

Clinico-Pathological Analysis of Ovarian Cancer in a Tertiary Hospital in North-East Nigeria: A 10-Year Review

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ABSTRACT

Background: Cancer of the ovary being the second most common gynecological malignancy in Nigeria and most countries in the world, is a major cause of morbidity and mortality. The aim of this study is to determine the frequency of ovarian cancers and analyse their clinico-pathological characteristics at a tertiary health institution in Gombe. **Methods:** This study was a retrospective review of all cases of histologically confirmed ovarian cancers at the Department of Histopathology, Federal Teaching Hospital Gombe over a period of 10 years. Relevant information was extracted from the histology request forms and patients' medical case records. Data were analysed statistically using SPSS Version 20.0 and results were presented in tables and charts. **Results:** One hundred and seven (107) cases of ovarian cancer were diagnosed, which constituted 14.7% of gynaecological malignancies (730) and 2.7% of total cancers (3993). Patients were aged between 11 and 80 years. The modal age group was 31-40 years. The three most common clinical presentations included abdominal distension, abdominal pain and weight loss; while the commonest stage at presentation was stage III. Surface epithelial-stromal cancers were the most common histological class, with high-grade serous carcinoma being the most common histological variant. The most common treatment modality was surgery and chemotherapy. **Conclusion:** This study shows a predominance of ovarian cancer cases in younger, reproductive women, and at advanced stage of presentation. Similarly, the preponderance of high-grade serous carcinoma in this female population is a major health concern and demands proactive measures to address it.

Keywords: Ovary, Cancer, Clinical features, Histological types

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Introduction

There were 240,476 cases of ovarian cancer of which 155,835 (64.8%) occurred in developing countries

compared to 84,641 in developed countries in 2009.¹ A study in the US showed, that a woman's lifetime risk of getting ovarian cancer is approximately 1 in 72.¹ Though, it may not be a common cancer, ranking ninth most frequent cancer, but it is the fifth commonest cause of cancer deaths in women.² Each year more than 6,500 women are diagnosed with ovarian cancer in the UK and about 4,400 women die of the disease.³ They are the commonest gynaecological cancer in the United Kingdom. Fallopian tube malignancies are merged with ovarian cancer because of similar histogenesis and clinical features.

Ovarian cancer is the third most common malignancy in women and the second commonest gynecological malignancy in Nigeria after cervical cancer.⁴ The vague nature of disease manifestation makes

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screening and early diagnosis quite challenging for clinicians and advanced-stage disease and late presentation are not uncommon findings.⁵ Ovarian cancer constituted 22.9% (54/236) of all gynecological malignancies in a 10-year retrospective study in a referral hospital in Southeast Nigeria.⁶ In Abuja and Ibadan, ovarian cancer was the third commonest malignancy in women accounting for 4.2% and 3% of all cancers respectively,^{7,8} while in Kano, Nigeria ovarian cancer accounted for 30.5% of gynaecological cancers.⁵ Ovarian tumours were also analysed in the Northeastern States of Bauchi and Borno. The study conducted at the Federal Medical Centre Azare, Bauchi State revealed that ovarian cancer accounted for 30% of all gynaecological malignancies; while at the University of Maiduguri Teaching Hospital, Borno State, granulosa cell tumour was the commonest malignant ovarian tumour.^{9,10}

The patients with ovarian cancer usually present late due to the fact that it is an intra-abdominal tumour with much space to grow before presenting with clinical features, and these are often vague.¹¹ Abdominal swelling was the most common presenting symptom in a study in Ibadan.^{8,12} Eighty-one per cent of the patients presented in Stages III and IV. Epithelial ovarian cancer constituted about 76.2% of the cases. Only 23.8% had adjuvant therapy, consisting of combination chemotherapy using cisplatin-based regimes.^{8,12}

Although it is relatively better than in developing countries, the prognosis of patients with ovarian cancer in developed countries is also poor, with a 5-year survival of about 35%.¹¹ Ovarian cancer has the highest case fatality rate among gynaecological cancers worldwide because of the lack of effective screening methods and non-specific early warning symptoms with late presentation.¹² There are usually delays in diagnosis. The time interval between onset of symptoms and seeking healthcare in patients with ovarian cancer attending a tertiary health facility in Lagos, Nigeria, was 36.1 ± 4.8 weeks; between seeking healthcare and referral to a tertiary hospital, was 22.7 ± 3.4 weeks; and the overall time interval from onset of symptoms to presentation for definitive care, was 52.0 ± 5.8 weeks.¹²

In a study in Bangalore in 2016, epithelial ovarian cancers accounted for 52.9% of the ovarian cancers seen; mucinous adenocarcinoma at 28.2%, clear cell carcinoma at 7.05%, and endometrioid cancer at 11.7%.¹³ Serous adenocarcinoma was the commonest

histopathological variety 42.4%.¹⁴ A study in Ibadan, Nigeria revealed that epithelial ovarian cancer constituted 76.2% of the cases of ovarian cancer.⁸

The mean patient age for all histologic sub-types in a study from Abuja, Nigeria, was 45.4 ± 17.1 years. The mean patient ages for the different sub-types were epithelial cancer 50.3 ± 13.2 years, sex cord 53.1 ± 13.3 years, and germ cell 18.5 ± 8.3 years.⁶

Although quite a number of characteristics of ovarian cancers remain the same across different regions of the world, there are obvious variations in some features. Variations in the histological types and the case fatality rates may not be unrelated to the available diagnostic molecular markers like immunohistochemistry and management facilities, especially between countries with different resource settings. Also, ethno-regional variations may be associated with the subtle differences seen. It therefore becomes necessary to document this in our area of study and practice which may form the basis for further enquiry.

Methods

This is a retrospective, descriptive study conducted at the Federal Teaching Hospital Gombe (FTHG) in 2024. A 10-year record of histologically-diagnosed ovarian cancer cases were retrieved from the records of the hospital Cancer Registry, the archives of Histopathology and Medical Records Departments of FTHG. In addition, the records of yearly-diagnosed cases of gynaecological malignancies as well as total cancers of all histological types were collected from the hospital Cancer Registry, Gombe (FTHG) over a ten-year period between January 1, 2013, and December 31, 2022. The study centre is a tertiary health institution in Northeastern Nigeria that provides clinical services to the people of Gombe and neighbouring states.

The clinico-pathological characteristics such as age, clinical presentation, stages, histological types and treatment modalities were extracted and entered into a computer for statistical analysis using SPSS Version 20.0. The results were displayed in frequency tables.

Results

During the 10 years of, a total of 3,993 cancer cases were histologically diagnosed at the Federal Teaching Hospital, Gombe. The total number of female genital tract malignancies was 730. There were 107 cases of ovarian cancer, which accounted for 2.7% and 14.7% of total cancers and female genital cancers



respectively. Patients were aged between 11 and 80 years. The modal age group was 31–40 years. The extreme age groups of 11–20 and 71–80 years were the least affected and represented 8 (7.5%) and 7 (6.5%) of the cases respectively as shown in Table 1.

The three most common clinical presentations were abdominal distension (in 86 patients), abdominal pain (in 53 patients) and weight loss (in 46 patients). Other less common presentations were infertility (in 9 patients) and abnormal vaginal bleeding (in 19 patients). Majority of patients with ovarian cancer presented at stage III, which accounted for 48 cases (44.9%), while the least number of patients presented at stage I with 13 cases (12.1%). Stages II and IV represented 29 cases (27.1%) and 17 cases (15.9%), respectively. Patients with operable tumours at stages III and below had surgery and cisplatin-based chemotherapy.

All of the three major histological subtypes of ovarian cancer, including metastatic neoplasms were diagnosed during the period of study. As shown in Table 2, there were 48 cases (44.9%) of surface epithelial cancers and 26 cases (24.3%) of malignant germ cell tumours. Malignant sex cord-stromal

tumours accounted for 29 cases (27.1%) while metastatic carcinomas contributed 4 cases (3.7%).

Among the surface epithelial cancers, high-grade serous carcinoma (type II) was the most common representing 37 cases (77.1%) of surface epithelial tumours, while malignant Brenner tumour and clear cell carcinoma were the least common, each accounting for 2 (4.2%) of cases. The mean age of occurrence of surface epithelial cancers was 38.5 ± 3.5 years.

The malignant germ cell tumours included 8 cases (7.5%) of dysgerminoma, 7 cases (6.5%) of yolk sac tumour, 6 cases (5.6%) of immature teratoma, 3 cases (2.8%) of malignant mixed germ cell tumours and 1 case (0.9%) each of choriocarcinoma and embryonal carcinoma. Their mean age was 25.5 ± 3.5 years. Except for the single case of fibrosarcoma, all of the sex cord-stromal tumours were granulosa cell tumours which together accounted for 26 (27.1%) of the ovarian cancer. All of the 4 metastatic carcinomas were adenocarcinomas representing 3.7% of the diagnosed ovarian cancer.

Table 1: Age distribution of cancer of the ovary

Age group (years)	Number of cases	Percentage (%)
11-20	8	7.5
21-30	16	15.0
31-40	31	29.0
41-50	17	15.9
51-60	20	18.7
61-70	8	7.5
71- 80	7	6.5
Total	107	100



Table 2: Frequency distribution of histological types of ovarian cancer

Ovarian cancer	Number of cases	Percentage (%)
Surface epithelial tumours	48	44.9
Serous carcinoma	37	34.5
Mucinous carcinoma	4	3.7
Endometrioid carcinoma	3	2.8
Clear cell carcinoma	2	1.9
Malignant Brenner tumour	2	1.9
Germ cell tumours	26	24.3
Dysgerminoma	8	7.5
Yolk sac tumour	7	6.5
Immature teratoma	6	5.6
Malignant mixed germ cell tumour	3	2.8
Choriocarcinoma	1	0.9
Embryonal carcinoma	1	0.9
Sex cord-stromal tumours	29	27.1
Granulosa cell tumour	28	26.2
Fibrosarcoma	1	0.9
Metastatic carcinoma	4	3.7
Total	107	100

Table 3: Clinical presentation of patients diagnosed with ovarian cancer

(This table allows multiple responses)

Clinical features	Number of cases	Percentage (%)
Abdominal distension	86	80.4
Abdominal pain	53	49.5
Weight loss	46	43.0
Abnormal vaginal bleeding	19	17.8
Constipation	11	10.3
Vomiting	10	9.3
Infertility	9	8.4
Fever	9	8.4



Discussion

Ovarian cancer remains a public health importance due to its heterogeneity, complex tumour biology and poor prognosis. These tumours are the leading cause of deaths from gynaecological malignancies after cervical cancer.¹⁻³ It accounted for less than a quarter (14.7%) of all gynaecological malignancies in this study. This is comparable to the 16.3% found in Maiduguri North East Nigeria, but higher than the 9.8% in Ibadan South West Nigeria, 11.9% in Benin South South Nigeria and 8.4% in Zaria North West Nigeria.^{4,7,8,14} Mohammed et al and Buhari et al recorded 43 cases and 80 cases over the period of 10 and 20 years respectively.^{5,15} The higher incidence of this malignancies in our centre may be due to in part, to the increased awareness, availability and affordability of healthcare services.

Majority of ovarian cancers are seen in older women with a sharp rise after menopause. More than 80% of newly diagnosed ovarian cancers were seen in the 6th decade,¹⁶ with peak incidence of occurrence between the ages of 50-54 years. This study, however, shows a younger age occurrence of the disease as women aged <60 years accounted for 86% of the cases, and >50% of cases occurred in women aged ≤ 50 years. The reason for occurrence of ovarian cancer in a younger age group in this study is due to the relatively large number of reported germ cell tumours that were seen in younger female population. This conforms with some studies in Nigeria with the highest incidence occurring between the ages of 30-39 years^{7,17}, while in other climes, women <19 years predominate.¹¹ Other similar studies reveal slight differences in age as seen in Tehran: 48-52 years with a mean of 50.15 years.¹⁸ The peak age in Ilorin was in the fifth decade of life,¹⁵ Benin 50-60 years¹⁴, and Kano 57-62 years.¹⁹ The above few studies show that ovarian cancer has a similar peak in incidence in Nigeria. This is contrary to the data from US Surveillance, epidemiology and end result (SEER) database which apparently proves the close relationship between increased age and risk of development of ovarian cancer. This database reveals low incidence in women under the age of 40 years, but rises steeply after the fifth decade reaching a peak in the 80- to 84-year-old age group (61.8 per 100,000 women). The median age at diagnosis in SEER is 63 years in contrast to 36 years in this report.²⁰ The difference in age at occurrence of ovarian cancer in the two regions could be due to the large numbers of

reported malignant ovarian germ cell tumours in the developing countries which occur in younger age groups relative to surface epithelial cancers that occur in older women, and more in developed countries.²¹⁻²⁵

The commonest histological subtype in our study is surface epithelial ovarian cancers which accounted for 44.9%, with high-grade (type II) serous carcinoma constituting 77% of the cases. This is similar to what was obtainable from Ibadan (76.2%),⁸ Enugu (68%),⁶ Benin (73.8%),¹⁴ and Port Harcourt (91.2%)²⁶ in the southern parts of Nigeria. The second most common histologic type (27.1%) is the Sex cord-stromal tumour with granulosa cell tumour accounting for 97% of the cases. Sex cord-stromal tumours constitute the second most common subtype in other centres.^{4,27,28}

Although serous carcinoma is the most common malignant ovarian tumour as observed in this study as well as several other studies cited above, the predominance of malignant granulosa cell was also reported in Nigeria and Ghana.^{4,29,30}

Malignant germ cell tumours accounted for 24.3% while metastatic carcinomas made up the least with 3.7%. This finding is similar to that of Zaria, but relatively lower than that obtainable in Lagos.^{4,29}

The difference between the two results was due to the relatively large number of germ cell tumours recorded in Lagos which represented the second most common category of ovarian cancer in contrast to that of Zaria, in which the numbers of germ cell tumours were less and hence accounted for the third category of ovarian cancer, after surface-epithelial and germ cell tumours.

The commonest symptoms found in patients in our study were abdominal distension (80.4%), abdominal pain (49.5%) and weight loss (43%). These common features are consistent with the ones reported in the US, UK, Asian and African countries, as well as several health centres in Nigeria.^{2-4,8,13-15,18,30} These are symptoms of advanced disease and may be the result of late presentation. Other symptoms are abnormal vaginal bleeding (17.8%) constipation (10.3%) and infertility (8.4%).

The predominance of symptoms of advanced disease may not be unconnected with the high number of patients presented in advanced stages. This observation is similar to findings in several studies across the globe.^{2,3,5-8,16,18,30}



However, the occurrence of ovarian cancer in younger, reproductive women at more advanced stages in developing countries relative to those in developed nations is worrisome, and demands proactive measures to arrest the trend.

This could be partly achieved in the younger, reproductive female population in developing nations by increasing awareness of health-seeking behaviour, abdomino-pelvic ultrasonography and the use of available (though not very specific) tumour markers; while awaiting the development of screening methods with more sensitivity and specificity.

Conclusion

Although most of the findings in this study are in concordance with common reports on the subject, there is a predominance of ovarian cancer cases in younger, reproductive women, and at advanced stage of presentation. Equally important is the preponderance of high-grade serous carcinoma in this female population, which is a major health concern and demands proactive measures to address it.

Contributions of authors

A K conceived the idea, designed the analysis, and drafted the manuscript. AK, A M D and H U F wrote the manuscript. A I L, A Z B and Y M A assisted in the histopathology report of the sample and helped supervise the manuscript. All authors provided critical feedback and helped shape the research, analysis and manuscript. All authors discussed the results and contributed to the final manuscript.

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Conflict of Interest

The authors declare no conflict of interest

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