

Patterns of Cervical Cytology Screening Outcomes among Premenopausal Women Attending University of Benin Teaching Hospital Benin-City, Nigeria

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How to cite this article:

Odega KI, Forae GD, Adeyemi EE. Patterns of Cervical Cytology Screening Outcomes among Premenopausal Women Attending University of Benin Teaching Hospital Benin-City, Nigeria. NDJMS 2020; 2(3)56-62

Received 18th March, 2019 | Accepted 25th October, 2019 | Published 27th April, 2020

Abstract

Background: This study is aimed at determining the patterns of cervical cytology screening outcomes among women of childbearing age attending tertiary health institution in Nigeria.

Methods: This study reviewed the cytology register of over 1742 female patients aged 18 to 45 years attending various clinics in University of Benin Teaching Hospital from 1 January 2013 to 31st December 2016. During screening a sterile speculum was placed in the vagina and a rovers® cervex brush introduced through the vagina to the cervix. The central bristles of the rovers® cervex brush was inserted into the endo-cervical canal. Maintaining gentle pressure, it was rotated five times in a clockwise direction. The rovers® cervex brush head was detached and placed in the preservative vial containing fixative. This along with the request form was sent to the cytology laboratory.

Result: A total of 1742 patients were screened for cervical lesions, the outcomes include 1342(77%) negative for intraepithelial lesion or malignancy (NILM), 231(13%) acute cervicitis, 55(3%) chronic cervicitis, 14(1%) atypical squamous cells of undetermined significance, 32(2%) low grade squamous intraepithelial lesion (LSIL) and 7(0.4%) high grade squamous intraepithelial lesion (HSIL).

Conclusions: Majority of the outcome of cervical cancer screening cases are actually negative for intraepithelial lesions or malignancy with significant number of cervicitis and premalignant lesions.

Keywords: Cervix, cytology, premenopausal, women, screening

-Running Title: Cervical cytology screening outcomes in University of Benin Teaching Hospital

Introduction

Cervical lesions constitute a major source of morbidity and mortality among women attending gynaecological clinics. Among malignant gynaecological lesions, cervical cancer is one of the few cancers that are both curable and preventable with regular screening.^{1,2} It is the second most common cancer in women constituting about 12% of all cancers in women worldwide. The majority of these cases occur in developing countries. Cervical cancer is one of the most common cancers affecting a woman's reproductive organ. Studies have shown that it is a leading cause of death among middle aged women.^{1,2,3} Cervical cancer has an estimated incidence rate of over 500,000 cases annually and 275,000 deaths.³

There are 452,000 new cases recorded each year, with more than 234,000 deaths occurring from it each year.^{3,4} Cervical cancer accounted for 16.5% of all cancer cases in Benin-City while the incidence rate is 14.4 per 100,000 population.⁵ About 80% reductions in incidence, mortality and morbidity of cervical cancer have been achieved in developed countries due to early detection.^{5,6}

Although cervical cancer is readily detectable in its premalignant stage, in 2007 it was reported that 36.59 million women aged less than 15 years in Nigeria are at risk of developing cervical cancer.^{6,7} Many of these are in South-Western and South-Eastern parts of Nigeria.^{7,8} It is estimated that less than 0.1% of Nigerian women have done any form of screening for cervical cancer and another less than 1% aware of this deadly disease.^{9,10,11,12}

This study is a retrospective study from January 2013 to December 2016, with the

sole aim of determining the cytological patterns of cervical screening among women of childbearing age attending various clinics of the University of Benin Teaching Hospital (UBTH) in Benin City, Nigeria.

Materials and Methods

A retrospective descriptive study of patients was carried out by collecting data kept in UBTH cytology registry from 1 January 2013 to 31 December 2016. This study reviewed the cytology register of over 1742 female patients aged 18 years and above attending various clinics; antenatal clinic, family planning clinic, post-natal clinic, human reproductive research program, Centre for Disease Control (CDC) and gynaecology clinic in University of Benin Teaching Hospital, Benin City, Nigeria.

During screening a sterile speculum was placed in the vagina to spread it and rovers® cervix brush was introduced into the vagina to get to the cervix. The central bristles of the rovers® Cervix brush was inserted into the endocervical canal. Maintaining gentle pressure, it was rotated five times in a clockwise direction. The Rovers® Cervix brush head was detached into the preservative vial containing fixative. This along with the request form was sent to the cytology laboratory for processing.

The most widely used staining procedure for cytological specimens is Papanicolaou's technique. In the first staining step, the nuclei were stained by a Haematoxylin solution which appeared blue, dark violet to black. Then followed by cytoplasmic stained with Orange solution which revealed mature and keratinised cells. The target structures were stained orange in different intensities. Lastly Polychromatic solution is used (Azure Eosin) for counterstaining. The data collected was entered into a spread-sheet for analysis. Results obtained were analysed with

respect to age, sex and cytological patterns of lesions. Categorical variables were expressed as frequency, percentage using simple statistical methods

Results

Table 1 shows a total number of 1742 patients screened and analyzed for cervical cancer. Among this, 1342 accounting for (77%) was negative for intraepithelial lesion or malignancy (NILM), 231 constituting (13%) had acute cervicitis, 55(3%) had chronic cervicitis, 14(1%) had atypical squamous cells of undetermined significance, 32(2%) had low grade squamous intraepithelial lesion (LSIL) and 7(0.4%) had high grade squamous intraepithelial lesion (HSIL). Unsatisfactory lesions constituted 3.3% of all the lesions. Atypical squamous cell (ASC-H) is the least common lesion accounting for only 0.06% of all the lesions. Other lesions are as shown in table 1

Table 2 shows the yearly frequency and trends of common cytological diagnosis. In all NILM was the most frequently

encountered diagnosis accounting for 75% to 81% of all yearly diagnosis for the 4 consecutive years. The second most common trend was acute cervicitis ranging from 11% to 14% yearly of all cytological diagnosis while the third most common trend was chronic cervicitis accounting for about 3-6.7% for the same period. The LSIL and HSIL were less commonly encountered accounting for only 1-2% and 1% of all diagnosis yearly from 2013 to 2016 respectively. The other results are shown in table 2.

Table 3 shows the age range and the diagnosis. According to the diagnosis NILM occur most commonly in age groups of 40-44 years and 45-49 years accounting for 23% and 22% of all cases respectively. Low squamous intraepithelial lesion occurred most in the age bracket of 45-49 years accounting for 47% of all LSIL cases, this is followed by 40-44 years accounting for 19%. Majority of HSIL cases accounting for 57% occurred in the 40-49 years age group. The other results are shown in table 3.

Table 1: Shows the frequency and outcome of lesions seen during cervical screening

Outcome	Frequency	Percentage (%)
NILM	1344	77.15 %
Acute Cervicitis	231	13.26 %
Chronic Cervicitis	55	3.16 %
ASCUS	14	0.80 %
LGSIL	32	1.84 %
HGSIL	7	0.40 %
ASC-H	1	0.06 %
Unsatisfactory	58	3.33 %
Total	1742	100 %

Table 2: Yearly trends of cervical lesions encountered during cytological screening

Lesions	Year			
	2013	2014	2015	2016
NILM	364(74.9%)	367(77.1%)	399(81%)	214(75%)
AC	41(8.4%)	50(10.5%)	47(9%)	36(13%)
ACC	28(5.8%)	13(2.7%)	9(2%)	7(2%)
CC	23(4.7%)	13(2.7%)	16(3%)	3(1.1%)
ASCUS	1(0.2%)	7(1.5%)	4(1%)	2(1%)
LGSIL	11(2.3%)	10(2.1%)	8(2%)	3(1.1%)
HGSIL	3(0.6%)	4(0.8%)	0(0%)	0(0%)
Unsat.	15(3.1%)	12(2.5%)	12(2%)	19(6.7%)
ASC-H	0(0%)	0(0%)	0(0%)	1(0.06%)
Total	486(100%)	476(100%)	495(100%)	285(100%)

Key: AC; Acute cervicitis ACC; Acute-on-chronic cervicitis CC; Chronic cervicitis

Table 3: shows cervical lesions representations in relation to the premenopausal age groups of the patients

Age Groups	Lesions								
	NILM	AC	ACC	CC	ASCUS	LGSIL	HGSIL	UNSAT	ASC-H
15-19	25(2%)	0(0%)	1(2%)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
20-24	56(4%)	10(6%)	4(7%)	1(1%)	0(0%)	2(6%)	0(0%)	3(5%)	0(0%)
25-29	143(10%)	18(10%)	7(12%)	7(13%)	1(7%)	1(3%)	1(14%)	3(5%)	0(0%)
30-34	238(17%)	41(24%)	14(24%)	9(16%)	0(0%)	4(13%)	1(14%)	10(17%)	0(0%)
35-39	293(21%)	41(24%)	7(12%)	12(22%)	4(29%)	4(13%)	1(14%)	13(22%)	0(0%)
40-44	311(23%)	30(17%)	10(17%)	14(25%)	6(43%)	6(19%)	3(43%)	9(16%)	0(0%)
45-49	301(22%)	33(19%)	15(26%)	12(22%)	3(21%)	15(47%)	1(14%)	20(34%)	1(100%)
Total	1344(100%)	173(100%)	58(100%)	55(100%)	14(100%)	32(100%)	7(100%)	58(100%)	1(100%)

Key: AC; Acute cervicitis ACC; Acute-on-chronic cervicitis CC; Chronic cervicitis

Discussions

Studies of the outcome of cervical cytology screenings varies from one geographic location to another. Globally, studies have it that the aim is for the early detection of cervical cancer.^{13,14,15,16,17} The majority of these cases occur in developing countries.^{11,18} Since cervical cancer is preventable and takes a long time to develop, its incidence and mortality has drastically reduced due to effective screening programs in

developed countries.^{11,12,13,18}

Our study, a review of prevalence of cervical cytology outcomes in four years showed a prevalence of 3.1% for premalignant lesions. This study bears some similarity to other works that have been done in various parts of Nigeria, Africa and other parts of the world at large.¹⁸ The documented prevalence of premalignant lesion varies according to the population studied and the duration of

study. Kobelin *et al* noted a prevalence of 3.4%¹⁴ especially squamous intraepithelial lesions in 406 cases mostly age 35 years who had a PAP screening in Boston, America. In Rwanda a study was done among women age 30-50, the prevalence of pre-cancerous lesion was 5.9% and cancer was 1.7%¹⁵ In an evaluation of women in Sokoto, Nigeria a prevalence of 7%¹⁶ was noted, while in Ibadan a prevalence of 11.8%¹⁷ was recorded in women generally, Abdul *et al*. also found a prevalence of abnormal smear in Zaria to be 14%¹⁸ while Ahmed *et al* found LSIL and HSIL to have a prevalence of 11.1 and 4.4%¹⁹ in Jalingo, North Eastern Nigeria.

There are schools of thought that cervical cancer is fairly commoner in the northern part of the country where socio cultural and economic factors favour the disease.^{19,20} Adewuyi *et al* recorded that in parts of Northern Nigeria majority in the cohort they studied had initiated sexual activity by age 17 years in a polygamous setting and are multiparous.²⁰ Furthermore, the northern part of the country ranks low in education and other parameters of human development index which may militate against curiosity of knowledge, attitude and practice of cervical cancer prevention measures. To be placed also in consideration is the regional variations that exist in cervical cancer incidence in Nigeria.²⁰

In UBTH an earlier work done by Obaseki *et al* on women within the age groups of 15 to 89 years showed the prevalence of premalignant lesion to be 16.2%.²¹ Reports from our study where a total of 1742 cases were screened in a duration of four years showed a prevalence of 3.1% as the rate of pre-malignancy among women of child bearing age (15-49 years). Comparing both reports, we noted a higher outcome from Obaseki *et al* when compared with our findings. The reason may have been due to

increase awareness of the public about cervical cancer screening over the years. Again, more pre-malignant lesions were also seen in postmenopausal age groups by Obaseki as compared to our study that is limited to only premenopausal age group. Moreover, comparing our findings to the study carried out in Zaria, where a prevalence of premalignant lesion of 7% was found in women of childbearing age,²² this was also slightly higher than our findings of 3.1%. The reason for this slight variability may be attributable to the difference in the sample size, duration of study and the difference in socio-cultural, religion and regional variation in the different areas of study.

The rate of premalignant lesion in women of child bearing age in UBTH is low because there is a high level of information and awareness among the populace of this region, coupled with the fact that UBTH is one of the few centres in Nigeria that has a centres for disease control (CDC) which partake in screening and advocacy of cervical cancer of the affected population. Also organized by the CDC is a rural outreach programme (RRI), that advocates for cervical cancer in rural areas as well as subsidize the fee rate thus aiding in the consistent routine screening of female folks from the rural area.

In conclusion, the pattern of cervical smear report in Benin-City, Nigeria is similar to other centres, our findings are particularly revealing high rate of negative for intraepithelial lesion/malignancy while inflammatory and premalignant lesions among women of child bearing age are relatively low but important.

Our recommendations include sufficient screening awareness campaign of cancer of the cervix in the population. Early testing using PAP screening is also recommended for the disease that has been proven to be easily preventable.

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