ORIGINAL ARTICLE

DEMOGRAPHIC DIFFERENTIALS AND HISTOPATHOLOGICAL PATTERNS OF OVARIAN MASSES

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ABSTRACT

Background and Objectives: A descriptive case series was carried out in the department of Obstetrics and Gynecology, Akhtar Saeed Medical and Dental College Lahore, from 1st Jan 2013 to 31st Dec 2013. The objective was to determine the frequency of various histopathological patterns of ovarian masses and to study its relationship with age and parity.

Methodology: Patients having symptoms and ultrasonographic evidence of an ovarian mass were included in this study. All relevant details recorded on pre designed proforma. After informed consent and proper investigations, laparotomy was done and specimens sent for histopathology. Histopathology and relationship between age and parity was studied.

Results: There were 62 cases of ovarian masses. Histopathology revealed that 31 cases (50%) were non-neoplastic and another 50% were neoplastic masses. Most common non-neoplastic mass was corpus luteal cyst 13 (21%) followed by follicular cyst 10 (16.1%). Endometriotic cysts observed in 5 cases (8.1%) and inflammatory masses in 3 cases (4.8%). Among neoplastic masses, epithelial tumours were commonly observed. Most common Benign neoplasia were Serous cyst adenoma 9 (14.5%) then mucinous cyst adenoma 5 (8.1%), Dermoid cyst 4 (6.5%), and granulosa cell tumours 2 (3.2%). Among malignant neoplastic masses, serous cyst adenocarcinoma was common 7 (11.3%) and mucinuous cyst adenocarcinoma was 4 (6.5%). Mean age of females with ovarian masses was 40.61 ± 13.74. Mean age of females having ovarian malignancy was 48.63 ± 13.61 and median age was 50 years. Out of 31 cases of neoplastic masses, benign neoplastic masses were more common in the age group 20 – 50 years (n = 17, 54.8%). Malignant neoplastic masses were more common after age 50 years (n = 5, 16.1%). Out of 31 neoplastic masses, 21 cases (67.7%) were seen in parity 4 and less than 4 while 10 cases (32.2%) were having parity more than 4.

Conclusions: An early age at presentation of malignant tumours was noted however, the chances of tumours being malignant was higher after 50 years of age. Nulliparity was not a significant factor in the aetiology of both benign and malignant ovarian masses and increasing parity has not been protective for women in this study.

Key Words: Ovarian mass, ovarian neoplasm, nulliparity.

INTRODUCTION

Ovarian tumours are one of the most common causes for referral to a gynecology unit. Malignant Ovarian tumours rank sixth amongst all female cancers and rank second amongst cancers of female genital tract. These constitute fifth most common cause of death due to female cancers.[1,2] Epidemiology and End Result (SE-ER) has calculated that 1 in 55 women has a lifetime risk to develop ovarian cancer.[3] Ovarian cancers displays a great histopathological diversity.[4,5]

Both non-neoplastic and neoplastic masses can develop within the ovaries, from the neonatal period to post-menopausal age. A large majority of ovarian masses are functional and resolve without any specific treatment. Surgical treatment is required for large, persistent, or painful ovarian cysts.[6,7] Sometimes it is difficult to differentiate non-neoplastic lesions with neoplasm, clinically and intraoperatively. They are diagnosed on histopathology.[8] It is also very important to differentiate between functional ovarian cysts and non-neoplastic ovarian masses for proper treatment.

As most of the ovarian cancers are diagnosed at an advanced stage, due to late presentation, the overall five year survival rate is 30 – 40%.[9] There is no definite screening method for general population. High risk females with BRCA1 and BRCA2 mutations should be screened by transvaginal ultrasound and CA125.

High risk factors for epithelial ovarian cancers are

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advanced age, infertility and family history of ovarian cancer. Decreased risk is associated with increased parity, oral contraceptive pills and history of hysterictomy or tubal ligation. A few studies have shown risk factors of non-epithelial ovarian tumors, an increased risk of germ cell ovarian cancer is seen among girls and young women, the mothers of whom were less than 20 years at the time of pregnancy and used exogenous hormones during the pregnancy or had increased body mass prior to pregnancy. Use of Oral contraceptive pills and oestrogen replacement therapy was linked with a decreased risk of sex cord stromal tumours.[10]

About 80% of ovarian cancers are epithelial in nature. Epithelial ovarian cancers are rare before 35 years of age, but incidence increases with advancing age and peak incidence is seen between 50 – 70 years. Benign epithelial tumours occur at a relatively younger age than malignant epithelial tumors, most commonly seen in women over 40 years.[11]

Infertility is associated with risk of ovarian cancers. The risk appears to be higher in women with unexplained infertility.[12] In a US study, there is a 50 % reduction in risk with one child, 60% reduction in risk with two children and 80% reduction with five or more children. Apoptosis of epithelial cells on the surface of ovary, induced by hormones secreted during pregnancy may be the protective mechanism.[13]

Women in Pakistan have higher parity as compared to women in West. As ovarian tumours are associated with high morbidity and mortality, this study was designed to see the relationship of increased parity with ovarian tumours and to see whether increased parity is a protective factor in our women or not.

The present study was carried out to find out the frequency of various histopathological types of ovarian tumours, their relationship with age and parity and to compare the results with local and international studies.

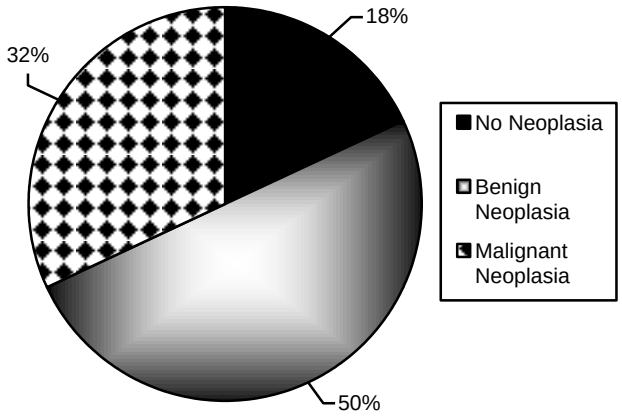
MATERIALS AND METHODS

Cross sectional study conducted in department of Obstetrics and Gynecology, Akhtar Saeed Medical and Dental College Lahore in its affiliated teaching hospitals, Akhtar Saeed Trust Teaching Hospital and Farooq Teaching Hospital, from 1st January 2013 to 31st December 2013. All symptomatic women with ultrasound evidence of an ovarian mass were included in this study. After taking consent a detailed history was taken followed by thorough physical examination. All relevant details were recorded on predesigned questionaire. After thorough investigations, surgical procedure was done and specimen sent for Histopathology to department of histopathology Akhtar Saeed Medical and Dental College.

The data was analysed by SPSS version 20. Frequencies and percentages of each type of ovarian mass calculated and Fisher exact test was applied to see the statistical difference of various ovarian masses with regard to their age and parity distribution. Statistical significance was defined as p-value less than and equal to 0.05.

RESULTS

Total gynecological procedures performed during study period were 1020.Out of these 62(6%) females had ovarian masses. Ovarian masses were broadly classified into non-neoplastic and neoplastic. Non-neoplastic masses included Follicular cyst, Corpus luteal cyst, Endometriotic cyst and inflammatory masses. The neoplastic masses were further divided into benign and malignant masses. Benign masses included mucinous and serous cyst adenomas, mature cystic teratoma (Dermoid cyst), fibrothecoma and granulosa cell tumour. Malignant masses include Mucinous and Serous cyst adenocarcinoma (Picture 1 to 6).



Graph 1: *Distribution of all ovarian masses (n = 62).*

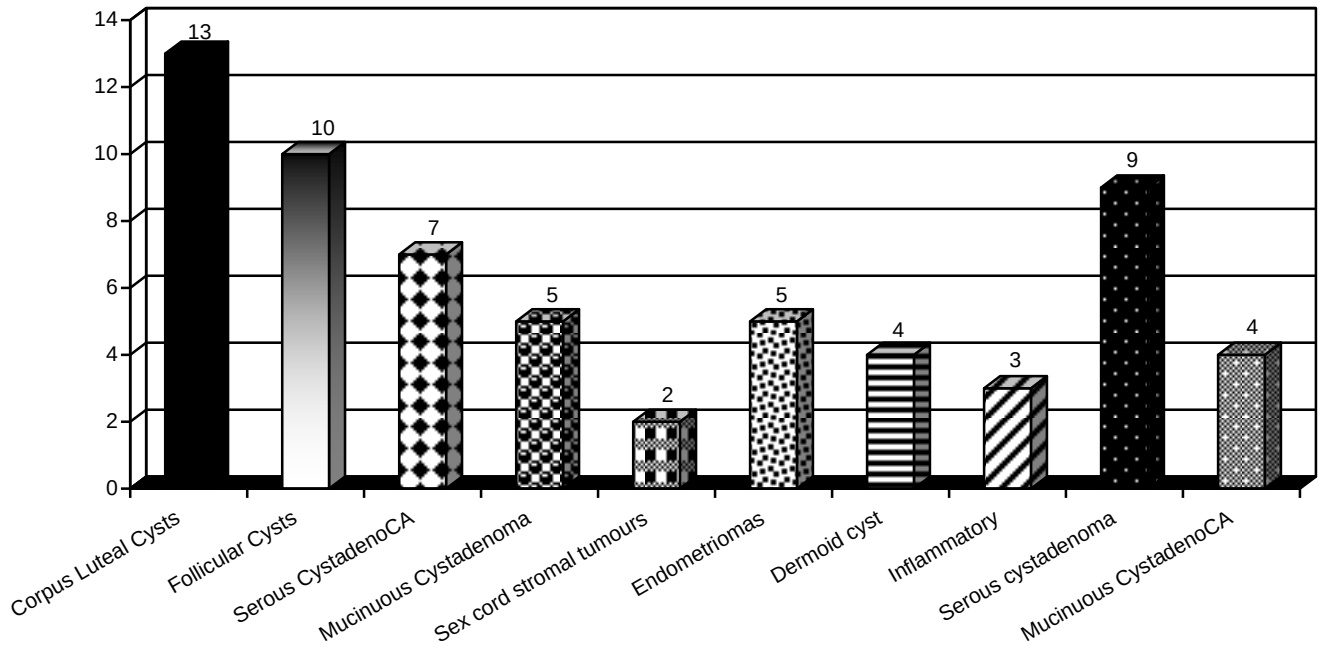
Among 62 cases, 31 (50%) masses were non-neoplastic and31 (50%) masses were neoplastic. Among neoplastic masses 20 (32%) were Benign neoplasia and 11 (18%) were malignant neoplasia.

Epithelial neoplasia account for 25 cases (40%). Majority are serous in type (n = 16, 25.8%) being ser-

Table 1: *Comparison of Ovarian masses with age (n = 62).*

Age in (Years)	*Type of Mass (n = 62)*		*Total*
	Neoplastic	*Non-neoplastic*	
50 and less than 50	23 (37%)	29 (46.7%)	52 (83.8%)
Above 50	8 (13%)	2 (3.2%)	10 (16.1%)
Total	31 (50%)	31 (50%)	62 (100%)

p–value = 0.039



Graph 2: *Histopathological patterns of ovarian masses (n = 62.*

Table 2: *Comparison of neoplastic masses (benign and malignant) with age (n = 31).*

Age	*Neoplastic Mass (n = 31)*		*Total*
	Benign Neoplasia	*Malignant Neoplasia*	
20 – 50 years	17 (54.8%)	6 (19.3%)	23 (74.1%)
More than 50 years	3 (9.6%)	5 (16.1%)	8 (25.8%)
Total	20 (64.5%)	11 (35.4%)	31 (100%)

p-value = 0.078

Table 3: *Comparison of neoplastic masses with parity (n = 31).*

Parity	*Neoplastic Mass (n = 31)*		*Total*
	Benign Neoplasia	*Malignant Neoplasia*	
More than 4	4 (12.9%)	6 (19.3%)	10 (32.2%)
4 and Less than 4	16 (51.6%)	5 (16.1%)	21 (67.7%)
Total	20 (64.5%)	11 (35.4%)	31 (100%)

F.E.T p- value = 0.052

ous cyatadenoma (n = 9, 14.5%) and serous cyst adenocarcinoma (n = 7, 11.3%). Mucinuous tumours were common epithelial tumours comprising of 9 cases (14.5%) with 5 cases (8.1%) of mucinuous cystadenoma and 4 cases (6.5%) of mucinuous cystadenocarcinoma. Moreover, 4 cases (6.5%) of mature cystic teratoma and 2 cases (3.2%) of granulosa cell tumours were also observed.

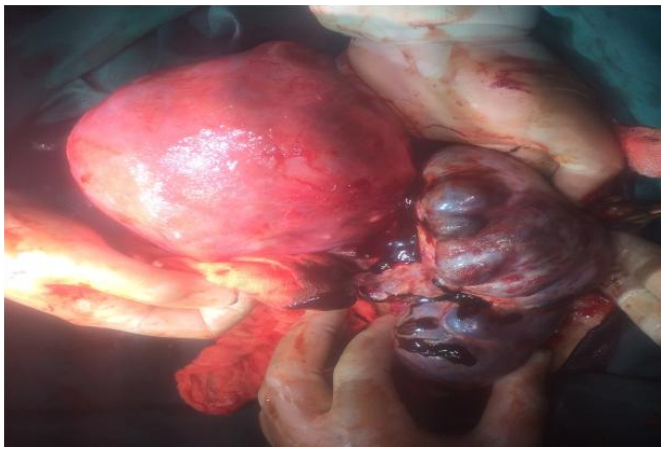
Mean age of females with all ovarian masses was 40.61 ± 13.74. Mean age for females having ovarian malignancy were 48.63 and median age for females having ovarian malignancy was 50.Mean parity for all ovarian masses was 3.06 ± 2.01 and mean parity for ovarian malignancy was 3.54.

Table 1 showing frequency and percentages of both neoplastic and non-neoplastic masses and their relation to two defined age groups. Data analysis by Fisher Exact test showing p value of 0.039 which is statistically significant.

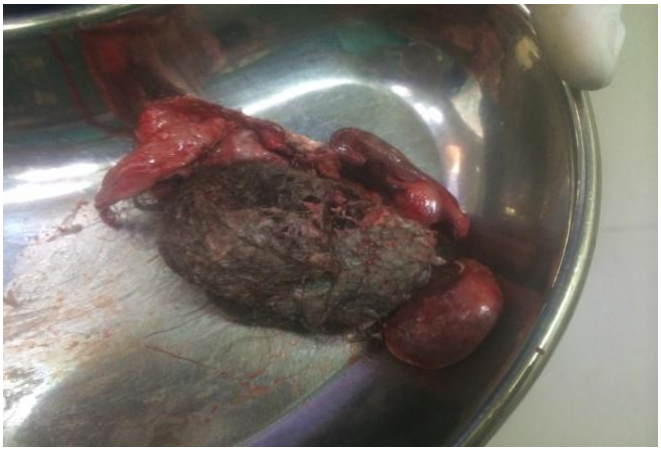
When ovarian neoplastic masses (benign and malignant) were compared to two groups of parity, 21 out of 31 neoplastic masses were seen in women with parity less than and equal to 4 and 10 cases seen in parity more than 4.Table 3 is showing comparison of neoplastic masses with both groups of parity and data analysis showing p value of 0.052 which is statistically significant.

DISCUSSION

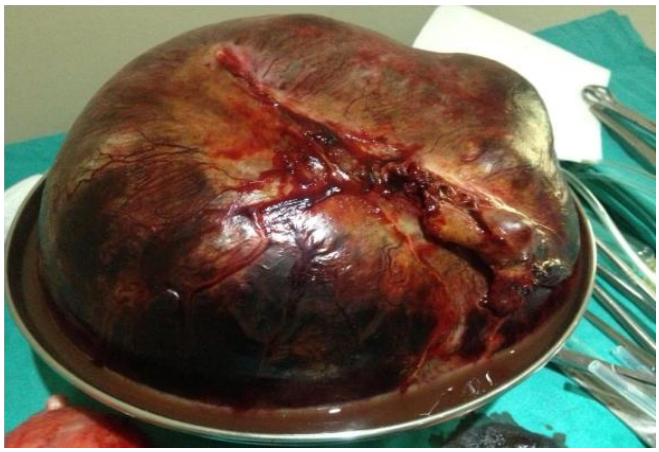
Ovarian masses are one of the most frequent reasons for referral to gynecologist. Timely diagnosis and appropriate management of an ovarian mass is very important otherwise many complications can occur. Although geographic and racial differences in the incidence of cancer are well recognized, various parameters of



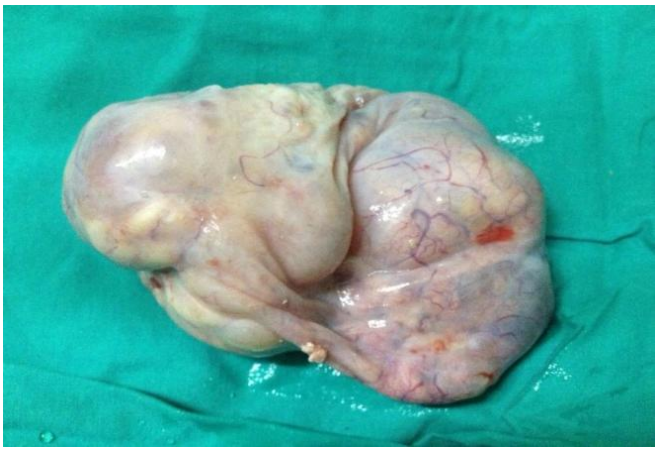
Picture 1: *Chocolate Cyst.*



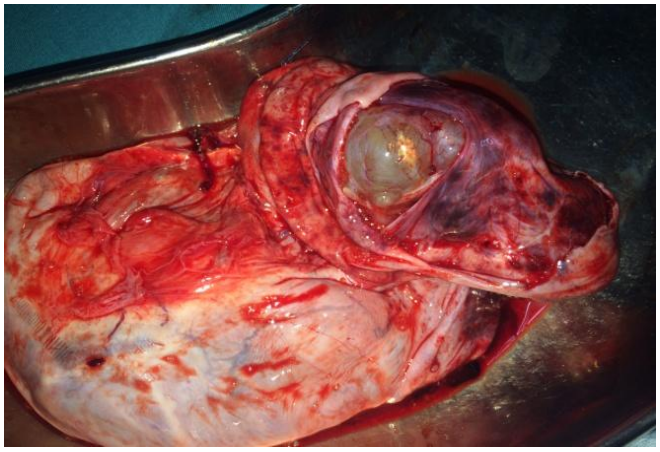
Picture 4: *Benign Teratoma Dermoid cyst.*



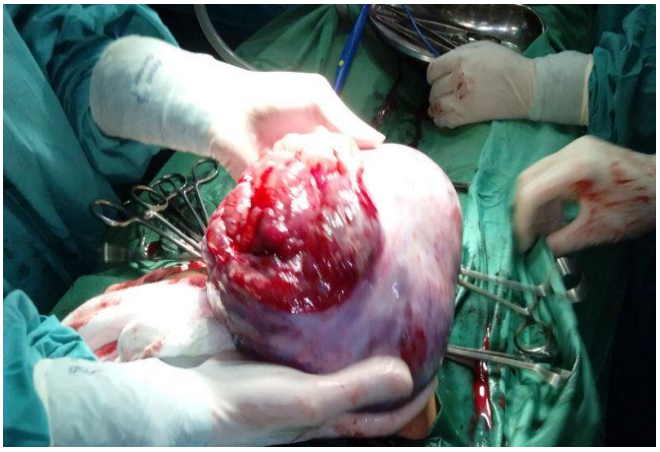
Picture 2: *Serous Cystadenoma*



Picture 5: *Mucinous Cystadenocarcinoma.*



Picture 3: *Mucinous Cysadenoma.*



Picture 6: *Malignant Epithelial Tumor.*

this study were comparable with other studies.

Most ovarian masses requiring surgery were either benign or functional. It has been found that Functional ovarian cysts were 4th most common cause of hospital admission in the United States in the late 1980's. Unnecessary surgery for functional ovarian cysts may increase the cost and risks over benefit in these patients. Simple ovarian cysts do not usually become malignant. However, the diagnosis of an ovarian cyst can cause anxiety, generally because of fear of malignancy.[14]

In current study, non neoplastic masses were 50%. These results were comparable to a Pakistani study,[15]

however a Saudi study negates it.[16] The most common non-neoplastic mass was corpus luteal cyst (n = 13, 21%) followed by follicular cyst (n = 10, 16.1%). These results were similar to studies from India[17] and Korea.[18] Endometriotic cyst was the third common non neoplastic mass (n = 5, 8.1%). This was contradictory to results in other studies which found 16%[19] and 20%,[19] risk of endometriosis. The diagnosis of endometriosis was important because patients having endometriosis have increased risk of developing ovarian malignancy.[21] In our study, inflammatory masses are 3 (4.8%) while another study showed 10.6% inflammatory masses.[22]

The current study revealed that neoplastic masses were 31 (50%). Out of those, 64.5% of all neoplastic masses were benign while only 35% were malignant. These results were comparable with the results of local study [23] while authors from other countries have slightly different figures.[24,25]

The most common histopathological diagnosis of ovarian neoplasia seen in our study were surface epithelial tumours (n = 25, 40%), out of these 16 cases (25.8%) were serous in type and 9 cases (14.5%) were mucinous. Various studies from the West also showed that surface epithelial tumours were the most common ovarian neoplasia.[2] Gupta[17] from India showed that incidence of surface epithelial tumours was 48.8%. Serous Cyst adenoma was the most common benign neoplasm and Serous-cyst adenocarcinoma was the most common malignant neoplasm found in our study. This finding coincided with previous studies by Gupta[17] and Khan.[26] On the other hand our finding did not coincide with other studies.[27,28] Benign Cystic Teratoma was the most common benign ovarian neoplasm seen in a study from Saudi Arabia and Serous-Cyst adenocarcinoma and metastatic carcinoma were the two most common malignant ovarian neoplasms.[27]

Second most common epithelial tumour in the current study was Mucinous cyst-adenoma and Mucinous cyst Adenocarcinoma. Similar results were reported in a study from Saudi Arabia.[16] However a study by Zaman[23] showed that second most common malignant neoplasm was endometrioid carcinoma and that mucinuous cystadenocarcinoma only found in 1.29% cases. Two cases of granulosa cell tumour were also observed in our study.

Nulliparity is considered to be a risk factor for malignant ovarian tumours. Most of the studies from the West showed that nulliparous women had high incidence of ovarian malignancy. According to these studies multiparity was related with a significant decrease in risk of ovarian cancer and increased risk of ovarian cancers was inversely proportional to the number of full term pregnancies.[29]

Current study showed that mean parity for all ovarian masses was 3.06 ± 2.01 and mean parity for ovarian malignancy was 3.54. In 11 cases of ovarian malignancy, 3 (27%) were seen in nulliparous women. One case (9%) was seen in females having parity 2, parity 4 and parity 8. However, the highest percentage 45.45% (5 cases) was seen in women with parity 5. Our findings were comparable to those observed in most previous Pakistani studies carried out at Rawalpindi, Karachi and Lahore[30-32] and two studies conducted in Nigeria.[33,34]

In current study mean age of females for all ovarian masses was 40.61 ± 13.74. Mean age of females having ovarian malignancy was 48.63 and median age for females having ovarian malignancy was 50.Benign neoplastic masses were more common in age group 20-50 years and malignancy more common in age above 50 years. A study by Karki[28] also revealed that most malignant tumours were noted after 40 years of age. Similarly an Iranian study also concluded that median age for ovarian malignancy was 49 years.[35] A study by Layla and Nabeel[16] revealed that malignancy was more common after age 52. A higher median age of 60 – 65 years for malignant ovarian tumours had been narrated from western countries and from southern and western parts of India.[36,37] The incidence towards an early age of presentation of malignant tumours in our study as compared to western countries necessitates early and careful investigation of any abdominal complaint in young females to reach early diagnosis of ovarian malignancy of this age group.

It is ***concluded*** that the most prevalent non-neoplastic mass was corpus luteal cyst and epithelial ovarian tumours were found to be the most common benign and malignant ovarian neoplasia. Malignancy increases with increasing age being higher after 50 years of age. The risk of ovarian malignancy increases with parity. The reason for this may be that multiparous women are comparatively older than women in low parity group.

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