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RESEARCH ARTICLE

OVARIAN CANCER IN A TERTIARY CARE HOSPITAL IN SOUTH-SOUTH NIGERIA: A 10 YEAR HISTOPATHOLOGICAL REVIEW

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ABSTRACT

Introduction: Ovarian cancer has one of the highest mortality rates among the cancers of the female genital tract.
Aim: To ascertain the relative frequency, histological types, age distribution of ovarian cancer seen in University of Port Harcourt Teaching Hospital between January 1998 and December 2007 and to compare the results with local and international studies.
Methodology: A retrospective study based on surgical biopsies from histopathologically proven cases of ovarian neoplasms seen at the hospital. Clinical information and bio-data were obtained from request forms. All the slides of ovarian tumours were reviewed. Results were analyzed using simple descriptive statistical methods.
Results: A total of 166 ovarian neoplasms were seen over the 10 year period, out of which 38 (22.9%) were malignant. Ovarian cancer was highest between 51- 60 years. The mean age at diagnosis was 45.8 years. Surface epithelial ovarian cancers were the most common group (71.1%), followed by germ cell and sex cord-stromal tumours, 13.2% each. Overall, Serous cystadenocarcinoma was the most common subtype (36.8%) followed by mucinous cystadenocarcinoma (31.6%).
Conclusion: Malignant ovarian tumours are far less common than their benign counterparts with surface epithelial malignancies being more common than germ cell cancers of the ovary in our locale.

INTRODUCTION

Ovarian cancer is the third most common cancer of the female genital tract worldwide (Ellenson and Pirog, 2010; Cecil, 2005). Also ovarian cancer is the fourth most common cause of cancer deaths in Western countries (Kasprazk *et al*., 1999). It has one of the highest mortality rate among the cancers of the female genital tract due to the lack of effective screening methods for it, absence of specific early warning symptoms and the fact that it usually presents late when symptoms develop due to invasion of other pelvic organs or from metastasis (Ellenson and Pirog, 2010; Odukogbe *et al*., 2004; Bren, 1999). There is likelihood of increase in the incidence of ovarian tumours in the developing countries because of decreasing fertility rate and increasing use of ovulation induction drugs, among other factors, which thus calls for greater effort in the study of this tumour in these regions (Odukogbe *et al*., 2004).

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A comprehensive literature on ovarian tumours in Africa is of utmost importance to enable us reappraise our continued dependence on Western data, considering the obvious socio-cultural differences between us and them, as these parameters also influence the incidence and prognosis of neoplasms (Ellenson and Pirog, 2010; Katchy and Briggs, 1992). Nwosu and Anya (2004) reported the ovary as the third most common site for cancers of the female genital tract in Port Harcourt. Gharoro and Eirewele (2006) reported ovarian cancer as the second most common gynecological malignancy in Benin and noted that it has a high mortality rate. Kyari *et al*. (2004) not only found that ovarian cancers were the second most common female genital tract malignancy in Maiduguri, North-Eastern Nigeria but also noted that they constituted the commonest cancers in the adolescent females. Thus there is a great need to study ovarian cancer, even in greater details in our local environments in Nigeria and to compare our findings with existing data locally and internationally since that will enable us advance towards the level of the developed nations in prevention, treatment and prognostication of these tumours. We therefore aim to ascertain the relative frequency,

histological types, age distribution of ovarian cancer in this centre and compare the results with similar studies in other regions of this country and abroad.

MATERIALS AND METHODS

This is a retrospective study based on surgical biopsies from histopathologically proven cases of ovarian neoplasms seen at the University of Port Harcourt Teaching Hospital over 10 years. The original request forms for all the histopathologically diagnosed ovarian neoplasms were retrieved and relevant clinical information and bio-data were obtained. Clinical information and bio-data unavailable on the request forms were obtained from the case files. The original slides of the neoplastic lesions were also retrieved. Fresh sections of the missing slides were also taken from the archived blocks and stained with Haematoxylin and Eosin. The slides were reviewed using the simplified W.H.O classification of ovarian tumours (Ellenson and Pirog, 2010). All the malignant lesions were included in the study. Ovarian cancers with incomplete bio-data were excluded from the study. The results obtained were analyzed using simple descriptive statistical methods. Ethical approval for this work was given by the hospital's ethics committee.

RESULTS

Out of the 166 ovarian tumours seen, 38 (22.9%) were malignant, giving a ratio of approximately 1: 3.4 of malignant to benign neoplasms. Ovarian cancer was highest between 51-60 years (Table1). The mean age at diagnosis of ovarian cancers in this centre was found to be 45.8 years. A total of 27 surface epithelial tumours were seen (Table 2). The modal age range was also 51- 60 years. The mean age at diagnosis of epithelial ovarian cancers was found to be 48.6 years. The 14 serous cystadenocarcinomas seen accounted for 51.9% of the total malignant surface epithelial tumours. They formed 36.8% of all the malignant ovarian tumours reviewed (Table 5). The modal age range for serous cystadenocarcinomas in this centre was found to be 51- 60 years. The 12 mucinous cystadenocarcinomas seen constituted 44.4% of the total malignant epithelial neoplasms (Table 3). They formed 31.6% of all the malignant ovarian tumours studied (Table 5). There modal age was found to be 51- 60 years. An undifferentiated carcinoma was seen in a 55 years old female constituting 3.7% of the total malignant epithelial tumours reviewed (Table 3). A total of 5 (13.2%) malignant germ cell tumours were seen. Four endodermal sinus tumours were seen and they formed 80% of the total malignant germ cell tumours (Table 4) and 10.6% of the overall ovarian malignancy (Table 5).

Table 1. Age distribution of malignant ovarian tumours

Age range	Frequency	Percentage
1-10	1	2.6%
11-20	1	2.6%
21-30	4	10.5%
31-40	9	23.7%
41-50	7	18.5%
51-60	11	29.0%
61-70	4	10.5%
71-80	1	2.6%
81-90	-	-
	38	100%

Table 2. Histological classification of major types of malignant ovarian tumours

Classes	Frequency	Percentage
Surface Epithelial cancers	27	71.1%
Germ cell cancers	5	13.6%
Sex cord cancers	5	13.6%
Others (Non-Hodgkins lymphoma)	1	2.6%
	38	100

Table 3. Histological types of surface epithelial malignancy

Surface Epithelial	Frequency	Percentage
Serous cyst adenocarinoma	14	51.9%
Mucinous cyst adenocarcinoma	12	44.4%
Undifferentiated	1	3.7%
	27	100%

Table 4. Histological subtypes of germ cell malignancy

Germ cell	Frequency	Percentage
Endodermal sinus	4	80%
Immature teratoma	1	20%
	5	100%

Table 5. Histological subtypes of malignant ovarian tumours

Tumour types	Frequency	Percentage frequency
Serous cystadenocarcinoma	14	36.8%
Mucinous cystadenocarcinoma	12	31.6%
Undifferentiated carcinoma	1	2.6%
Immature teratoma	1	2.6%
Endodermal sinus tumour	4	10.6%
Granulosa cell tumours	5	13.2%
Non-Hodgkin's Iymphoma	1	2.6%
	38	100%

Three were seen below the age of 30 years (9, 16 and 21 years) while one occurred in a 55 year old woman. No case of Dysgerminoma or choriocarcinoma was seen. A total of 5 (13.2%) malignant sex cord-stromal were seen (Table 2). The modal age range for the malignant granulosa cell tumours was 61-70 years. One (2.6%) case of non-Hodgkin's lymphoma was seen in a 56 year old woman (Table 2). No case of secondary ovarian tumour was seen.

DISCUSSION

Ovarian cancer is generally of lower relative frequency than benign ovarian tumours as seen in the present study with a ratio of 1: 3.4 malignant to benign. Despite the lower relative frequency of these malignant neoplasms in our area they are of great concern because of their notoriously high mortality rate among the gynecological malignancies (Odukogbe *et al*., 2004; Gharoro and Eirewele, 2006). There was a significantly lower relative frequency of malignant ovarian tumours in this centre, 22.9%, compared to Ibadan, 32% (Adesina, 1995), and Benin, 33.7% (Akhiwu, 1999). This may due to the larger sample sizes in both studies, coupled to the fact that Ibadan serves as one of the referral centres for cancer management in Nigeria and within the West African sub-region. The relative frequency of malignant ovarian tumours in this study was also lower compared to that of South Africa, 33% (Lancaster and Muthupei, 1995), Italy, 33.3% (Di Bonito *et al*., 1988) and

Pakistan, 40.8% (Ahmad *et al*., 2000) . In Italy, Europe (Di Bonito *et al*., 1988) and Pakistan, Asia (Ahmad *et al*., 2000) there existed a higher frequency of surface epithelial cancers as a result of their race (Elleson and Pirog, 2010; Cecil, 2005), low parity (Boyle *et al*., 2000; Risch *et al*., 1994) and high saturated fat intake (Risch *et al*., 1996) which are risk factors for epithelial ovarian cancers not associated with our race or environment.

Malignant ovarian cancers were seen most in the 51- 60 years age range in the index study. This peak age range fell within the worldwide modal age range of 40- 65 years for malignant ovarian neoplasms (Elleson and Pirog, 2010). This also agreed with finding that surface epithelial tumours with their high relative frequency in the Western countries occur mainly in the older women (Baker and Piver, 1994). The mean age at diagnosis of ovarian cancer was found to be 45.8 years and is very similar to that in Ghana, 46.4 years (Nkyekyar, 2000). It fell within the worldwide peak incidence age range of ovarian cancers (Elleson and Pirog, 2010). The mean age at diagnosis of ovarian cancer in this study was distinctly lower than the mean age at diagnosis of ovarian cancer in the United States of America which was found to be 61 years (Ries *et al*., 2002). Since the incidence of ovarian malignancy rises with advancing age, this wide difference can be explained based on the wide gap between the average life expectancy at birth for a Nigerian female and that of an American female (Cecil, 2005; National population commission, 2006). This suggests that few Nigerian females live long enough to be as susceptible to ovarian cancers as seen in the American females. This further supports the lower relative frequency of ovarian cancers and the lower age distribution of ovarian tumours in our environment compared to the United States.

Malignant surface epithelial tumours were the most common ovarian cancers in this series, forming 71% of all the malignant ovarian tumours seen, which was contrary to the earlier finding in Port Harcourt by Briggs and Katchy (1990) who reported germ cell malignancies as the most common. In the studies from Ibadan (Odukogbe *et al*., 2004), Benin (Gharoro and Eirwele, 2006) and Ile-Ife (Okonofua *et al*., 1993), surface epithelial cancers were also found to be the most common. This suggests that surface epithelial cancers of the ovary are more common in our environment than malignant ovarian germ cell tumours. Our finding of serous cystadenocarcinoma (36.8%) as the most common malignant ovarian tumour, followed by mucinous cystadenocarcinoma (31.6%) contrasted the observation at Ile-Ife (Okonofua *et al*., 1993), where the most common was mucinous cystadenocarcinoma (52%), followed by serous cystadencarcinoma (26%). This was in line with the noted variations in the incidence pattern of ovarian tumours across different regions (Cecil, 2005; Odukogbe *et al*., 2004; Doh and Shasha, 1994). The peak age range (51 – 60 years) for epithelial cancers seen was within the worldwide peak age range for ovarian cancers (Ellenson and Pirog, 2010). It also fell within the age range at which most ovarian cancers were seen at Ile-Ife (Okonofua *et al*., 1993) and Uyo (Bassey *et al*., 2007). The mean age at diagnosis of epithelial ovarian cancers which was found to be 48.6 years was higher than the mean age at diagnosis of ovarian cancers in general, found to be 45.8 years in this centre. This was because the malignant germ cell tumours (endodermal sinus tumours and immature teratoma) were seen at lower ages, which invariably reduced the overall mean age at diagnosis of ovarian cancers in this centre. That also was in line with the fact that age distribution of ovarian tumours is according to histological types (Di Bonito *et al*., 1988). No dysgerminoma was seen although it normally forms about 2% of all the ovarian cancers. Onyiaorah *et al* (2011) reported only a case from Lagos in their 10 years study. This further underscored the rarity of this tumour our environment.

All the malignant germ cell tumours seen in children and adolescents were of endodermal sinus tumour-type which was in keeping with its status as the most common malignant germ cell tumour (Ellenson and Pirog, 2010; Di Bonito *et al*., 1988). Jibrin (2001) also noted that endodermal sinus tumour was the most common malignant germ cell tumour in Calabar. Although the contribution of sex cord-stromal tumours to the total ovarian malignancies is usually small (about 5%), the 5 granulosa cell tumours seen were included in the malignant group based on their behaviour as potentially malignant tumours, since their actual pattern cannot be determined exclusively by their histological features (Ellenson and Pirog, 2010). This explained the apparently high (13.2%) contribution of granulosa cell tumours to the overall ovarian cancers seen. In Calabar (Jibrin, 2001), granulosa cell tumours seen accounted for 54% of the total malignant ovarian tumours.

Our observation of only one non-Hodgkin's lymphoma of the ovary was line with the fact that primary ovarian lymphomas are very rare and that almost all ovarian lymphomas are of the non-Hodgkin's variety (Monterroso *et al*., 1984).

Conclusion

Malignant ovarian tumours are far less common than benign ovarian tumours in our locale and surface epithelial ovarian malignancies are more common than germ cell malignancies here. Ovarian cancers occur mostly in women above 50 years of age in our environment.

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