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Full Length Research Paper

Correlation between visual inspection of the cervix and pap smear test for cervical cancer screening

Mbamara S. U.[1]*, Ukah C. O.[2], Ikpeze O.[1], Okonkwo Jen[1] and Onyiaora V.[2]

[1]Department of Obstetrics and Gynaecology Nnamdi Azikiwe University Teaching Hospital Nnewi, Anambra State, Nigeria.
[2]Department of Pathology Nnamdi Azikiwe University Teaching Hospital Nnewi, Anambra State, Nigeria.

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Cancer of the cervix, although a preventable disease has remained a common genital cancer in Nigeria, where most women rarely ever undergo cervical cancer screening. The reasons commonly cited in several studies for this abysmal situation are the absence of routine and organized screening programme, lack of knowledge about cervical cancer screening and cost. Visual inspection of the cervix, which is easy to do, cheap and does not require sophisticated material, elaborate training or technology has been advocated for low resource areas like Nigeria. The aim of this study was to assess the correlation between the observations on visual inspection of the cervix and the findings of the Pap smear among clinic attendees in a tertiary health care center. This is a prospective cross sectional study conducted at the Gynecological clinic of Nnamdi Azikiwe University Teaching Hospital Nnewi, Anambra State, South East Nigeria. This study shows that only 18 (12.9%) of the women were aware of cervical cancer screening test while 122 (87.1%) have never heard of the cervical cancer screening test before. Fifteen (83.3%) of those women who were aware of cervical cancer screening test got their information from health care providers, 2 (11.1%) from television and 1 (5.6%) from radio. However, 11 (61.1%) women out of the 18 respondents who were aware of cervical cancer screening test have done a Pap test before. Ninety six (68.6%) of the women had normal cervical smear while forty one (29.3%) had abnormal cervical smear. The proportion of unsatisfactory smear was 2.1%. The abnormal cervical smear was further sub-classified as LSIL (25 cases, 17.9%), HSIL (12 cases, 8.6%), ASC-US (3 cases, 2.1%) and glandular intraepithelial lesion (1 case, 0.7%). No case of squamous cell carcinoma was detected. The peak age prevalence of abnormal cervical smear was 40 to 44 years. A total of 24 suspicious looking cervixes were observed by visual inspection. There was significant association between the visual appearance of the cervix and the cervical smear result. Abnormal cervical smear was detected more among the women with suspicious cervical appearance on visual inspection (X^2=10.45; Fisher exact = 0.003). Visual inspection of the cervix with unaided eye is a veritable tool in the routine screening of cancer of the cervix in poor resource areas. Most of the abnormal smear detected by the Pap test was among the women who had suspicious cervical appearance on visual inspection with an unaided eye. This is very interesting in that no special skill or extensive training is required before the widespread commencement of visual inspection of the cervix especially in hinterlands and resource poor areas.

INTRODUCTION

Cancer of the cervix is the most common reproductive tract cancer in women in Nigeria and most of them present themselves for diagnosis and treatment when it is too late (WHO/ICO, 2009; Pinga et al., 1999). Like in other developing countries in Nigeria, cancer of the cervix is also a major cause of cancer related suffering and pre-mature death but yet it is largely a preventable disease. Cervical cancer prevention efforts have been focused on screening women at risk of the disease using Papanicolaou smears and treating pre-cancerous lesions when detected. Immunization against Human Papillomavirus (HPV), which has been determined to be

*Corresponding author. E-mail: Kensunny30@yahoo.co.uk.

a major factor to the development of cervical cancer, has also been introduced most especially in the developed world as another method of primary prevention against cervical cancer (Bhatla et al., 2007). The conventional method of screening for cervical cancer is by Pap smear which was introduced in 1943 by Dr George Papanicolaoua (Roblyer et al., 2007). Nigeria like other sub-Saharan African countries have not been able to establish and maintain routine universal Pap smear screening test for citizens although the efficiency of Pap smear in reducing the incidence of and mortality from cervical cancer has been established (Bhatla et al., 2007; Obafunwa et al., 1991; Roblyer et al., 2007). This may be due to operational difficulties in the establishment and operation of widespread routine Pap smear, poverty, lack of political will, inappropriate prioritization of needs and presence of other communicable diseases (most especially malaria and HIV/AIDS) contending for the limited resources at their disposal.

It is therefore imperative that efforts should be made to explore alternative methods of detecting the pre-cancerous stage and early stage of cervical cancer which is curable. This alternative should be accessible for all the populations, cheap, less labor intensive and devoid of high technology base. This study which was conducted in the Gynecology clinic of Nnamdi Azikiwe University Teaching Hospital (NAUTH) as aimed at exploring visual inspection of the cervix with an unaided eye and determining the relationship between the detection rates of visual inspection with unaided eye (VI) and Pap smear test result.

MATERIALS AND METHODS

This cross-sectional prospective study was conducted at Nnamdi Azikwe University Teaching Hospital, (NAUTH), Nnewi, Anambra State in South East Nigeria from December 2007 to July 2008. The study was conducted among women between the ages of 16 and 64 years who have been sexually exposed and attended Gynecology and family planning clinics in NAUTH, Nnewi during the period of study. The respondents were longitudinally recruited after giving verbal consent to participate in the study. Pre-tested, semi-structured, self administered questionnaire were used to elicit information on demographic data, knowledge of cervical cancer screening using Pap smear test, utilization and acceptability of the screening test. The women who completed the questionnaires had Pap smear collected from them by the researcher after noting the appearance of cervix which was reported as:

(a) Healthy, that is, smooth, pink, cervix with clear mucoid secretion and central hole external os
(b) suspicious, that is, .hyperemic and erosive looking cervix and (c) abnormal (those with abnormal cervical appearance, that is, obvious cervical lesion, erosion, the easily bleeds, friable growths, cervix with friable irregular surface were excluded from this study)

Each woman was placed in dorsal position with her legs flexed at the hip and knee and abducted. The labia were parted with gloved thumb and index fingers. The Cusco's bivalve speculum which was not lubricated was then passed and fixed to visualize the cervix under a bright light source. The hook end of the Ayres' spatula was then inserted at the external os and swept through 360◦ (degree) rotatory movement either in clockwise or anticlockwise direction to scrape the entire squamocolumnar junction of the transformation zone. The smears were uniformly spread on two pre-labeled frosted slides and promptly immersed into 95% alcohol for fixation. The last question on the questionnaire was answered after the smear has been taken. The smears were stained by the same laboratory scientist using Papanicolaou method and read by a pathologist. Three main stains were used - Harris's haematoxyline with acetic acid, orange G (OG6) and papanicolaou eosin-azure. All the smears were interpreted in accordance with the 2001 Bethesda system of reporting cervical and vaginal cytology (Apgar et al., 2001). The cytology report of the smears therefore read any of the following:

Normal, Low grade squamous intraepithelial lesion (LGSIL), High grade squamous intraepithelial lesion (HGSIL), Atypical squamous cell (ASC), Atypical glandular cells of uncertain significance (AGCUS).

The data were analyzed using SPSS for windows version 16.0. Statistical comparison was done using Chi square (X^2) and Fischer exact. The level of significance was accepted when p-value is equal to or less than 0.05. Ethical approval was obtained from the ethical committee of Nnamdi Azikiwe Teaching hospital Nnewi.

RESULTS

A total of 198 women were recruited during this study. Fifty of the women withdrew from the study after completing the questionnaire by refusing cervical smear to be collected from them and eight women were excluded because they had obvious cervical lesion, that is, frank malignant growth on the cervix. The one hundred and forty women who participated fully in this study formed the bases of the analysis.

Table 1 shows the socio-demographic characteristics of the women. The age range of the women was 16 to 64 years. The peak age range of the respondents was 25 to 29 years which accounted for 39 (27.9%) of the respondents with a mean age of 33.8 years. About 58% of the respondents were below 35 years of age while 42.0% were above 35 years.

Only two (1.4%) of the women had non-formal education. Twenty one (15%) of the women received primary education, seventy (50.0%) received secondary education while forty one (33.6%) of the women received tertiary education.

They were mostly married 117 (83.6%) and in monogamous 113 (80.7%) relationship. Polygamy was uncommon 16.4%. Seventy six (54.3%) of the respondents were nulliparous women. The lowest parity was 0 and the highest parity was 8 with a mean of 1.2 ± 1.7.

Only 18 (12.9%) of the women were aware of cervical cancer screening test while 122 (87.1%) have never heard of the cervical cancer screening test before. Fifteen (83.3%) of those women who were aware of cervical cancer screening test got their information from health care providers, 2 (11.1%) from television and 1 (5.6%) from radio. However, 11 (61.1%) women out of the 18

Table 1. The socio-demographic characteristics of the women.

Variable	Frequency N=140	Percentage N=100%
Age range (years)		
16-19	1	0.7
20-24	13	9.3
25-29	39	27.9
30-34	28	20.0
35-39	27	19.3
40-44	19	13.6
44-49	8	5.7
50-54	0	0
55-59	0	0
60-64	5	3.6
Educational status		
Non formal	2	1.4
Primary	21	15
Secondary	70	50.0
Tertiary	47	33.6
Marital status		
Single	15	10.7
Married	117	83.6
Divorced	2	1.4
Widow	6	4.3
Separated	0	0
Parity		
Nullipara (para 0)	76	54.3
Primipara (para 1)	24	17.1
Multipara (para2 -4)	32	22.9
Grand multipara (para ≥ 4)	8	5.7

respondents who were aware of cervical cancer screening test have done a Pap test before. Six (55.0%) of the women have done it once while 5 (45.0%) women have done it twice.

The various reasons for not screening are presented in Figure 1. One hundred and nineteen (85.0%) of the women could not screen because they were not aware of the cervical cancer smear screening while 4 (3.2%) feel that it was an unnecessary exercise. There is a significant association between the educational status and the knowledge of cervical smear Pap test as those with higher educational status were found to be more knowledgeable about cervical smear Pap test than their counterparts with lower educational status (X^2 = 10.14, p–value 0.001),

Eighty seven (62.1%) of the women were aware of their HIV status while 52 (37.1%) were unaware of their HIV status. Of the women who were aware of their HIV status, only 11 (7.9%) were sero-positive while 77 (55.5%) were sero-negative. Fifty two (37.1%) of the women did not give any response to their HIV status.

Eighty (57.1%) of the women agreed that they would like to repeat cervical cancer screening test next time while 60 (42.9%) would decline to further cervical cancer screening test. One hundred and twenty nine (92.1%) of the women had normal looking healthy cervix while 11 (8.3%) had suspicious looking cervix on inspection.

Figure 2 shows the result of the cervical smear test using the 2001 Bethesda classification. Ninety six (68.6%) of the women had normal cervical smear while forty one (29.3%) had abnormal cervical smear. The proportion of unsatisfactory smear was 2.1%. The abnormal cervical smear was further sub-classified as LSIL (25 cases, 17.9%), HSIL (12cases, 8.6%), ASC-US (3 cases, 2.1%) and glandular intraepithelial lesion (1 case, 0.7%). No case of squamous cell carcinoma was detected. The peak age prevalence of abnormal cervical smear was 40 to 44 years. There was significant association between the visual appearance of the cervix and the cervical smear result. Abnormal cervical smear

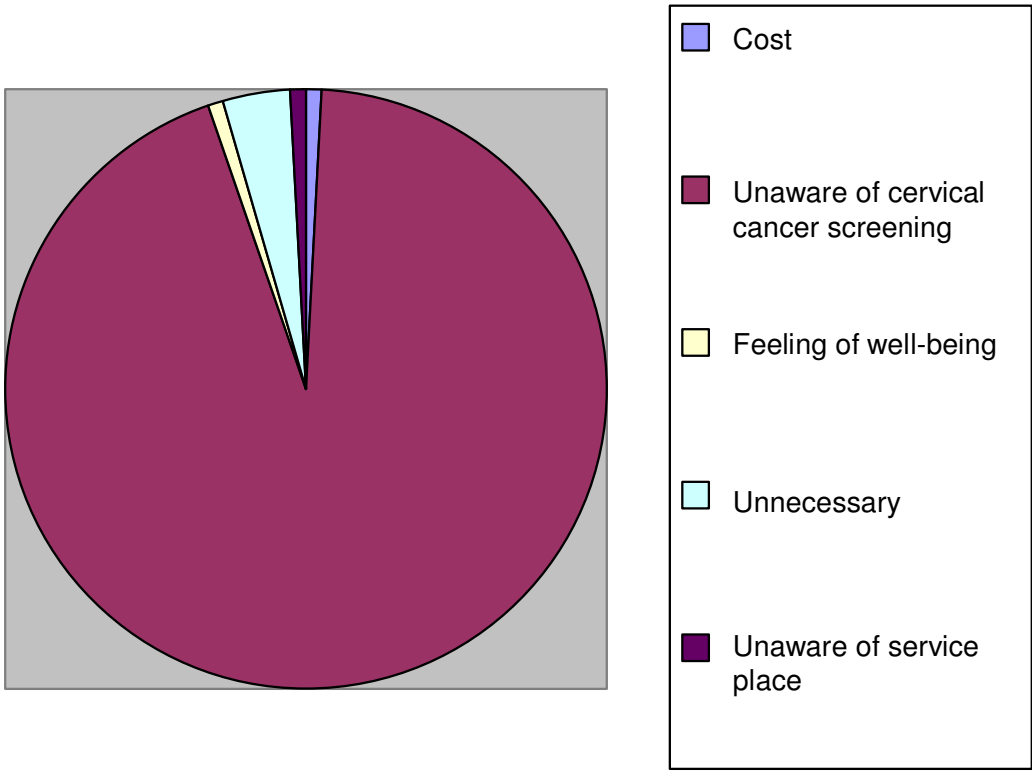

Figure 1. The various reasons why the women did not do cervical screening.

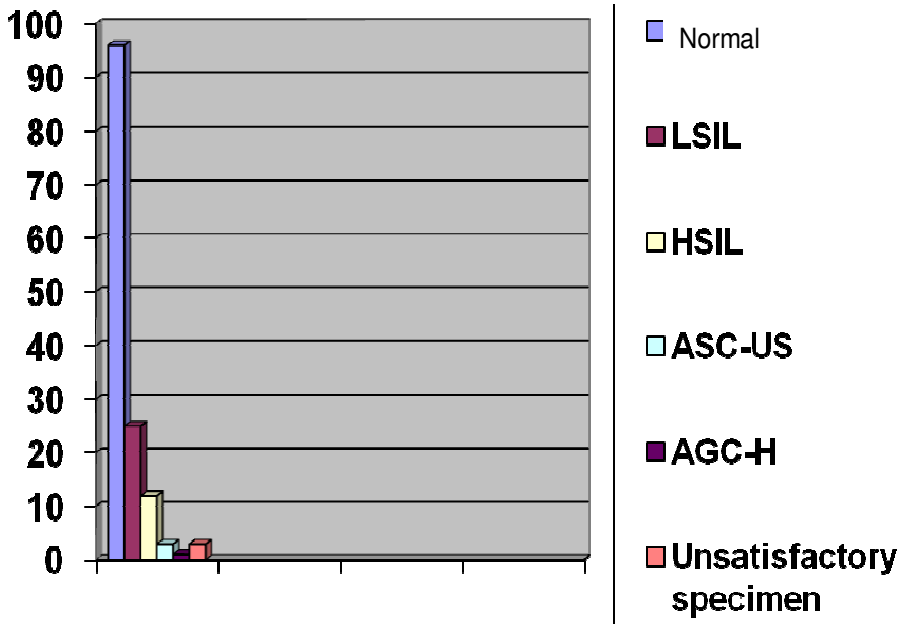

Figure 2. The result of the cervical smears according to 2001 Bethesda system

was detected more among the women with suspicious cervical appearance on visual inspection (X^2=10.45; Fisher exact = 0.003) as shown in Table 2.

DISCUSSION

The women who participated in this prospective study

Table 2. Cross tabulation of the visual appearance of the cervix and the cervical smear test result.

Variable	Cervical smear result		X^2	
Cervical appearance on visual inspection	Normal	Abnormal		
Normal	93	33		
Suspicious	3	8	10.45	F = 0.003*
Total	96	41		

were predominantly young with about 60% of them being less than 35 years. This is a reflection of the age composition of the women attending the various recruiting clinics. This reveals one of the limitations of hospital based screening since most of the women participating in the screening would be within the above age range. It is pertinent to note that this young age is the ideal age to start screening since some studies have shown a peak age specific prevalence of CIN at 35 years (Obafunwa et al., 1999; Apgar et al., 2001; Sharp et al., 1987). More so since the precursor lesion start much earlier than the onset of the cancer then starting cervical cancer screening at young age could be an acceptable argument. Age is the most easily identifiable risk factor for the development of cancer of the cervix with women aged 45years to 70 years having the highest risk of developing and dying from cervical cancer (Saslow et al.,2002). It has also been noted that the age of the target population is an important determinant of the performance of the different cervical cancer screening test (Syrjanen et al., 2008). On the other hand considering the paucity of funds and the demands of competing health needs particularly infectious diseases such as Malaria, HIV, tuberculosis and maternal and infant mortality contending for scarce resources starting cervical cancer screening earlier than 30 years may not be cost effective in our environment. It may lead to repeated screening, over treatment of conditions which will not progress rapidly to cancer and also which can be screened in women 35 years and or above. It has been noted even in developed world that screening below 25 years is not cost effective in reducing deaths from cancer of the cervix (RCOG, 2006). One other problem that could arise from starting earlier than 30 years to screen is how to make the patient to appreciate the need for long term follow up either before or after treatment. For some patients it may be difficult for them to understand that they have a lesion which is between cancer and non-cancer and which no person can predict with certainty the course it will take. It can also lead to an over treatment of case which would ordinarily not have progressed to cancer.

Cytology based screening program which was introduced over 5 decades ago have been very difficult to establish and implement in large scale in developing countries and this has a little effect on the incidence of the cervical cancer and mortality (Bhatla et al., 2004). The cervical cancer prevention effort in Nigeria and other sub Saharan Africa is based on opportunistic screening. Therefore there is the need to establish a simple, cost effective, reliable and acceptable alternative screening method. In this study visual inspection of the cervix was found to be significantly related to Pap smear in the detection of abnormal cervical lesion. Most of the abnormal smear detected by the Pap test was among the women who had suspicious cervical appearance on visual inspection. This is very interesting because as collaborated in other studies no special skill or extensive training is required before the widespread commencement of visual inspection of the cervix especially in resource poor nations (Ahmed et al., 2008).

The finding that about 25% of the abnormal Pap smear result is from cervix of normal appearance shows that visual inspection has a lower sensitivity and specificity than Pap smear in the detection of abnormal cervical smear. Although visual inspection with acetic acidic (VIA) and visual inspection with Lugos iodine (VILI) have been shown to be cost –effective, improve on the sensitivity and specificity of visual inspection of the cervix in detecting abnormal cervical pathology (Bhatla et al., 2007; Bhatla et al., 2004) these chemicals may not be readily available in rural areas inhabited mostly by women of low socioe-conomic class who are usually over burdened by this disease.

The acquisition of these chemicals will also add to the cost of the test. Visual inspection of the cervix with an unaided eye can be performed by doctors, nurses and paramedical health workers. Most importantly, it can also be done in primary health care centers were there may be no doctors and which are very close to the rural women. Women with suspicious cervical appearance can be referred for further evaluation and management. Given the high number of women who will require Pap smear screening, VI may be used as a triage to women who will be referred for further management. With the controversy on the cost effective age at which to commence Pap smear visual inspection with unaided eye (VI) can be used to follow up the women till the age of 35 years when they could be enrolled into the routine Pap test program. This conservative approach will eventually improve the awareness of the women about cervical cancer. The extension of this VI inspection to the rural populace will also help send the campaign against cervical cancer closer to the rural women who are the women at the greatest risk. This will ultimately improve

the utilization of cervical cancer prevention services. It is our belief therefore that VI of the cervix with unaided eye could be a credible adjunct and or alternative to Pap smear in cervical cancer prevention in rural areas.

LIMITATION OF STUDY

This is a hospital based study. The study sample is small and the classification of the cervix into normal and suspicious is subjective. Further studies are needed to further evaluate correlation between visual inspection of the cervix with unaided eyes and Pap smears result.

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