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ORIGINAL ARTICLE

Spectrum of ovarian lesions in all age groups in a tertiary care hospital in Karachi Pakistan; a 5-year study

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ABSTRACT

Background: Ovaries are a site of wide range of pathologies consisting of both malignant and benign lesions. They are a source of immense morbidity and mortality for females .Ovarian lesions tend to vary depending on age with malignant ones being more common in older age and benign being prevalent in younger patients. Ovarian cancers pose a great challenge because of their late detection, the reason being their asymptomatic nature or very vague symptoms. The aim of our study is to find out the prevalence of these wide array of lesions in different age group among cases presented in Civil hospital Karachi from 2019 to 2023.

Methods: This is a retrospective cross-sectional study of ovarian specimens received at pathology department of Dow Medical College Karachi from Civil Hospital Karachi in five year duration from 2019 to 2023.Specimens were obtained from unilateral or bilateral salpingo-oopherectomy with or without hysterectomy. Data regarding age, clinical suspicion, histological diagnosis and menopausal status was entered and analyzed using SPSS version 25.

Results: From 2019-2023, out of 548 ovarian lesions, 312(56.9%) were neoplastic while 236(43.1%) were non neoplastic. The most common non neoplastic lesions were endometriotic cyst (30.93%). Neoplastic lesions occurred mainly in age group 16-30. Among them majority were benign cases. Dermoid cyst (29.16%) was most frequent benign tumor while serous papillary carcinoma (8.33%) was the most common malignancy.

Conclusion: Neoplastic lesions were more common than non-neoplastic ones, with benign dermoid cysts being the most common. Young individuals were primarily affected.

Keywords: Dermoid Cyst, Ovarian Carcer, Ovary, Papillary Carcinoma

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Introduction

Pathological lesions of ovaries span a broad spectrum of neoplastic and non-neoplastic lesions that pose a great challenge for health care (1). The diverse nature of these lesions ranging from follicular cyst, corpus luteal cyst, PCOS, endometriosis, inclusion cyst, hemorrhagic cyst and luteoma of

pregnancy which are non-neoplastic to neoplastic lesions, which can be benign or malignant. Benign ones include serous or mucinous cystadenoma, adenofibroma, Cystadenofibroma, or dermoid cysts while malignant being serous or mucinous Cystadenocarcinoma, Endometrioid carcinoma, clear cell carcinoma, Dysgerminoma, Granulosa cell tumors and immature Teratoma. Metastatic tumors and lymphomas also make a part (2) (3).

Any age group can be effected by them, however according to literature, prevalence of benign lesions is high in younger age group while malignant lesions are more prevalent among elderly (2)(4). In newborns and infants most of the ovarian lesions are cystic in nature (5). Sound knowledge of both benign and malignant lesions is crucial as they both contribute to morbidity and mortality in women. Like PCOS and endometriosis are leading cause of infertility in females of reproductive age and malignant ones leading to loss of life (1). Moreover, there are also certain debilitating emergency complications like rupture, torsion and hemorrhage necessitating immediate surgery and transfusions (6).

For adequate prevention and management, insight into risk factors is essential. Several predisposing factors are notorious. Among causes, those specifically leading to benign cysts comprise ovulation induction, hypothyroidism, tubal ligation, smoking, tamoxifen and maternal gonadotropins and pregnancy (5). As far as malignant ones are concerned, genetic predisposition is of supreme importance (7) (8). Other factors being low parity and infertility(9), as the risk lessens to 10% with each successive pregnancy (10) .Some other studied factors are increased age, early menarche, endometriosis, PID, estrogen replacement, obesity, smoking and genital talc usage .Some protective factors are also known including parity ,lactation, oral contraceptives , intrauterine devices , vegetable rich diet , physical activity, nonsteroidal inflammatory drugs , metformin, oophorectomy , hysterectomy and tubal ligation(7) (11).

Regarding ovarian malignancy one immense challenge is its diagnosis, which in 68% of cases is at late stage (12).The underlying reason being their asymptomatic nature at early stage, lack of routine screening and nonspecific symptoms of late stage disease (13). Symptoms that eventually develop at late stage include abdominal symptoms (82%), abdominal mass and distension (73%) (14).Furthermore, patients can also manifest other symptoms like pelvic pain, altered bowel habits, loss of appetite, and feeling of fullness, vaginal bleeding, urinary frequency and nausea (15).

Ovarian pathologies are associated with high rate of morbidity and mortality. The aim of this study is to find the prevalence of a diverse array of ovarian lesions in different age groups which presented in Civil Hospital Karachi during year 2019-2023, so we can have a sound knowledge of their incidence in our population as to have a better approach to plan for early diagnosis, prevention, management and treatment. Our aim is to see frequency of different ovarian lesions in biopsy specimen in a tertiary care hospital in Pakistan.

Methods

Ethical approval to ensure that the participant's rights are protected was taken from Dow Institutional Review Board. This

observational retrospective study was conducted at histopathology department of Dow University. Our study population comprises of females who presented at Civil Hospital Karachi and their ovarian biopsy specimens were sent to the histopathology lab of Dow Medical College. The duration of our study is 6 months from Dec 2023 to May 2024.All ovarian biopsies sent to histopathology lab from Civil hospital Karachi during 2019-2023 were included in our study while biopsies received with incomplete information were excluded. A self-designed proforma was used and filled using pre-collected data. Data analysis was done using SPSS version 25.

Table 1. Frequency and Percentages of Non neoplastic lesions

Non-neoplastic lesion	Number of cases	Percentage
Endometriotic cyst	73	30.93
Follicular cyst	57	24.15
Luteal cyst	55	23.30
Infarction due to torsion	37	15.68
Hemorrhagic cyst	9	3.81
Tubo-ovarian abscess	5	2.1
Total	236	100

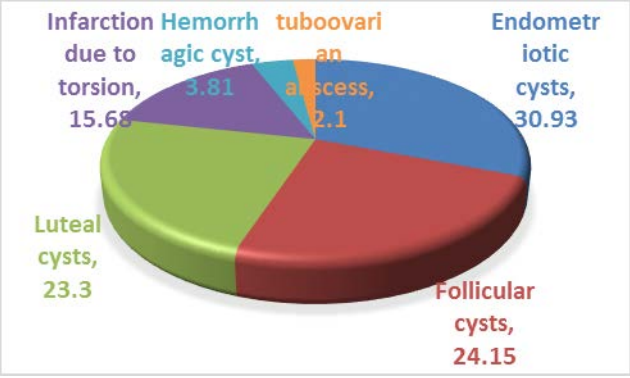

Figure 1. Percentages of Non neoplastic lesion

Out of 548 cases, 312(56.9%) of them were neoplastic. Neoplastic lesions comprised of Surface epithelial tumors; (n=212, 67.94%),

Results

Total of 548 cases of ovarian lesions were studied .Out of them 312 were neoplastic while 236 were non-neoplastic .The most common non-neoplastic lesion in our study was endometriotic cyst (30.93%) followed by follicular cyst(24.15%), lutealcyst (23.30%), infarction due to torsion(15.68%), hemorrhagic cyst (3.81%), tubo-ovarian abscess (2.1%). The age range of our study was 13-70 years .Most common age group of occurrence of non-neoplastic lesions was 31-45 years. Mean age was 35.39 years.

Sex cord stromal tumors; (n=6, 1.92%) and germ cell tumors; (n=94, 30.12%).Out of these, 253(81.08%) cases were benign whereas 13(4.16%) were borderline tumors and 46(14.74%) were malignant.

In our study the age range comprises from 11 to 85 years. The cases were divided into 5 age groups with the bulk of ovarian neoplastic lesions, both benign and malignant occurring in the age group 16-30 (123 cases) followed by age group 31-45 (103 cases), then 46-60 (68 cases), then above 60 years (13 cases) while the least number of cases were observed in the age group 0-15 (5 cases).

Out of all 253(81.08%) benign lesions, majority of themwere dermoid cyst (n=91, 29.16%), followed by serous cystadenoma (n=77, 24.67%), mucinous cystadenoma (n=57, 18.26%), serous cystadenofibroma (n=24, 7.69%), seromucinous cystadenoma (n=2, 0.64%), fibroma (n=1, 0.32%) and luteoma (n=1, 0.32%). Only 13 cases (4.16%) comprised of borderline tumors, consisting of mucinous borderline tumor (n=7, 2.24%), followed by serous borderline tumor (n=6, 1.92%). Malignant lesions comprised of a total of 46 cases(14.74%) in which the most

common lesion was serous papillary carcinoma (n=26, 8.33%), followed by endometrioid carcinoma (n=6, 1.92%), mucinous adenocarcinoma (n=5, 1.60%), granulosa cell tumor (n=4, 1.28%), dysgerminoma (n=3, 0.96%), clear cell carcinoma (n=1, 0.32%) and cystadenocarcinoma (n=1, 0.32%).

Table 2. Frequency and percentages of neoplastic lesions

HISTOLOGIC TYPE	BENIGN		BORDERLINE		MALIGNANT	
	No.	%	No.	%	No.	%
Surface Epithelial tumor (n=212, 67.94%)	160	51.28	13	4.16	39	12.5
Serous cystadenoma	77	24.67	0	0	0	0
Mucinous cystadenoma	57	18.26	0	0	0	0
Serous cystadenofibroma	24	7.69	0	0	0	0
Seromucinous cystadenoma	2	0.64	0	0	0	0
Mucinous borderline tumor	0	0	7	2.24	0	0
Serous borderline tumor	0	0	6	1.92	0	0
Serous papillary carcinoma	0	0	0	0	26	8.33
Endometrioid carcinoma	0	0	0	0	6	1.92
Mucinous adenocarcinoma	0	0	0	0	5	1.60
Clear cell carcinoma	0	0	0	0	1	0.32
Cystadenocarcinoma	0	0	0	0	1	0.32
Sex Cord Stromal tumor (n= 6, 1.92%)	2	0.64	0	0	4	1.28
Luteoma	1	0.32	0	0	0	0
Fibroma	1	0.32	0	0	0	0
Granulosa cell tumor	0	0	0	0	4	1.28
Germ Cell Tumors (n=94, 30.12%)	91	29.16	0	0	3	0.96
Dermoid cyst	91	29.16	0	0		
Dysgerminoma			0	0	3	0.96

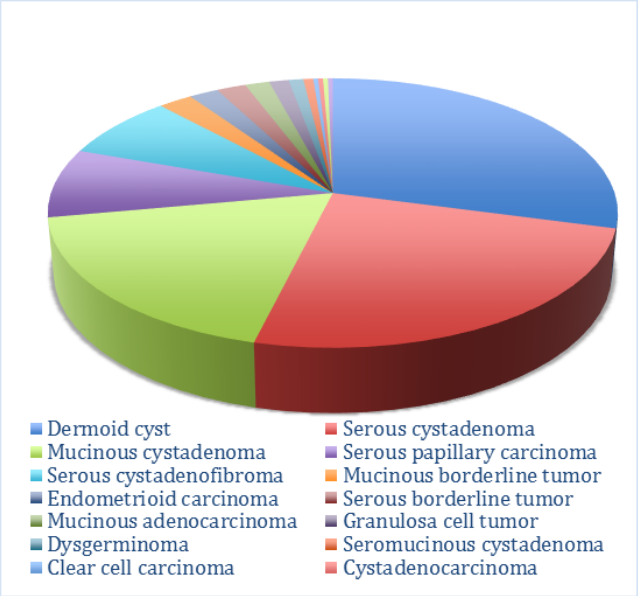

Figure 2. Percentages of neoplastic lesions

Discussion

Our study comprised of a total of 548 cases, 312(56.9%) of them were neoplastic while 236(43.06%) were non neoplastic. This is similar to studies conducted in Saudi Arabia and Nepal which showed 63.2% neoplastic, 36.8% non-neoplastic lesions and 86.87% neoplasms, 13.33% non-neoplastic lesions respectively (16) (17). This is also similar to a local study conducted in Lahore which observed 59.91% neoplastic, 40.09% non-neoplastic lesions (18). In contrast non-neoplastic lesions were more common in studies conducted in India showing 52.2% non-neoplastic, 47.8% neoplastic lesions, Libya 53.70% non-neoplastic, 46.29% neoplastic lesions, and Nigeria with 58% non-neoplastic, 23% neoplasms (19) (20) (21).

Other studies conducted in Multan and Lahore observed results contradictory to our research (23) (24) (25).

Our mean age was 35.39 years which is in concordance with the studies conducted in Pakistan (18) (19). Noria raffallah et al reported mean age of 39.62, S mahajan et al (38 years), Seema butt et al (44.5 years) (20) (19) (24).

In our study among non-neoplastic lesions Endometriotic cysts were most common which is in concordance with a local study (22). However, follicular cysts were reported to be more common in studies conducted in Libya (20) and India (19). Also, some of our local studies reported follicular cysts to be most prevalent (23) (24) (25). Sushna maharjan et al found hemorrhagic corpus luteal cyst to be the most common (17). Corpus luteal cyst was the most common in the study by Ameena Ashraf et al (18).

Majority of neoplastic lesions in our study were benign (81.08%) in nature. Similar findings were observed in researches done in Saudia 64.4%, Nepal 93.84%, India 63.3%, and Libya (16) (17) (19) (20). These findings also correlate to studies done in Multan and Lahore with 85.2% and 64.57% benign lesions respectively (23) (18).

From an overall count of 312 neoplastic lesions, benign lesions (n=253, 81.08%) were found to be more common than malignant lesions (n=46, 14.74%) and borderline neoplasms (n=13, 4.16%) were the least common. These correspond with findings from Saudia, Nepal, Multan (16) (17) (23).

Among neoplastic Lesions, most common category was observed to be Surface epithelial tumors (67.94%) followed by germ cell tumors (30.12%) and lastly sex cord stromal tumors (1.92%). Similar findings were observed by Farag N H et al (59.4%:23%:9%), Maharjan S et al (46.7%:38%:2%), Ashraf A et al (52.76%:43.31%:3.15%), Mahajan S (68.4%:25.5%:6.1%), Usman A et al (66%:28%:4%) (16) (17) (18) (19) (22). Research done by Kashif Z et al also observed surface epithelial tumors as the most common type of ovarian neoplasm (23). On the contrary Amin SM et al observed found germ cell tumors (44%) to be the most common neoplasms followed by surface epithelial tumors (39%) however similar to our study the least common ovarian neoplasm was observed to be sex cord stromal tumors (6.77%) (21).

The most common ovarian neoplastic lesion in our research was Dermoid cyst (29.96%). These findings are similar to researches done in Saudia, Nigeria, Lahore (16) (21) (25). However this is contradictory to the results of researches done in Pakistan, India, Islamabad, Multan (18-23), in whom serous cystadenoma was found to be the most common neoplasm. Maharjan S et al observed equal percentages of both dermoid cyst and serous cystadenoma (40%) (17). While research conducted by Butt S et al shows serous cystadenocarcinoma to be the most common ovarian neoplasm (24).

Among the benign ovarian lesions (n=253), The most common was Dermoid cyst (91/235, 35.96%). These results corresponds with researches conducted by Farag N H et al, Ashraf A et al, Amin SM et al, Malik AI et al (16) (18) (21) (25); whereas serous cystadenoma was the most common benign lesion in researches by Mahajan S et al, Usman A et al , Kashif Z et al, Butt S et al which is in contrast with our findings (19) (22) (23) (24).

From a total of 46 malignant lesions, the most common malignant neoplasm was found to be serous cystadenocarcinoma (morphological variant; serous papillary

carcinoma) n=26 (56.5%). Same findings were observed in researches done in Saudia, India, Nigeria, Islamabad, Lahore (16) (18) (19) (21) (22) (24). Maharjan S et al and Malik AI et al found dysgerminoma whereas Kashif Z et al found granulosa cell tumor to be the most common malignant neoplasm (17) (25) (23).

Conclusion

Neoplastic lesions were more common than non-neoplastic lesions in our study. Benign lesions were more prevalent. Most common benign lesion was dermoid cyst, malignant tumor was serous papillary carcinoma, non-neoplastic lesion was endometriotic cyst. Most common to be affected was young age group overall.

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KEY FOR CONTRIBUTION OF AUTHORS:

A. Conception/Study/Designing/Planning
B. Active Participation in Active Methodology
C. Interpretation/ Analysis and Discussion