

Pattern of Ovarian Tumours in Different Age Groups: In A Gyneacological Unit of A Tertiary Care Hospital

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Abstract

Objective: To determine the frequency and pattern of ovarian tumours in different age groups in a unit of a tertiary level hospital.

Study Design: Retrospective study

Place and Duration: Department of Obstetrics and Gynaecology (Unit-II) Liaquat University Hospital (LUH), Hyderabad, Sindh from January 2001 to December 2007.

Methodology: All cases of ovarian tumours with confirmed diagnosis on histopathological examination, managed in gynecological unit II from January 2001 to December 2007 were included in study. Medical case records and histopathological reports were reviewed. The patients with ovarian tumours were divided into three groups on bases of age at time of presentation. Data analysis included were frequency and percentage of histopathological pattern of ovarian tumours in different age groups.

Result: Over the study period of 7 years, the total gynecological admissions in gynecological unit II were 17550, and 813 biopsies were studied in patients who presented with ovarian masses. Out of 813 biopsies, 602 were ovarian neoplasms on histopathological examination, giving a frequency of 3.4%. In relative frequency, 73.08 % were benign, 22.75 % were malignant and 4.15% were mixed ovarian tumours. Epithelial tumours were the most common type, followed by germ cell tumour and sex cord stromal tumours in all age groups. Mucinous adenocarcinoma was the most common malignant ovarian tumour, in reproductive and perimenopausal age group and germ cell tumour in very young women.

Conclusion: Ovarian tumours can present at any age. In all age groups the most common ovarian tumours are epithelial. In younger age group the most common benign tumours are epithelial, and the most common malignant tumours are germ cell. The frequency of malignant and benign ovarian tumours was almost same in both reproductive and perimenopausal age groups, and the most common malignant tumour was mucinous adenocarcinoma.

Key Words: Ovarian tumour, incidence, age group histopathological pattern.

Introduction

Ovarian tumours are a group of neoplasms, affecting the ovary and have diverse spectrum of features according to the particular tumour entity. These include benign, low malignant potential/borderline and malignant subtypes. The ovarian tumours are subdivided into main categories according to World Health Organization classification system. Epithelial tumours account for 75% of all ovarian tumours and 90 – 95% of ovarian malignancy, sex cord stromal tumours 5 -10% and germ cell tumours 15 – 20%, and metastatic tumours 5%.¹ The relative frequency of ovarian tumours is different for Western world and Asian countries. For example, surface epithelial tumours account for 50-55% of all ovarian tumours and their malignant counterpart for approximately 90% of all ovarian cancers in western world where as this figure is 46-50% and 70-75% respectively in Japan.² The life time risk for women to develop ovarian cancer is approximately 1 in 70.³

The incidence of ovarian cancer varies in different geographic locations, in USA and UK it is 3-7 times greater than in Japan. In Asia incidence is somewhat higher than in the west.⁴ In England and Wales, ovarian cancer is the most common gynecological cancer and the fourth most common type after cancers of the breast, large bowel and lungs, represent-

ing some 5% of all cancers in women,² and accounting 50% of all deaths from female genital system.⁵

The incidence of ovarian carcinoma is much more with positive personal or family history of carcinoma breast, colon and uterus.⁶ According to the GLOBOCAN 2008 WHO survey in Pakistan ovarian cancer is the second most common cancers of gynecological origin, after cervix uteri and the fourth most common malignancy of women.⁷

The type of ovarian tumour varies according to age at time of presentation. In pre-menopausal patients more than 90 percent of surgically managed cases are benign as opposed to just 60% in post-menopausal populations.⁸ It is well known that germ cell tumours are the most common ovarian neoplasm in the first two decades of life constituting approximately two-third of all ovarian tumours.⁹ Malignant germ cell tumours constitute one third of germ cell ovarian tumours and two third of all ovarian malignancy in this age group.

The purpose of our study was to determine frequency of ovarian tumours and their histopathological subtypes in different age groups in a unit of a tertiary level hospital.

Methodology

This departmental-approved retrospective descriptive study was carried out in Gynecology Unit II at

LUH, Hyderabad, Sindh. All patients who were operated for ovarian masses from January 2001 to December 2007 were included in the study. The patients were scrutinized by tumour registry data in the unit in which histopathological report of each operated patient was entered. Those with confirmed diagnosis of ovarian tumours on histopathology were included in the study. The patients with adnexal masses other than ovarian tumours, such as functional cysts, endometrial cysts and inflammatory tubo-ovarian masses were excluded from the study. The data was collected on a predesigned proforma, processed on Statistical Package for Social Sciences (SPSS) version 10.0 software and expressed as frequencies and percentages. The variables analyzed were frequency, age distribution and histopathological subtype.

Results

From January 2001 to December 2007 total number of patients who presented with ovarian masses in gynecology unit II was 813. Out of which 602 were true ovarian tumours confirmed on histopathological examination, giving the frequency of 3.4% of all gynaecological admissions. The maximum number of ovarian tumours were found in age group II (21-44 years) 70.6%, followed by age group III (>45 years) 21.59%, and age group I (<21 years) 7.8% (Table I). Epithelial tumours were the most common type of

ovarian tumours (73%), followed by germ cell tumours (18.3%), and sex cord stromal and other mixed tumours (8.8%) in all age groups (Table II,III,IV). The malignant tumours were far more common in age group III (>45 years 36%) than in age group (<21 years 12%). The most common malignant ovarian tumour in our study was mucinous adenocarcinoma, a type of surface epithelial tumour, comprising 55% of all ovarian malignancies. However in younger age, group (<21 years) mucinous adenocarcinoma (surface epithelial tumour) and immature teratoma (germ cell tumour) were found with equal frequency (Table II). Tumours belonging to borderline malignancy were not seen in our study.

**Table II. Histopathological Variant Of Ovarian Tumours In Age < 21 YEARS
n=47(frequency: 7.8%)**

Histo pathological type	No	Percentage
Epithelial	32	68.1
Benign	29	90.6
Serous cyst adenoma	18	62
Mucinous cystadenoma	11	38
Malignant	3	9.4
Mucinous adenocarcinoma	3	100
Germ cell tumours	12	25.5
Dermoid cyst	9	75
Immature teratoma	3	25
Others	3	6.3
Mixed (Mesodermal)	3	100

Table I. PATTERN OF OVARIAN TUMOURS IN DIFFERENT AGE GROUPS

Age groups (years)	Benign No. (%)	Malignant No. (%)	Mixed (%)
Group I (<21)	38(80.85)	6(12.76)	3(6.38)
Group II (21-45)	325(76.47)	87(20.47)	13(3.07)
Group III (>45)	77(59.23)	44(33.84)	9(6.92)
	440(73.08)	137(22.75)	25(4.15)

Table III. Histopathological Variant of Ovarian Tumours in Group 11 (21-45 YEARS) n=425 (Frequency: 70.59%)

Histopathological type	No	Percentage
Epithelial tumours	319	75.0
Benign	256	80.2
Serous cyst adenoma	186	72.65
Mucinous cyst adenoma	70	27.34
Malignant	63	19.8
Serous adenocarcinoma	15	23.8
Mucinousadenocarcinoma	48	76.2
Germ cell tumours	76	17.9
Benign	67	88.15
Dermoid	66	98.5
Struma ovarii	1	1.5
Malginant	9	11.9
Choriocarcinoma	3	33.4
Dysgerminoma	6	66.6
Sex cord stromal tumours	12	2.8
Granulosa cell	11	91.6
Thecoma	1	08.4
Others	18	4.2
Nonhodgkin lymphoma	1	5.55
Metastatic	3	16.66
Mixed (Mesodermal)	14	77.7

Discussion

A female's risk at birth of having an ovarian tumour sometime in her life is 6-7%, of having ovarian cancer is almost 1.5% and dying from ovarian cancer is 1%.² The studies from Pakistan show ovarian cancer as common gynaecological malignancy, even more so than cervical cancer.^{10, 11}

Human ovarian tumours are divided into three major categories, which are named according to their presumed histogenesis of direction of differentiation i.e.

Table IV. Histopathological variant of ovarian tumour in age group iii (> 45YEARS) n=130 (frequency: 21.59%)

Histopathological type	No	Percentage
Epithelial tumours	99	76.15
Benign	64	64.64
Serous cyst adenoma	25	39
Mucinous cyst adenoma	39	61
Malignant	35	35.35
Seroust adenocarcinoma	11	31.42
Mucinous adenocarcinoma	24	68.57
Germ cell tumours	15	11.52
Benign	11	73.4
Dermoid	11	100
Malignant	4	26.6
Dysgerminoma	3	75
Embryonal	1	25
Sex cord stromal tumour	7	5.37
Granulosa cell tumour	6	85.7
Fibroma	1	14.2
Others	9	6.92
Mixed (Mesodermal)	9	100

common epithelial tumours, sex cord stromal tumours, and germ cell tumours.¹ Frequency of ovarian tumours and percentage of histopathological pattern in different age groups differs in different studies.¹¹

In current study 73.08% were benign and 22.75% were malignant ovarian tumours, the frequency was similar to that reported from different international studies.^{12,13} But frequency of benign ovarian tumours was 68.7% and malignant ovarian tumours was 31% in a study published by pathological department of same institute,¹⁴ this difference may be because our unit represents only one gynecological unit out of four gynecological units of the hospital, while patho-

logical department of same institute receives specimens not only from gynecological department of our hospital but also from most of surrounding hospitals. None of the tumours is border line malignant in our study; it was reported in less than one percent in a study from same institute¹⁴ and 2.35% by Novak MS.¹² In our study the most common pathological variant of ovarian tumour in all age groups were epithelial, followed by germ cell tumour and sex cord stromal tumour, which is similar to a study conducted by I.A.Malik,¹⁵ but differs from a study published by Koonings PP¹⁶ and Onviaorah.¹⁷

In age group less than 21 years the frequency of ovarian tumours was 7.80%, the figure does not correlate with the studies published by Sawai and Sirsat (11.2%),¹⁸ Jamal S (3.6%),¹¹ Oumachigue (6%)¹⁹ and Baloch S(26%).⁵ The most common tumours in young age group were epithelial(68.7%) followed by germ cell tumours which is similar to study by Baloch⁵ but do not correlate to study by Ehren IM,²⁰ Abeera²¹ and Bhattacharia.¹³ In the same age group, 12.76% tumours were malignant while in most of published literature 20-35% of tumours were malignant.^{22,23} According to study conducted in by Bhattacharya in West Bengal, India, in girls up to 20 years of age the most common malignant tumour was dysgerminoma¹³ but in our study among the malignant ovarian tumours 50% were mucinousadenocarcinomas and 50% are immature teratomas.

In current study majority of tumours (70.59%) were in age group between 21-45, which correlates with the study carried out Jha R et al,² but differs from the study done by Shahid from Rawalpindi where the majority (73.1%) of ovarian tumours were in slightly older age group, that is above 40 years of age.¹¹ In our study 76.47 % tumours in this age group were

benign while 20.47 % tumours were malignant; the incidence being similar to study by Jhr² and Onviaorah,¹⁷ but do not correlate to study by Novak MS¹² in which incidence of malignancy was significantly lower that was 4.6% . In this age group the most common benign and malignant epithelial ovarian tumours were serous cyst adenomas (72.65%) and mucinous adenocarcinomas (76.2%) respectively.

In our study, in age group more than 45 years the frequency of ovarian tumours was 21.59%. The common variety of tumour for both benign (61%) and malignant (75%) were mucinous. While in a study from Japan serous carcinoma were more prevalent than mucinous carcinoma in age 35 years and over and vice versa in those aged younger than 35 year.²⁵ In this aspect our study differs from national and international studies.^{8,15} The reason remains unknown, it may be by chance, however genetic and environmental factors may be operative.

The maximum frequency for both benign and malignant germ cell tumours in our study was in ages less than 21 to 45 years which is in contrast to a study from Asian country where incidence rate of germ cell tumours is peaked in age group 15-24.²⁵

Conclusions

Our study concludes that **the main bulk of ovarian tumours both malignant and benign are in reproductive age group.** Benign tumours are common for all ages. **Epithelial tumours are the most common variety of tumours.** Among the benign epithelial tumours **Serousadenomas are relatively common at younger age than Mucinousadenomas.** The commonest malignant ovarian tumour irrespective of age is Mucinous adenocarcinoma. **Our study differs from other national and international studies in that among**

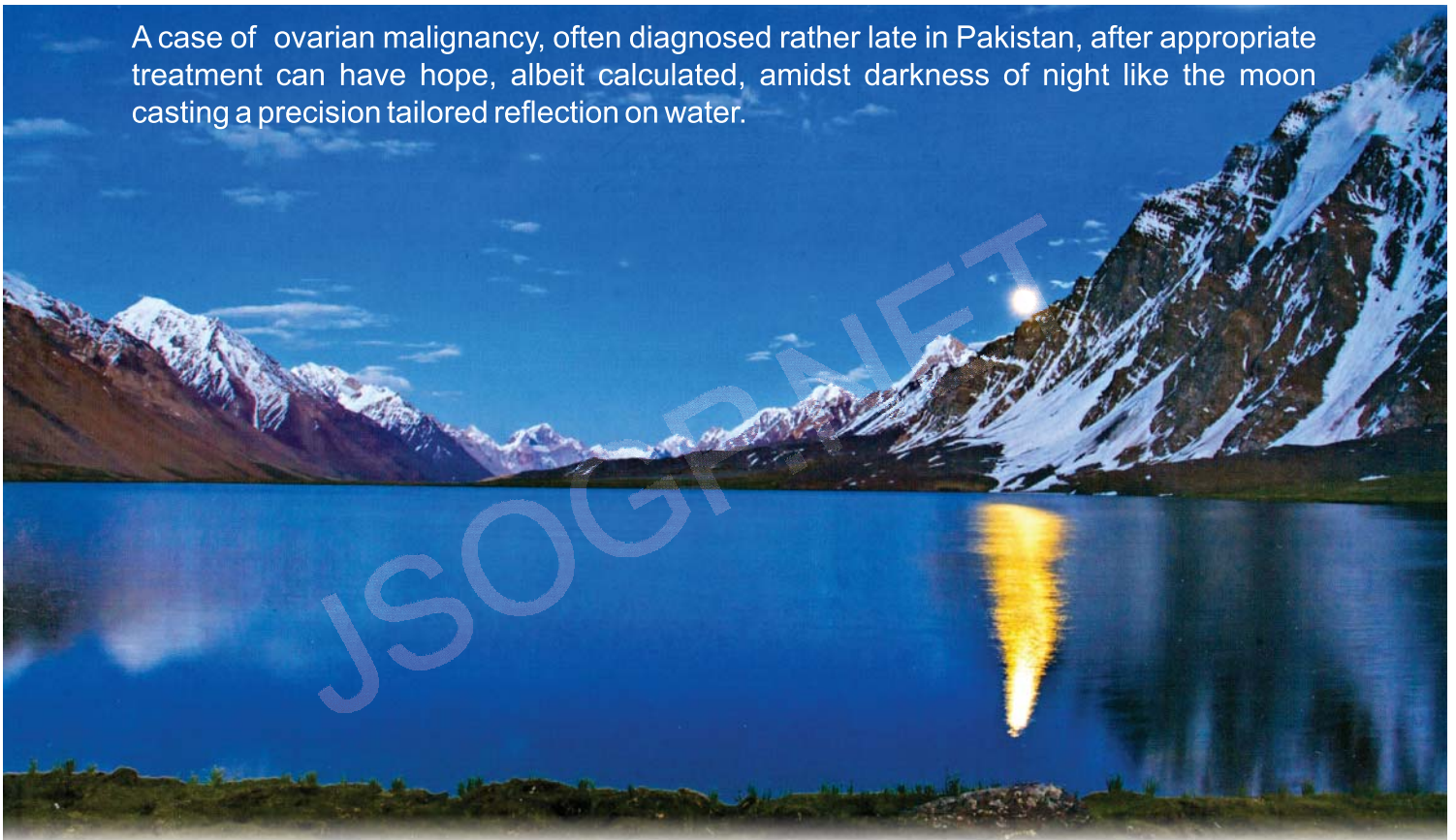
germ cell tumours at young age no tumour was a Dysgerminoma.

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A case of ovarian malignancy, often diagnosed rather late in Pakistan, after appropriate treatment can have hope, albeit calculated, amidst darkness of night like the moon casting a precision tailored reflection on water.



Karambar Lake, a Ramsar site is the highest altitude wetland in the world at a height of 4,272 meters, is part of the Hindu Kush range, located in Chitral, Khyber Pukhtunkhwa, Pakistan. The lake's deepest point is 52 meters.

Editor's addition