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ENDOMETRIAL CANCER IN ZARIA, NIGERIA: A TWENTY YEAR HISTOPATHOLOGICAL ANALYSIS (1991-2010)

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ABSTRACT

Background: Cancer has become a major global public health problem. There are approximately 150,000 cases of endometrial cancer diagnosed each year, making endometrial carcinoma the fifth most common cancer in women. The predisposing factor was linked to reproductive history with duration and type of oestrogen exposure. Endometrial cancer is often diagnosed early. There has not been a comprehensive clinico-pathological study/ documentation of endometrial cancer in the study center.

Materials and Method: This is a retrospective histopathological review of endometrial cancer seen over 20-year period obtained from endometrial curettage and hysterectomy specimens submitted to the Department of pathology. Histology slides were retrieved, reviewed and classified using the WHO classification of tumours of the endometrium. Analysis of the collected data was carried out using SPSS Version 15.0, and data were presented in frequency distribution tables and figures.

Result: A total of 1,505 cases were diagnosed as malignant lesions of the female genital tract with the endometrial cancer represent 4.4% of the malignancies. Majority of endometrial cancer were epithelial 69.7 %, 21.7 % were grade I tumours, grade II tumours 50.0 % and grade III 28.3 % of the cases. Stromal sarcoma 19.7% of these 61.5 % were high grade stromal sarcoma, 38.5 %, low grade stromal sarcoma and Malignant Mixed Mesodermal Tumours accounted for 10.6 % cases. The age range was from 24 to 80 years. With peak age of incidence in 5th and 6th decades. Most of the endometrial cancers were diagnosed by endometrial biopsies 63.6% while the rest by total abdominal hysterectomy 36.4 %.

Conclusion: Endometrial cancer represented 4.4 % of the female genital tract malignancies within the study period with possible early exposure to the aetiological factors and epithelial tumour are commoner than Malignant Mixed Mesodermal Tumours.

Keywords: Endometrial, Cancer, Epithelial, Stromal, Northwestern, Nigeria

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Introduction

Cancer has become a major global public health problem. In 2008, there were 12.7 million new cases of cancer and 7.6 million cancer related deaths worldwide.¹ Africa, with a population of approximately 1 billion people (15% of the world's population) contributed 681,000 new cancer cases (5% of all cases worldwide) and 512,000 deaths (7% of all cancer deaths) to the worldwide estimates in 2008.² The incidence of cancer continues to rise all over the world and current projections show that there will be 1.27 million new cases and almost 1 million deaths by 2030.² Low- and middle-income countries (LMIC) will contribute more than 80% of the new cases worldwide.^{2,3} In Nigeria E.E. Jedy-Agba et al. in a study found that, total number of cancers registered in the 11 hospital-based cancer registries in 2009 and 2010 was 6484. Overall, more cases were recorded in women (3903 – 60.2%).³ The number of new cancer cases recorded annually in these hospital-based cancer registries on average was 106 cases in males and 164 cases in females.³ In females, the incidence of cancer is high in Northern America (ASR 274.4 per 100,000), Australia/New Zealand (ASR 276.4) and Northern and Western Europe (ASRs 249.4 and 250.9, respectively) as a consequence of the high rates of breast cancer in these regions (ASRs greater than 75 per 100,000). The lowest cancer incidence rates are Middle and Northern Africa for women (ASRs less than 100 per 100,000).¹ In women, breast cancer was by far the most common cancer constituting 40.3% of all cancers followed by cervical cancer (17.3%), cancer of the ovary (3.7%), lymphomas (3.1%) and skin cancer (2.1%). Overall, all other anatomical cancer sites

excluding the 5 commonest cancers (prostate, colorectal cancer, lymphomas, liver cancer, and skin cancer) accounted for 33% in females.³ Taken together, cancers of the breast and cervix constitute about 60% of all cancers presenting among Nigerian women treated in major tertiary health centers. The cancer registry data also show that these 2 cancers were the commonest cancers affecting Nigerian women.^{3,4}

Worldwide, it is estimated that there are 287 new case of tumours of Corpus uteri (4.8 % of all the cancer), 8.2 % estimated age-standardized (World) mortality rates (ASR per 100,000) and 1.0 % cumulative risks.^{1,5}

The predisposing factor to endometrial cancer is linked to reproductive history: highest in nulliparous women and those with late menopause. The cause is linked to duration and type of oestrogen exposure. Endometrial cancer is often diagnosed early because abnormal uterine bleeding is a common symptom. Clinicopathological studies and molecular analyses support the classification of endometrial carcinoma into two broad categories, referred to as type I and type II.^{6,7}

Endometrial carcinoma is the most common invasive neoplasm of the female genital tract and the fourth most frequently diagnosed cancer in women in the United State of America. In 2000, it is estimated there were 36,000 new cases and 6,500 deaths resulting from this neoplasm.⁶ These figures represent an estimated 6% of the new cancer cases and 2% of cancer deaths in women in the United State of America.^{8,9} Worldwide, approximately 150,000 cases are diagnosed each year, making endometrial carcinoma the fifth most common cancer in women.⁸

There is a wide difference in the incidence of endometrial cancer across countries. High rates are seen in Europe, the UK, the US (White), Canada, New Zealand and Australia.

Consistently lower rates are seen in Africa, Central and South America and in Asia.⁹

Materials and Method

This retrospective analysis was based on all histologically confirmed endometrial cancer cases, obtained from endometrial curettage and hysterectomy specimens submitted to the Pathology Department of the Ahmadu Bello University Teaching Hospital (ABUTH) Shika-Zaria, for Histopathological examination in the period, 1st January 1991 to 31st December 2010. All cases registered as cancer of endometrium were extracted from the departmental records. The patients' request cards filled by the requesting clinicians and theatre or case folder where necessary, together with all the relevant histology slides stained with routine Haematoxylin and Eosin (H & E) were retrieved. Where necessary, special stains such as mucicarmine, alcian blue and periodic acid-Schiff (PAS) for mucin to reach definitive diagnosis of adenocarcinoma and Grimelius for neurosecretory granules for neuro-endocrine tumours, was done.

In the case of broken or missing slides, fresh sections were made from stored tissue blocks. All the slides were reviewed with the Supervising Consultants and the cases were classified using the WHO Classification of Tumours of the endometrium 2005.¹⁰ Patients' bio-data including age and type of specimen was extracted from the accompanying case cards, cases in which both slides and tissue blocks are missing were excluded from the study.

Analysis of the collected data was carried out using Statistical Program for Social Sciences (SPSS) Version 15.0, and data was presented in frequency distribution tables and figures (photomicrographs with legends).

Results

In the twenty-year period under review (January 1991 to December 2010) a total of one thousand five hundred and five cases were diagnosed as malignant lesions of the female genital tract in the Department of Pathology Ahmadu Bello University Teaching Hospital (ABUTH), Zaria.

Eighty-four cases with previous histological diagnoses of endometrial cancer were retrieved from these records. In fifteen cases neither the microscopic slides nor the paraffin embedded tissue blocks were available and they were subsequently excluded from further analysis. Three cases were found to be lesions other than endometrial cancer and were similarly excluded.

Sixty-six cases of endometrial cancers were analyzed. They represented 4.4% of all the female genital tract malignancies diagnosed in the Department of Pathology, Ahmadu Bello University Teaching Hospital (ABUTH), Zaria, during the period under review (Figure 1).

Figure 1: Female Genital Tract Malignancies

The histopathological pattern of distribution shows that the vast majority of endometrial cancer were epithelial 46(69.7 %); the remainder were stromal sarcomas (19.7%) and Malignant Mixed Mesodermal Tumours (10.6 %) (Figure 2)

Figure 2: Distribution of Endometrial Tumours

The age range was from 24 to 80 years. The peak age of incidence for endometrial cancer was in 5th and 6th decades while at the extremes of decades fall gradually, in five (7.5 %) cases ages, were not stated hence were grouped as unspecified, (Table 1 and 2) shows the histological types of endometrial tumours according to age group and histological grading.

Table 1: Age Distribution and Histological Types of Endometrial Tumours

HISTOLOGICAL TYPE	EPITHELIAL Grade			STROMAL SARCOMA		MMMT	TOTAL (%)
	I	II	III	ESS	UES		
AGE (YRS)							
20-29	1	0	1	2	0	0	4(6.1)
30-39	4	1	0	1	1	0	7(10.6)
40-49	0	5	2	1	1	1	10(15.2)
50-59	1	10	1	1	3	2	18(27.3)
60-69	1	4	4	0	2	2	13(19.7)
70-79	2	0	1	0	1	1	5(7.6)
80-89	1	2	1	0	0	0	4(6.1)
Unspecified	0	1	3	0	0	1	5(7.6)
TOTAL (%)	10(21.7)	23(50.0)	13(28.3)	5(38.5)	8(61.5)	7(10.6)	66(100.0)

ESS; endometrial stromal sarcoma, UES; Undifferentiated endometrial sarcoma, MMT; Malignant Mixed Mesodermal Tumours

Most of the endometrial cancer were diagnosed by endometrial biopsies 42 (63.6%) while the rest by Total Abdominal Hysterectomy 24(36.4 %) Figure 3.

Figure 3. Nature of specimen according to age group

Epithelial Tumours

There were 46 cases of these tumours representing 69.7 % of the total endometrial cancers analyzed. Of these 21.7 % were grade I tumours, grade II tumours accounted for 50.0 % while grade III forms 28.3 % of cases (Table 1).

Stromal Tumours and Malignant Mixed Mesodermal Tumours

There were 13 cases of stromal sarcoma. Of these 61.5 % were high grade [Undifferentiated endometrial sarcoma (UES)] and low grade [endometrial stromal sarcoma (ESS)] accounted for 38.5 %, while Malignant Mixed Mesodermal Tumours constitutes 10.6 % of the endometrial tumours. Table 1 show the histological grading and Age distribution of the stromal sarcoma and Malignant Mixed Mesodermal Tumours.

Discussion

Sixty-six cases (66) of endometrial cancers which occurred over a twenty-year period were analyzed. The tumours represented 4.4 % of the female genital tract malignancies diagnosed in the study period. Comparable to Ekanem et al's 333 tumours (10-years), Ogunbiyi et al's 335 tumours (38-years), Pindiga et al's 328 tumours (10-years), Mohammed et al's 513 tumours (11-years) and Mandong et al's 386 tumours (10-years) in South-East, South West, North East, North West and North Central Nigeria respectively, thus supporting the relative rarity of these tumours in our environment.¹¹⁻¹⁵ and (Gabon).¹⁶

However, lower incidence was recorded in an endometrial biopsies analysis by Dauda et al¹⁷, compared to that obtained in this study. The lower value could be due to the relative duration of the study period as well as the sample size. The youngest patient in our series was 24 years old and the oldest, 80 years old. This finding is in keeping with studies by Mohammed et al.¹⁴ in Zaria and Ogunbiyi et al.¹² in Ibadan where the age range was 20years to 80 years. Studies from Calabar South Eastern Nigeria by Ekanem et al and Jos North Central Nigeria by Mandong et al reported an age range of 30year to 72 years and 41 years to 60 years respectively.^{11,15}

In this study, a total of 66 cases of endometrial cancer were seen. This represented 4.4 % of the female genital tract malignancies. Most of the tumours (69.7%) were epithelial tumour types. This corroborates studies by some authors in Nigeria,^{11,12,13,15-20} WHO¹⁰ and studies from United State of America.^{8,21} However, Adewole et al in Ibadan got a lower figure in his study.²² The lower value could be due to the relative duration of the study period which was only 6 years. Endometrioid adenocarcinoma was the commonest epithelial tumour accounting for 47.0%. Reports from WHO, Ibadan (Ogunbiyi et al) and Jos (Dauda et al.) support this finding.^{10,12,17}

The second commonest epithelial tumour was Undifferentiated carcinoma with a frequency of 9.1%. This is in agreement with other studies.^{10,12,17} Other epithelial tumours seen in this studies in order of frequency are;

Adenosquamous and Villoglandular 4.6% each. Serous, Mucinous and clear cell respectively representing 1.5% each. With respect to grade, ten (21.7%) had grade I tumour, twenty-three (50.0%) had grade II and thirteen (28.3%) had grade III tumour. This show that grade I and grade II tumours are common in this study. This finding is in keeping with other studies.^{23,24}

Endometrium Stromal sarcoma account for 13 (19.7 %) in this study. This is in consonance with the studies of Ekanem IA et al, Ogunbiyi JO et al, Pindiga UH et al, Agboola A and Dauda AM et al. which had a low frequency of 1%, 0.4%, 13.6%, 0.5% and 5.4% incidence compared to the epithelial tumours.^{11,12,13,16,17} It could be deduced that Endometrial Stromal Sarcoma is not common in this environment. The age range of patients with Endometrial Stromal Sarcoma in this study was 20-79 years (from third decade). This corroborates studies from Ibadan and Jos.^{12,17,22} However it was reported to occur at the sixth decade of life from other studies.^{11,16,19} This is much later than that of the present study, it would therefore appear that the average age of women who developed Endometrial Stromal Sarcoma in this study was in the third decade of life in this environment than other studies.^{11,16,19}

The earlier presentation in this environment could be due to early exposure to the aetiological factors. Low grade endometrial stromal sarcoma (ESS) in this study accounted 9.1 % and is most common in the age groups of 20-29 and 30-39 years, in contrast to the other studies and WHO which reported 42-58 years and 42 -53 years respectively.^{8,10} High grade [Undifferentiated endometrial sarcoma (UES)] accounted for 10.1 % in this study and it is commoner in the age group 50-59 years. This observation is in consonance with the earlier studies.^{8,10} Malignant Mixed Mesodermal Tumours are rare tumours. It accounted for 10.6 % of the endometrial cancer in this study commoner in sixth and seventh decade of life. This is in keeping with other studies.^{8,10,12,13,19,20,22}

Conclusion

Endometrial cancer represented 4.4 % of the female genital tract malignancies diagnosed in the study period with age range of 24-80years. Epithelial tumour account for 69.7%, while Stromal sarcoma account for 19.7 %, Grade II tumour account for 50.0% while high grade Undifferentiated endometrial sarcoma account for 10.1 %. Malignant Mixed Mesodermal Tumours account for 10.6 % of the endometrial cancer in this study.

Conflicts of interest:

There are no conflicts of interest.

Table 2. Age Distribution of Histological types of Endometrial Tumours

Histological Type	Ages in years								Total (%)
	20-29	30-39	40-49	50-59	60-69	70-79	80-89	NoS	
Endometrioid Adenocarcinoma	1	3	5	6	7	3	3	3	31 (47.0)
Adenosquamous	0	0	0	0	2	0	1	0	3 (4.6)
Villoglandular	0	0	0	2	0	0	0	1	3 (4.6)
Serous	0	0	0	1	0	0	0	0	1 (1.5)
Clear Cells	1	0	0	0	0	0	0	0	1 (1.5)
Mucinous	0	1	0	0	0	0	0	0	1 (1.5)
Undifferentiated	0	1	2	3	0	0	0	0	6 (9.1)
ESS	2	2	1	1	0	0	0	0	6 (9.1)
UES	0	0	1	3	2	1	0	0	7 (10.6)
MMMT	0	0	1	2	2	1	0	1	7 (10.6)
Total	4	7	10	18	13	5	4	5	66 (100)

ESS; Endometrial Stromal Sarcoma, UES; Undifferentiated endometrial sarcoma, MMT; Malignant Mixed Mesodermal Tumours. Nos; Age not specified

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