

# Histo-pathological Features of Genital Tract Malignancies as Seen in a Tertiary Health Center in North-Western Nigeria: A 10-year Review

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## Abstract

**Background:** The pattern of gynecological malignancies varies among nations and even within health institution in the same country. Understanding the histo-pathological pattern of these malignancies will help in the management of the patient. **Aim:** The aim of the following study is to establish the frequency, histo-pathological features, and distribution of genital tract malignancies as seen in a tertiary health institution in North - western Nigeria. **Materials and Methods:** A retrospective analysis of data from ward admissions and discharge records, surgical biopsy materials from the theater and the histopathology laboratory results of slides. The study was carried out at the Usmanu Dan-Fodiyo University Teaching Hospital Sokoto, Nigeria. Data were entered into a study proforma and analysis was through SPSS version 15 (Chicago IL) for windows. The results were expressed in simple percentages, tables and charts. **Results:** During the study period (2000-2009), there were 404 cases of gynecological malignancies recorded in the hospital. Cervical cancer was the most common gynecological malignancy 274/404 (69%), followed by choriocarcinoma 52/404 (13.1%), ovarian cancer 46/404 (11.4%) while the least common was vaginal cancer 1/404 (0.3%). The mean age of the cancers was 54 years (28.3). The mean age of incidence of all ovarian cancers was 52.5 years (SD  $\pm$  16.2). Epithelial ovarian tumors had a mean age incidence of 67 (12) years, while that of ovarian germ cell tumors was 18.5 (8) years. The incidence of cervical cancer showed a rising trend. Moderately differentiated squamous cell carcinoma was the most common histological variant of cervical carcinoma 170/252 (67.5%). Among the ovarian tumors, epithelial cancers were the most common 38/46 (82.6%), and were followed by the germ cell tumors 5/46 (10.9%). Dysgerminoma was the predominant ovarian germ cell tumour 4/5 (80%). There were 50 deaths from these cancers in our hospital. **Conclusion:** Cervical cancer is the most common gynecological malignancy in our center and it was followed by Choriocarcinoma. Efforts to reduce the cancer burden should focus on health education of the masses, national organized screening especially for cervical cancer and establishing regional centers for monitoring and evaluation of these programs.

**Keywords:** Gynecological cancers, Histopathology, Nigeria

## Introduction

Gynecological malignancies are those involving the genital tract and include those of the cervix, uteri, endometrium,

gestational trophoblastic tumors, vulva, vagina and fallopian tubes. Worldwide gynecological cancers are among the leading causes of cancer-related deaths. The epidemiologic pattern of these cancers in developing countries differs in many aspects from those of the industrialized nations.<sup>[1]</sup> The cause is mainly due to different genetic patterns, lifestyles, environmental, socio-cultural and economic factors. Among all gynecological malignancies, ovarian cancer has the highest mortality and in two-third of the cases, it is detected in an advanced stage.<sup>[1,2]</sup> In the developed countries of the world, ovarian and endometrial cancers are the leading forms of female genital tract malignancies, while in the third world nations, cervical cancer is the most common.<sup>[1,2]</sup> In some

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countries, it has surpassed breast cancer as the leading cause of cancer-related death among women.<sup>[3]</sup> In the United States of America, cervical cancer is ranked as the fourth most frequent cancer in women, while in Europe, it is at the 7<sup>th</sup> position.<sup>[4]</sup> In India, gynecological cancers account for 10-15% of all cancers diagnosed each year and cervical cancer is the most common,<sup>[1]</sup> while in Ghana, cervical cancer constitutes about 57.8%, of all gynecological malignancies.<sup>[5]</sup> In 2002, it was reported that the most causes of cancer mortality in Nigeria were breast (15.9%), cervical (15.1%), prostate (9.6%), and liver cancer (8.8%).<sup>[6]</sup> In studies done in the South-eastern and Northern parts of Nigeria, cervical cancer was the most common female genital tract malignancy (78–61.5%).<sup>[7-10]</sup> The southern part of the country is characterized by high literacy level but sexual promiscuity and high parity are very common; while ignorance, early marriage and polygamy which are risk factors for cervical cancer, are prevalent in the north.

Cervical cancer of both squamous and adenocarcinoma types are considered as virtually 100% attributable to Human Papilloma Virus (HPV) infection. It is mainly transmitted through sexual contact and the probability of transmission is increased with early age of initiation of sexual activity, multiple sexual partners and high-risk sexual partner.<sup>[10,11]</sup> HPV-16 and -18 are the predominant sero-types worldwide accounting for over 70% of all cervical cancer. Most HPV infections resolve spontaneously and only in 5-10% of cases that the virus is internalized. It is this persistent infection that results in cervical cancer. Thus screening for exfoliated cell and effective treatment of premalignant lesions remain the mainstay of control of cervical cancer. This indeed has contributed to the reduction in the incidence of cervical cancer in the developed countries but not so in the resource poor countries.<sup>[12]</sup>

The high prevalence of genital tract cancer in the underdeveloped countries is due to lack of awareness, risky sexual behaviors, high parity and absence of mass or population-based screening procedures especially for cervical cancer. Screening programs where present are largely opportunistic and tend to target those at low risk for the disease, while neglecting the high risk.<sup>[13]</sup> Most screening activities are done as pilot or research projects which are discontinued on completion.

Similarly, ignorance and poor socio-economic conditions result in patients presenting in health centers with advanced stages of malignancies when treatment for cure is not possible and symptomatic or palliative care can only be offered.

The Northern part of the Nigeria is known to have the highest maternal mortality rates in the country. Thus, a lot of attention has been directed at reducing obstetric deaths while neglecting the high morbidity and mortality due to genital tract malignancies which are also very common in this region. Thus there is need to decrease gynecological malignancies and increase survival. Assessment of the incidence and prevalence is the first step in this process. This necessitated this 10-year review.

## Materials and Methods

This is a 10-year retrospective study that was conducted between the periods of 1<sup>st</sup> January 2000 and 31<sup>st</sup> December 2009. It involved surgical biopsy materials received at the Histopathology laboratory of the Usmanu Dan-Fodiyo University Teaching Hospital (UDUTH) Sokoto, North-western Nigeria. The UDUTH, Sokoto is a tertiary health institution located in the north-western region of Nigeria. The teaching hospital provides tertiary health care services to the entire north-western region of Nigeria and neighboring Niger Republic. The hospital has residency programs in the sub-specialties such as surgery, internal Medicine, obstetrics and gynecology, histopathology, general medicine and public health. The sources of the specimens were from the patients, main and minor theatres and referrals from the government and private hospitals within the metropolis. All pathological specimen results categorized as endometriod, cervical, ovarian, vaginal and vulvar cancers received by the Histopathology Department during the 10-year study period were reviewed. Similarly, results of manual vacuum aspirations and immunochemistry from the chemical pathology department were also reviewed. Information on age, education, parity, occupation and socio-demographic characteristics were obtained from the request forms. The nature, source and histological diagnoses of the specimens were also recorded. Hospital committee on ethics approved the study. Data were entered into a study proforma and analysis was through SPSS version 15 (Chicago IL, USA) for windows. The results were expressed in simple percentages, tables and charts.

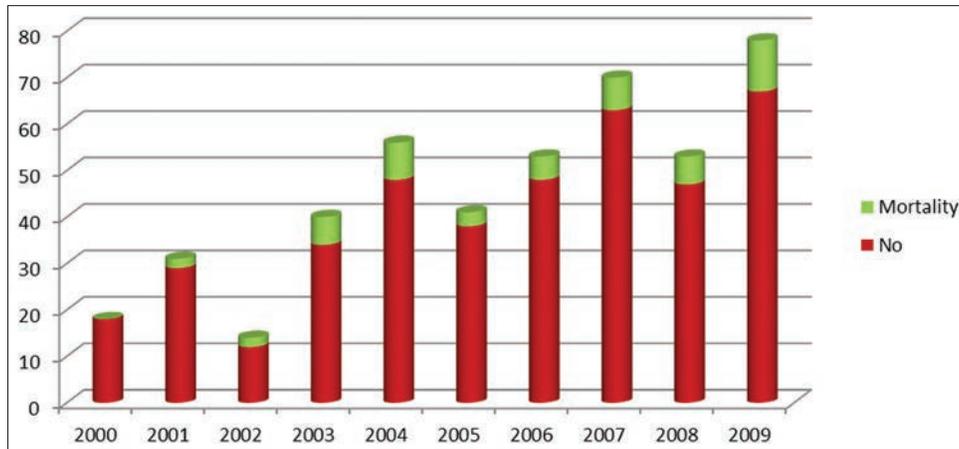
## Results

During the study period, there were 404 cases of gynecological malignancies in our center, which gave an annual average of 40.4 gynecological cancers. The mean age of the patients was 54 (28.3) years, with a range of 15-90 years.

Most cases of gynecological cancers 222/404 (54.9%) were seen during the period of 2006 to 2009 as shown in Figure 1. There were 50 cases of mortality arising from these cases giving an annual death rate from gynecological malignancies of five/year. Most of the deaths 29 (58%) were also witnessed during the periods of 2006-2009.

The most common genital tract malignancy in Sokoto was cervical cancer 274/404 (67.8%). The least common was vaginal carcinoma which constituted only 0.25% (1/404) of all the gynecological malignancies as revealed in Table 1. This was present in a 58-year old multiparous woman. There were 46/404 (11.4%) cases of ovarian neoplasm during the study period. There was no case of tubal malignancy recorded.

The age range for cervical cancer was 20 to 90 years with a mean of 55.5 (14.5). Cervical cancer was most common within the age range of 40 to 59 years 146 (36.8%) and was rare before



**Figure 1:** Annual distribution and mortality from gynecological malignancies

**Table 1: Anatomical distribution of genital tract malignancies in Sokoto**

Type of cancer	No	Percentage
Cervical	274	67.8
Choriocarcinoma	58	14.4
Ovarian	46	11.4
Endometrial	23	5.7
Vulva	2	0.5
Vagina	1	0.3
Total	404	100

the age of 20 years as seen in Table 2. The peculiarity of the situation of cervical cancer in Sokoto is that it tends to occur in the younger age group. There were four cases of cervical cancer within the age range of 20 to 29 years; one of such cases was present in a 21 year-old woman. The age incidence showed a bimodal distribution with two peaks within the age range of 40-49 and again within the 50 to 59 age groups.

The main histological type of cervical cancer was the squamous cell carcinoma (SCC) 252/274 (92%), while the rest were adenocarcinoma 22/274 (8%). The SCC was moderately differentiated in 170/252 (67.5%), poorly differentiated 48/252 (19%) and well-differentiated 34/252 (13.5%) of cases. They were large cell non-keratinizing 146/252 (58%), large cell keratinizing 104/252 (41.3%) and small cell carcinoma 2/252 (0.3%).

There was high prevalence of choriocarcinoma mostly in the younger age group [Table 2]. This may be related to early marriage which is prevalent in Sokoto.

Among the ovarian malignancies, based on the WHO’s histological classification, epithelial tumors were predominant 38/46 (82.6%), followed by germ cell tumors 5/46 (10.9%) and sex-cord stromal tumors 3/46 (6.5%) as seen in Table 4. Serous cystadeno-carcinoma was the most common histological type of epithelial ovarian tumor 25/38 (65.7%), while dysgerminoma was the predominant type of germ

cell tumor. The mean age of onset of all ovarian tumors was 52.5 (16.2). Ovarian malignancies were common within the 5<sup>th</sup> and 6<sup>th</sup> decades of life 18 (39.1%), but tend to spread within the 30-69 year age range.

Endometrioid carcinoma was common in the 5<sup>th</sup> and 6<sup>th</sup> decades 16/23 (69.6%) and the histological type was mainly adenocarcinoma 19 (82%), and SCC two (8.7%).

The average age incidence of vulval carcinoma was 55.5 years and the tumors were moderately differentiated SCC.

## Discussion

The incidence of gynecological malignancies is related to age. From this study, genital tract malignancies were prevalent within the age range of 30 to 69 years. Cervical cancer remains the major gynecological malignancy in Sokoto 274/404 (67.8%), and reveals a rising trend when compared to the incidence of 61.5% from a previous study from this center.<sup>[9]</sup> This may be related to the high prevalence of child marriage and thus early sexual debut, polygamy and low-socio-economic status of women in this region. Other contributing factors are ignorance, lack of awareness and the low practice of screening for cervical cancer.<sup>[13]</sup> The high incidence of cervical cancer is also noted in studies from other centers in Nigeria.<sup>[7-9]</sup> In a study in Tehran, Iran, the distribution of different types of genital malignancies showed a higher incidence rate for endometrial cancer (58%) and a low prevalence of cervical cancer (13.6%).<sup>[14]</sup> The lower rate of cervical cancer was attributed to widespread screening programs in that country.

As it usually takes about 10-20 years for precursor lesions caused by HPV to develop into invasive cancer, most cervical cancers can be prevented by early detection and treatment of precancerous lesions. Unfortunately, the uptake of the conventional Pap smear is very low in this region. In a study in Sokoto, Nigeria, Nnadi *et al.*, showed that over a 3-year period, only 126 cervical smears were taken for cytology and

**Table 2: Distribution of genital tract cancers according to age**

Age range	Cervical cancer	Ovarian cancer	Choriocarcinoma	Endometrial cancer	Vaginal cancer	Vulvar cancer
≤ 19 years	-	1	2	-	-	-
20-29	4	3	15	-	-	-
30-39	29	6	28	-	-	-
40-49	63	6	13	1	-	-
50-59	83	18	-	6	1	1
60-69	45	6	-	10	-	1
70-79	40	2	-	3	-	-
80-89	5	4	-	3	-	-
≥ 90 years	5	-	-	-	-	-
Total	274	46	58	23	1	2

**Table 3: Histo-pathological differentiation of cervical cancer**

Histological Type	No. (%)	Percentage
Squamous cell	252	92
Poorly differentiated	48 (19)	
Moderately differentiated	170 (67.4)	
Well differentiated	34 (13.4)	
Large cell keratinizing	104 (41.2)	
Large cell non keratinizing	146 (57.9)	
Small cell	2 (0.8)	
Adenocarcinoma	22	8
Well differentiated	16 (72.7)	
Poorly differentiated	6 (27.2)	

**Table 4: Histological types of ovarian tumours**

Histological Type	No	%
Epithelial cell cancer	38	82.6
Serous cystadenocarcinoma	25 (65.7)	
Mucinous cystadenocarcinoma	8 (21.1)	
Endometrioid cell carcinoma	4 (10.5)	
Clear cell carcinoma	1 (2.6)	
Germ cell tumours	5	10.9
Dysgerminoma	4 (80)	
Immature teratoma	1 (20)	
Sex cord stromal	3	6.5
Granulosa cell tumour	2 (66.7)	
Theca cell tumour	1 (33.3)	
Total	46	100.0

the annual uptake of cervical smears was 1.3% of the total number of patients registered at the gynecological clinic.<sup>[13]</sup> The screening program was opportunistic and the main indications for cervical cytology were symptom-based.<sup>[13]</sup> Because of its complexity, cervical cancer control requires a team effort and communication between health care providers at all levels of the health care system. A public health approach will require creating awareness and increasing knowledge about risk factors to acquisition of the disease, as well as mass vaccination against the HPV.<sup>[12]</sup> The immunization program should be integrated into the existing national immunization program and targeted at young girls before the age of 17 years.

Choriocarcinoma was the second most common female genital tract cancer in our study 58/404 (14.4%). Similar findings were obtained in Ibadan<sup>[15]</sup> and Gombe,<sup>[16]</sup> Nigeria, but different from studies from Maiduguri and Ilorin, where ovarian cancer followed cervical cancer as the most frequent female genital tract malignancy.<sup>[8,17]</sup> Gestational choriocarcinoma represents a success story in oncology as it is the only cancer in humans that can be cured by chemotherapy alone. The non-gestational variety occurs in association with ovarian germ cell tumors and the response to chemotherapy is less.

Ovarian cancer was present in 46/404 (11.4%) cases. This is low compared to studies from Enugu (21.5%),<sup>[7]</sup> Uyo (21.2%),<sup>[18]</sup> Ilorin (17.5%)<sup>[17]</sup> and Maiduguri (16.3%).<sup>[8]</sup> Epithelial ovarian cancer made up 82.5% (38/46) of all the ovarian tumors and the most common histological variant of epithelial ovarian tumor in this study was the serous cystadenocarcinoma 25/38 (65.7%). A previous study from this center had identified mucinous cystadenocarcinoma as being more prevalent.<sup>[19]</sup> Epithelial tumors were followed by germ cell tumors 5/46 (10.9%) and sex-cord stromal tumors 3/46 (6.5%) in that order. Dysgerminoma was most common malignant germ cell tumor. Similar findings were noted from studies in other centers in Nigeria.<sup>[19,20]</sup> In Benin City, Nigeria, the granulosa cell tumour was the most common malignant form of ovarian tumour.<sup>[21]</sup> Among the gynecological malignancies, ovarian cancer is the deadliest, because of the inaccessible location of the ovary and the absence of standard methods of screening for ovarian cancer. Patients thus tend to present in advanced stages of the disease. The low incidence of ovarian cancer in this study may be related to early marriage and high parity which are prevalent in this region and are known protective factors against developing ovarian malignancy.

Primary malignancies of the vagina are rare as most are metastatic tumors.<sup>[22]</sup> In a 14-year review of vaginal cancers in Port Harcourt Nigeria, vaginal cancer constituted 4.36% of all gynecological malignancies,<sup>[23]</sup> while in Kano, North-western Nigeria, it made up 0.75%.<sup>[20]</sup> In this study, there was only one case of vaginal cancer constituting about 0.25% of all gynecological cancers during the study period.

The fallopian tube is a common site of metastatic spread, primary tumor of the tube is rare. The majority of tubal malignancies are secondary from the uterus, ovary or from the gastro-intestinal tract.<sup>[23]</sup> One case of adenocarcinoma of the fallopian tube was reported in Zaria, Nigeria.<sup>[24]</sup> There were no tubal cancers reported in this study.

## Conclusion

Cervical cancer is most common gynecological cancer in our center. Mortality from gynecological cancer is very high. The result from this study is similar to reports from other centers in Nigeria although there are some slight variations. Efforts towards prevention of these cancers should be directed primarily to health education and vaccination against the HPV as well as screening for premalignant lesions of the female genital tract especially cervical cancer. Establishing National Cancer Control Programs and regional centers for monitoring and evaluation of these programs would be a critical step to cancer control in Nigeria.

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