018

ABSTRACT

Background: Ovarian lesions being asymptomatic in nature and very difficult to distinguish between benign or malignant by radiology or clinically, histopathological analysis becomes necessary. Nowadays, due to changing lifestyle and environment, we need to study the pattern and frequency of ovarian lesions in our region as well as globally. **Objective:** The objective of this study was to study the histopathological pattern of non-neoplastic lesions of ovary and to ascertain the frequency and distribution of the non-neoplastic lesions of ovary. **Materials and Methods:** This is a study of ovarian non-neoplastic lesions at tertiary care hospital over a period of 5 years. A total of 308 ovarian lesions were studied. Specimens were received in formalin and hematoxylin and eosin stained slides were examined. **Results:** Of 308 ovarian lesions studied, 67.53% of lesions found to be non-neoplastic. The non-neoplastic cysts commonly encountered are the follicular cysts (12.5%), simple serous cyst (49%), corpus luteum cysts (16.82%), endometriotic cysts (9.13%) and hemorrhagic cysts (2.88%), inclusion cyst (2.4%), and one rare case of hydatid cyst in our study. Non-cystic lesions which include congestion/edema (2.88%), non-specific inflammation (1.92%), granulomatous inflammation (1.44%), and one case of luteoma. **Conclusion:** The most common non-neoplastic lesion was simple serous cyst (49%) followed by corpus luteal cyst (16.82%), follicular cyst (12.5%), and endometriosis (9.13%). Most commonly involved age group is 20–49 years.

KEY WORDS: Non-neoplastic; Ovarian Cyst; Ovarian Lesions


INTRODUCTION

Ovarian lesions constitute a significant percentage of female diseases worldwide and account for a remarkable proportion of female admissions in hospitals.^[1] Some of them can be confused with a neoplasm clinically, intraoperatively, or on pathological examination.^[2] Many occur in the reproductive years and may interfere with fertility.^[3] Further, certain non-neoplastic lesions of ovary frequently form a pelvic mass and often associated with abnormal hormonal manifestations, thus

potentially mimicking ovarian neoplasm^[4] and very difficult to differentiate radiologically and clinically; hence, proper recognition and classification are required for management. The aim of this study is to evaluate the histopathological patterns of ovarian non-neoplastic lesions and to ascertain the frequency and distribution with emphasis to compare our study with findings of other researchers in India and other countries in the world.

MATERIALS AND METHODS

A study of 208 cases of non-neoplastic lesions of ovary was conducted at the Department of Pathology, GMERS Medical College, Ahmedabad, Gujarat, over the period of 5 years, from 2012 to 2016. The materials for this study, ovarian specimen was obtained from hysterectomy specimen with unilateral or bilateral adnexae, and oophorectomy and/or cystectomy specimens received in the department. Oophorectomy

Access this article online	
Website: http://www.ijmsph.com	Quick Response code
DOI: 10.5455/ijmsph.2018.0617916072018	

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specimens with neoplastic findings and those showing no pathological changes were excluded from the study.

Relevant clinical information regarding the age, clinical features, radiological findings, and provisional diagnosis were obtained. The specimens were analyzed in detail macroscopically for various parameters such as size, external surface, and consistency, and cut sections with contents of cyst.

The specimens were received in 10% of neutral buffered formalin processed by routine paraffin techniques and sections stained with hematoxylin and eosin were taken for microscopic examination.

RESULTS

Most of the time patients presented with symptoms like abdominal pain or were diagnosed on ultrasound. The age of the patients ranges from 10 years to 80 years. Of 208 cases, four cases were found to be bilateral lesions consisting of two cases of follicle cyst, one case of simple serous cyst, and one case of endometriosis. Size of the non-neoplastic lesions was found to be from 3 cm to 25 cm [Tables 1 and 2].

DISCUSSION

Due to similar clinical presentations, there is confusion in the diagnosis of non-neoplastic and neoplastic lesions of ovary although it is diagnosed as a mass or cystic lesion on ultrasonography and hence removed prophylactically in routine oophorectomies and hysterectomies.^[5] A total of 308 ovarian lesions were studied, of which 208 (67.53%) were found to be non-neoplastic lesions. This distinction between non-neoplastic lesions and neoplastic lesion is necessary since proper treatment depends on the histological abnormality; hence, this study was undertaken to determine the histopathological spectrum of these lesions in our hospital.

The non-neoplastic cysts commonly encountered are the follicular cysts (12.5%), simple serous cyst (49%), corpus luteum cysts (16.82%), endometriotic cysts (9.13%) and hemorrhagic cysts (2.88%), inclusion cyst (2.4%), and one rare case of hydatid cyst in our study, comprising 93.26% of total non-neoplastic lesions of ovary.

These cysts may mimic ovarian neoplasm clinically and grossly. They comprise a spectrum of morphologic changes whether physiological or pathological.^[6]

We encountered non-cystic lesions which include congestion/edema (2.88%), non-specific inflammation (1.92%), granulomatous inflammation (1.44%), and one case of luteoma.

Table 1: Distribution of non-neoplastic lesions of ovary

Non-neoplastic lesions of ovary	Number of cases (%)
Congestion/edema	06 (2.88)
Inclusion cyst	05 (2.4)
Simple serous cyst	102 (49)
Follicular cyst	26 (12.5)
Corpus Luteal cyst	35 (16.82)
Endometriotic cyst	19 (9.13)
Non-specific inflammation	04 (1.92)
Hydatid cyst	01 (0.48)
Granulomatous inflammation	03 (1.44)
Luteoma	01 (0.48)
Hemorrhagic cyst	06 (2.88)
Total	208 (100)

Table 2: Age distribution of non-neoplastic ovarian lesions

Age (year)	Number of cases (%)
1–9	0 (0)
10–19	6 (2.88)
20–29	39 (18.75)
30–39	72 (34.61)
40–49	67 (32.21)
50–59	13 (6.25)
60–69	06 (2.88)
70–79	04 (1.92)
80+	01 (0.48)
Total	208 (100)

In our study, four bilateral non-neoplastic lesions reported consisting of two cases of follicle cyst, one case of simple serous cyst, and one case of endometriosis.

A study by Eriksson *et al.* quoted by De Kroon *et al.* demonstrated that two-third of the cystic ovaries that required surgery were found to be functional cysts.^[7]

We had 67.53% of non-neoplastic lesions which outnumbered neoplastic lesions similar to a study by other researchers in India^[3,5,8,9] as well as from other countries such as Pakistan,^[7] Nepal,^[10] and Nigeria.^[1,11] However, this is at variance with Ameena *et al.*,^[12] Prathima and Shastry,^[13] Maharjan,^[14] and Javed *et al.*^[15]

Age range of our patients was from 10 years to 80 years with mean age of 38.2 years.

The most affected age groups are 30–39 and 40–49 years similar observation in a study by Amin *et al.*^[11]

Table 3 shows the comparison between various studies on the basis of age distribution in non-neoplastic lesions of ovary.

We found simple serous cyst as a most common non-neoplastic lesion (49%), with wide age range from 16 years to 80 years which is similar to observation done by Annapurna *et al.*^[3] Other researchers in India as well as in other countries also reported simple cyst in significant numbers. Ameena *et al.*^[12] and Zaman *et al.*^[7] in Pakistan found 35.29% and 11.95% cases, respectively, while, in India, Makwana *et al.*^[8] reported 28.43% cases and in Nigeria, Forae and Aligbe^[11] found 14.9% of cases of simple serous cyst. Simple ovarian cysts do not usually become malignant. Nevertheless, the diagnosis of an ovarian cyst causes anxiety, mainly because of fear of malignancy.^[7]

Table 4 shows comparison of the present study with studies done in other parts of India as well as studies done abroad.

Corpus luteal cysts are resulting from intracystic hemorrhage. These cysts are also harmless and can resolve without leaving any complication. However, it can sometimes rupture or cause ovarian torsion. In our study, corpus luteum cyst is the second most common lesion, i.e., 16.82%.

The follicular cysts are unilocular thin-walled several mm to 8 cm. Solitary follicular cysts are common and occur throughout life. Functional cysts are often asymptomatic and seen in younger patients having symptoms of dysmenorrhea, menorrhagia, and abdominal pain.^[15] However, large solitary luteinized follicular cyst is a rare lesion presenting during pregnancy and puerperium, unaccompanied by endocrine abnormalities. The median diameter of the cyst is 25 cm. In our study, we found one such case.

Endometriosis is common condition found in women of reproductive age. The most common location of endometriosis

Table 3: Comparison of various studies on the basis of age distribution

Authors	Age groups in years (%)			
	0–19 (years)	20–39 (years)	40–59 (years)	>60 (years)
Ramchandran <i>et al.</i> ^[16]	7.9	53	30	9.1
Pilli <i>et al.</i> ^[17]	7	58	30	5
Kar <i>et al.</i> ^[18]	7.4	41.7	46.2	4.4
Prakash <i>et al.</i> ^[19]	5.7	53.4	36.6	4.3
Wills and Mathew ^[20]	5.55	29.16	62.5	2.77
Dhakal <i>et al.</i> ^[21]	6.38	44.68	48.93	0
Present study	2.88	53.36	38.46	5.28

Table 4: Comparison of distribution of non-neoplastic lesions in different studies

Lesions	Amin <i>et al.</i> ^[1]	Singh <i>et al.</i> ^[10]	Alam and Bhatti. ^[22]	Makwana <i>et al.</i> ^[8]	Zaman <i>et al.</i> ^[7]	Annapurna <i>et al.</i> ^[3]	Sawant and Mahajan ^[23]	Present study
Congestion/edema	-	-	1	-	-	16	-	6
Simple cortical hyperplasia	-	-	-	-	-	18	-	-
Inclusion cyst	-	-	12	-	-	-	-	5
Simple serous cyst	5	60	-	56	41	82	11	102
Follicular cyst	54	112	26	38	99	-	77	26
Corpus luteal cyst	26	103	42	59	155	-	14	35
Endometriotic cyst	2	1	38	4	48	4	2	19
Non-specific Inflammation	-	-	16	4	-	-	-	4
Hydatid cyst	-	-	-	-	-	-	-	1
Granulomatous inflammation	-	-	1	-	-	2	-	3
luteoma	-	-	-	-	-	-	-	1
Hemorrhagic cyst	47	53	-	35	-	-	6	6
Ovarian ectopic pregnancy	-	-	-	-	-	2	-	-
Infarct ovary	-	-	14	-	-	-	-	-
Multicystic/polycystic	4	-	-	-	-	-	-	-
Miscellaneous	-	-	-	1	-	-	-	-
Total	138	329	150	197	343	124	110	208

is ovary and posterior cul-de-sac.^[5] Endometriosis is also known as chocolate cyst of ovary. When the endometrial tissue is found outside the endometrium and myometrium, it is called as endometriosis, which can lead to infertility.^[10] Although ovary is the most common site for endometriosis, in our practice, we also found cases of endometriosis in fallopian tube and bladder wall.

Alam and Bhatti^[19] reported 25.3% of cases of endometriosis out of 150 non-neoplastic lesions. Zaman *et al.*^[7] found 13.99% of cases out of 343 cases. Ameena *et al.*^[12] reported 9.42% of cases of endometriosis out of 85 cases. In the present study, it is 9.13%.

In our study, we found 6 (2.88%) cases of hemorrhagic cyst. Cysts only showing hemorrhage and hemosiderin-laden macrophages under microscopic examinations were diagnosed under the category of hemorrhagic cysts and were advised to correlate with surgical and clinical findings.^[10]

The reason for variation cannot be fully ascertained but may be attributable to environmental, hormonal, and genetic influences. Extensive sampling and knowledge of histopathological features of ovarian lesions are important part of this study.

CONCLUSION

Non-neoplastic lesions of ovary outnumbered neoplastic lesions (i.e., 67.53%). The most common non-neoplastic lesion in our study is simple serous cyst (49%), followed by corpus luteum cyst (16.82%) and follicular cyst (12.5%). Age groups most affected are 20–49 years. Majority of functional cyst occurred in the reproductive age groups. Our study observations were compared with studies within India, as well as globally.

For non- neoplastic lesions, it is mandatory to do histopathological examination as it is difficult to differentiate from neoplasms by other means of diagnosis i. e. clinical findings, radiological and operative findings as well as gross appearance.

ACKNOWLEDGMENTS

The authors acknowledge is due to our colleagues and technical staffs of the Department of Pathology, GMERS Medical College, Ahmedabad, for their cooperation and thanks also due to the staff of Gynecology and Obstetrics Department, who sent biopsy specimens of ovarian masses to our department.

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How to cite this article: Modi PJ, Bhalodia JN, Shah NM. Histopathological analysis of non-neoplastic lesions of ovary: A study at tertiary care hospital in western region of India. Int J Med Sci Public Health 2018;7(10):843-847.

Source of Support: Nil, **Conflict of Interest:** None declared.