Original Article

A Histopathologic Review of Cervical Cancers in Jos University Teaching Hospital, Jos, Nigeria

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Abstract

Background: Cervical cancer is the most common gynecological malignancy globally, with a high prevalence in developing countries. We, therefore, undertook this review to document and evaluate its prevalence and histologic patterns seen at a tertiary hospital in Jos, Northcentral Nigeria. **Materials and Methods:** This is a 10-year (2006–2015) retrospective study of all cervical cancers diagnosed at the Pathology Department of Jos University Teaching Hospital, Jos Nigeria. **Results:** Three hundred and six cervical cancers accounting for 92.4% of all gynecologic malignancies were diagnosed during the 10-year study period. Patient's ages ranged from 18 to 85 years (mean 51.12 ± standard deviation 12.63 years), with peak occurrence in the fifth decade. Squamous cell carcinoma (SCC) was by far the most common histologic type (88.9%), the most common histologic grade was moderate differentiation (70%). Adenocarcinomas accounted for 4.3% and leiomyosarcoma accounted for only 0.03% of cases (1 case only). Only 0.65% (2) patients knew their HIV status and both had SCC. **Conclusion:** Our finding of the dismal proportion of cervical cancer is consistent with most published reports in Nigeria and Sub-Saharan Africa but somewhat at variance with that reported in the developed world where cervical cancer is much less common. A total reappraisal of our preventive efforts is therefore needed urgently.

Keywords: Africa, cervical cancer, low- and middle-income countries, squamous cell carcinoma

Introduction

Cervical cancer is the fourth most common cancer in women, and the seventh overall, with an estimated 528,000 new cases in 2012.[1] Similar to liver cancer, a large majority (around 85%) of the global burden occurs in the less developed regions, where it accounts for almost 12% of all female cancers.[1,2]

In Sub-Saharan Africa, cervical cancer accounts for 22.5% of all cancer cases in women and the majority of women who develop cervical cancer live in rural areas.[3] According to the World Health Organization, cervical cancer will kill >443,000 women per year worldwide by 2030, nearly 90% of them in Sub-Saharan Africa.[4] This increase in cervical cancer incidence in Africa threatens to undermine the progress made in reducing maternal mortality and increasing longevity among women in Africa.[4] Nevertheless, cervical cancer is a potentially preventable noncommunicable disease that can be averted or halted by primary (vaccination), secondary (early diagnosis of persons at risk), and tertiary (early diagnosis of person with proven cases of cervical neoplasia) prevention. The close links between HIV and HPV justify linking cervical cancer prevention, screening, and management programs with AIDS programs as part of the "90-90-90" initiative of the UNAIDS, both nationally and regionally.[4] Innovative strategies based on effective, rapid, inexpensive, and mobile screening tools, including molecular biology as well as vaccination and awareness programs, should be rapidly implemented and evaluated in sub-Saharan Africa.[4]

According to the International Cancer Organization/International Agency for Research on Cancers data on key statistics, there were no fewer than 14,089 new cervical cancer cases and 8240 cervical cancer deaths annually in Nigeria.[5] This high incidence might not be unconnected with high HIV burden

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in Nigeria.[6] Although contrary to findings of increased incidence of cervical cancer in HIV cohorts in most previous studies in Nigeria, a study by Ononogbu *et al*. showed only a marginal increase in incidence of cervical cancers among HIV-infected women.[6-8] Although HIV prevalence among adults in Nigeria is remarkably small (2.9%) compared to other Sub-Saharan African countries such as South Africa (18.9%) and Zambia (12.4%), the size of Nigeria's population means 3.2 million people were living with HIV in 2016.[9] An estimated 60% of new HIV infections in Western and Central Africa in 2015 occurred in Nigeria.[10] Together with South Africa and Uganda, the country accounts for almost half of all new HIV infections in Sub-Saharan Africa every year. Approximately, 160,000 people died from AIDS-related illnesses in Nigeria in 2016.[10]

It is a well-documented fact that persistent high-risk HPV infection promotes the development of cervical intraepithelial neoplasia, which are precursor lesions for cervical cancer.[11,12] Some studies show disparity in cervical cancer incidence between women with HIV and women without HIV to be greatest in low- and middle-income countries (LMICs).[13] For example, in Africa, where cervical cancer is a leading cause of cancer death, HIV-infected women are 6 times more likely than uninfected women to develop cervical cancer[14,15] Contrary to studies in Western literature that show a reduction in incidence of cervical cancers from pre-ART to ART era, some studies in Nigeria show only marginal reduction in incidence of cervical cancers in ART era compared to pre-ART era.[16-22,7,8] These findings highlight the need for more epidemiological studies of cervical cancer and precancerous lesions among HIV-positive women in Africa and an improved understanding of incidence and risk factors. Studies have shown that the histologic pattern of cervical cancer influence treatment outcomes.[23,24] We, therefore, sought to describe the pattern of cervical cancers in Jos and patient's knowledge of their HIV status.

Materials and Methods

This was a cross-sectional descriptive study of the histologic patterns of cervical malignancies in JUTH from January 2006 to December 2015. Tissue blocks from archives were retrieved and fresh sections were made. Microtome sections were cut at 4 μ, they were stained with hematoxyline and eosin, made into slides and viewed under the light microscope by a pathologist with a second look done by other pathologists. Biodata of all cases including knowledge of their HIV status was retrieved from their records. Collated results were presented in the form of tables and figures. Histologic typing were evaluated according to the WHO classification of tumors 4th edition 2007 guidelines. Simple statistical analysis was employed using Stata (2016 edition).

Inclusion criteria: All cervical tissue biopsies suspected for malignancy brought to the pathology department during the years under review.

Exclusion criteria: All samples with insufficient clinical history, rejected samples, and samples whose blocks are lost were excluded.

Results

Three hundred and six cervical cancers accounting for 92.4% of all gynecologic malignancies were analyzed. Twelve samples out of the 318 samples initially considered for the study were excluded from this study due either to missing blocks or insufficient relevant clinical information. Patients' ages ranged from 18 to 85 years (mean 51.12 ± standard deviation 12.63 years), with highest occurrence in the fifth decade age group. Squamous carcinoma was by far the most common histological type (88.9%) with moderate differentiation being the commonest grade (70%). This is distantly followed by adenocarcinoma (4.3%) and leiomyosarcoma (mesenchymal malignancies) comprising 0.03% (1 case) [Table 1]. Only 2 (0.65%) patients knew their HIV status and both had squamous cell carcinoma (SCC) [Table 2]. A decline in the frequency of cervical cancers diagnosed was observed from 2009 to 2016 [Table 3].

Age Group 5 (49–58 years) had the highest frequency (26.80%) [Table 4]. Figure 1 shows a photo micrograph of SCC, while Figure 2 is that of cervical adenocarcinoma.

Discussions

Of a total of 306 samples analyzed, SCC was the most common (88.89%) histologic pattern [Table 1]. This is consistent with most other studies observed elsewhere but is less than the 91% value reported in a previous study from the same institution.[16,17,22] This could be due to the longer (10-year data) duration covered in our study as opposed to the 3-year study by Musa J *et al*.[22] Our study also had a higher sample size (306) than that used in the previous study (65). Furthermore, improved Pap smear screening uptake over the years could attribute to the lower prevalence

Table 1: Frequecy of histologic diagnosis

Histologic diagnosis	Frequency	Percentage	Cumulative
Adenocarcinoma	13	4.25	4.25
Adenosquamous	12	3.92	8.17
CIS	8	2.61	10.78
Leiomyosarcoma	1	0.33	11.11
SCC	272	88.89	100.00
Total	306		100.00

Table 2: Frequency of knowledge of HIV status

Knowledge of HIV status	Frequency	Percentage	Cumulative
Known	2	0.65	0.65
NIL	304	99.35	100.00
Total	306		100.00

observed in this study than the earlier one. With just one leiomyosarcoma (0.3%) documented in this 10-year study, mesenchymal malignancies of the cervix were uncommon. This is comparable to 0.2% reported at Kano in Northern Nigeria and 0.5% reported by Platz in the USA.[16,18]

Only 2 (0.65%) out of the 306 patients whose tissues were analyzed had knowledge of their HIV status [Table 2]. This is at variance with a study in Southern Nigeria where 61% of the respondents had fair knowledge of their HIV status.[17,25] Majority of the cervical cancer patients were referred to JUTH from rural health centers where Provider-Initiated HIV Testing and Counselling was not available.[25] Furthermore, knowledge of HIV status was not included as standard of care in managing cervical cancer patients in our institution during this study period. Thus, physicians screened for HIV at their discretion. From 2008, there was a gradual decline in the incidence of cervical cancer (18.3%) till 2016 (0.65%) [Table 3]. This might be due to the incessant industrial strike actions in our institution (JUTH) at various periods over the years (February 2009 to April 2009; September 2010; March 2012; January 2014 to March 2014; October 2015 to September 2015), thus accounting for reduced or total nonexistent pathology services at JUTH during the long periods. Operation stop cervical cancer initiated in JUTH from 2006 to date has been offering a well-subsidized Pap smear screening and colposcopy service, this could also have contributed to a further reduction in incidence of cervical cancers as premalignant lesions are detected early and properly managed. Furthermore, the proliferation of many other hospitals in Jos offering pathology services could explain the gradual drop in incidence of cervical cancers diagnosed at JUTH during the period under review. The possibility of an actual drop in incidence of cervical cancers in Jos could be verified later by conducting a multicenter study in the future.

Table 3: Frequency of cancer by year

Year	Frequency	Percentage	Cumulative
2006	35	11.44	11.44
2007	51	16.67	28.10
2008	56	18.30	46.41
2009	34	11.11	57.52
2010	29	9.48	66.99
2011	28	9.15	76.14
2012	37	12.09	88.24
2013	11	3.59	91.83
2014	14	4.58	96.41
2015	9	2.98	99.35
2016	2	0.65	100.0
Total	306		100.00

Table 4: Frequency by age groups

Age groups	Frequency	Percentage	Cumulative
1	1	0.33	0.33
2	9	2.98	3.27
3	45	14.71	17.97
4	80	26.14	44.12
5	82	26.80	70.92
6	64	20.92	91.83
7	18	5.88	97.71
8	7	2.29	100.0
Total	306		100.00

In this retrospective study, age group 49–58 years had the highest (26.8%) frequency [Table 4]. This is consistent with a similar study in other regions in Nigeria.[16,18,20,21]

Although this study showed the most common histologic pattern (SCC) being consistent with almost all similar studies conducted from LMICs, its retrospective nature is laden with incomplete information and missing tissue blocks. This is also a single hospital-based study, thus lacking generalizability. Thus, a prospective study involving many hospitals in Jos should be carried out in the future to obtain population incidence in Jos and reduce incomplete or missing data. This will ensure generalizability of findings. Cervical cancer accounted for 92.4% of all female gynecologic malignancies seen at JUTH during the period of study, thus there is an urgent need to stem this trend by the institution

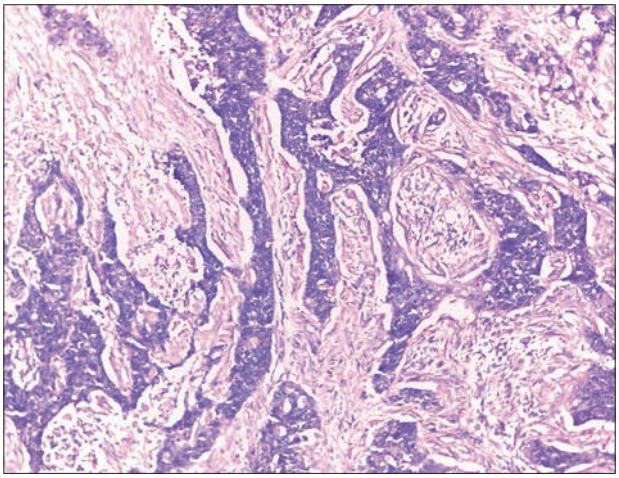

Figure 1: Squamous cell carcinoma (H and E, ×10)

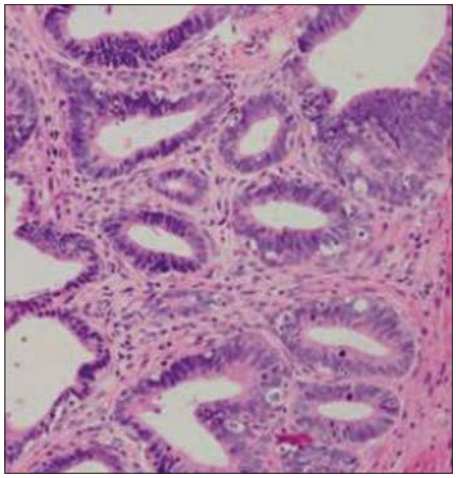

Figure 2: Adenocarcinoma (H and E, ×10)

of HPV vaccination into our Government subsidized routine immunization program. This should be done in conjunction with continuous efforts on Pap smear/visual inspection with Lugol iodine screening procedures. Health education of the populace on the risk factors and the prevention should also be done regularly.

Conclusion

Cervical cancer is quite common in our setting, thus data for health planning and policy formulations are necessary. Recommendations include the need for women to have accessible and affordable Pap smear screening, continuous health education, HPV vaccination, and provision of adequate facilities to manage cervical premalignant and malignant lesions. HIV screening should be done routinely in cases of cervical cancer due to its association with higher stage and worsening prognosis.

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Conflicts of interest

There are no conflicts of interest.

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