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THE CERVICAL SMEAR PATTERN IN PATIENTS WITH CHRONIC PELVIC INFLAMMATORY DISEASE

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ABSTRACT

Background: Cancer of the cervix is the commonest malignancy of the genital tract in Nigeria. In an atmosphere of opportunistic screening due to lack of a national screening programme, studies are needed to determine patients at risk of premalignant lesions of the cervix.

Goal: To determine cervical smear pattern in patients with chronic pelvic **i**nflammatory disease and investigate the potential of chronic pelvic inflammatory disease as a risk factor to cervical dysplasia.

Study Design: Case- control study.

Setting : Department of Obstetrics and Gynaecology, Ahmadu Bello University Teaching Hospital Zaria, Nigeria.

Subjects: Three hundred and sixty-nine premenopausal women attending the gynaecologic and family planning clinics of Ahmadu Bello University Teaching Hospital Zaria, Nigeria from January to December 2000.

Results: Of the 369 women that had cervical cytology by Pap smear, 163 (44%) had chronic pelvic inflammatory disease(cases) while 206 (56%) were non chronic PID patients (control). There was no statistical significance in the mean age between the two groups. The mean age at first coitus and marriage of all the women were 17.92.7 years and 18.5 3.4 years respectively. There were 52 dysplastic smears encountered, giving a prevalence rate of 140/1,000 or 14% for Cervical Intraepithelial Neoplasia. There were higher cases of dysplasia in the chronic PID group than in the control and this differences was statistically significant ($p<0.05$). Other risk factors to dysplasia identified include high parity (>4) and age of first coitus less than 20 years. Only 10% of all the women screened were aware of both cervical cancer and Pap smear.

Conclusion: Women with chronic pelvic inflammatory disease are probably at higher risk of developing cervical dysplasia than women without chronic pelvic inflammatory disease.Cervical cancer screening programmes should be intensified in chronic pelvic inflammatory disease patients. However, further studies are needed in our setting to verify the association between pelvic inflammatory disease and cervical dysplasia.

Key Words: Cervical smear, pelvic inflammatory disease, cervical cancer *(Accepted 3 July 2008)*

INTRODUCTION

Cervical cancer continues to be an important women's health problem throughout the world. Each year nearly 400,000 new cases occur almost 80% in women living in developing countries and at least 200,000 die of the disease.[1,2] Globally, cervical carcinoma is the second most common cancer in women.[2]In Nigeria and indeed in many parts of sub-Saharan Africa, cervical carcinoma is the commonest genital tract cancer.[3-6] It accounted for over 60- 80% of all gynaecological cancers,[3-6] and its incidence is estimated to be about 25/100,000.[5] Reports from Europe and America revealed the effectiveness of cervical smear in the reduction of the incidence and mortality rates from invasive carcinoma of the cervix by the detection of precancerous lesions represented by cervical intraepithelial neoplasia, and offering appropriate management.[7,8] In many parts of developing countries cervical cancer rates continue to remain unacceptably high due to lack of effective screening programmes designed to identify premalignant lesions. Report from various geographical regions of Nigeria showed the prevalence rate of CIN to range from 77-120 per 1,000.[9-11] Many workers in Nigeria have advocated for a national screening policy/ programme even if it is a once in a life time screening policy[5,12-14]. At present, opportunistic screening is the rule in many centers offering cervical screening services, thus identifying patients/clients at risk of cervical dysplasia will certainly be cost effective. With the increasing rates of

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sexually transmissible infections, unsafe abortions and puerperal genital infections in many parts of sub-Saharan Africa including Nigeria[15], pelvic inflammatory disease (a common sequelae of the above conditions) will continue to be a public health problem in Africa. Also with the polymicrobial nature of pelvic inflammatory disease (PID) including viruses such as Human Papilloma Virus (HPV), women with PID are theoretically at risk of dysplasia/carcinoma. This study aimed to document the pattern of cervical smear in patients with chronic PID and to investigate the potential of chronic pelvic inflammatory disease as a risk factor to cervical dysplasia.

MATERIALS AND METHOD

This study was a case- control study (prospective)design that took place from January to December 2000. Consecutive patients/clients within the reproductive age, attending the gynecologic and family planning clinics in Ahmadu Bello University Teaching Hospital Zaria, Nigeria (ABUTH) during the period of study were recruited. Patients with chronic PID were considered 'cases' and those without chronic PID were considered as 'control'. For the purpose of this study, chronic pelvic inflammatory disease was defined and identified as either of the following:-

(1) Clinically: History of pelvic pain for at least three months duration associated with vaginal discharge and with or without deep dyspereunia, cervical motion or adnexeal tenderness.

(2)Laparoscopic or Laparatomy evidence of PID, characterized by peritubular and or periovarian adhesions. Patients with evidence of PID at caeserean section or laparatomy for ectopic gestation, smear was done after a minimum period of 12 and 6 weeks postoperative respectively, to allow for complete resolution of the effects of pregnancy.

(3)Radiological (Hysterosalpingogram) evidence of PID such as hydrosalpinx. Patients who had acute PID, postmenopausal, yet to commence coitus, and those with suspicious lesions on the cervix or frank carcinoma of the cervix were excluded from the study. Equally excluded from the study were patients who were pregnant, and patients on post molar surveillance. Smear from patients with incomplete or missed abortion were taken after six weeks post evacuation.

The authors using a standardized questionnaire interviewed all participants. Clinical and socio-biological parameters such as age, parity, age of first coitus and marriage, type of family, number of sexual partners and social class were noted. Awareness of cervical carcinoma and Pap smear were also noted. Each of the patient/client were then counseled for cervical cytology. Two smears were taken from each patient. Each patient was placed in the dorsal position on an examination couch.An unlubricated bivalve speculum was inserted into the vagina and a cervical cytology specimen was obtained with a wooden Arye's Spatula, and immediately fixed in equal parts of 95% ethyl alcohol and ether. The smears were then stained by routine Papanicolaou technique, using Haris Haematoxylin, orange G and EA50. The stained slides were dried in alcohol, cleared in xylol and mounted in DPX. An experienced consultant histopathologist (the fourth author) interpreted all the smears. The results were grouped into normal, inflammatory, CIN I/ HPV infection, CIN II, CIN III, carcinoma in-situ, or invasive carcinoma. Inadequate smears were repeated after at least two weeks from the initial smear, and the results grouped accordingly.

Data Analysis

The data was analyzed using EPI-INFO version 6 statistical software. P value for significant was set at <0.05

RESULTS

From January to December 2000, 369 patients/clients attending the gynecologic and family planning clinics of Ahmadu Bello University Teaching Hospital Zaria satisfied the selection criteria and were screened for cervical cancer by Papanicolaou smear. One hundred and sixty-three patients (44.2%) had chronic pelvic inflammatory disease (PID), while 206 (55.8%) did not have chronic PID patients (control). Of the 163 patients with chronic PID, 23.9% were confirmed by laparoscopy/Laparatomy,3.1% by hysterosalpingograph while 73% were diagnosed based on clinical grounds only.

The socio-demograhic Characteristics were as follows: The age range of the women screened was 14-52 years with a mean age of 31.7 years±7.6 years. The mean age for the chronic PID group was 30.8±7.1 years, while that of the control group was 32.3±8.0 years. The difference in the mean value of the two groups is not statistically significant (P value= 0.490).

Eighty-nine percent of the women screened were married while six, three and two percent were single, divorced and widowed respectively. Ninety-four percent of all the women screened were married at some point. The minimum age at first marriage was 12 years and maximum was 35 years, with a mean age at first marriage of 18.5±3.4 years. The mean age of first marriage for the subjects (chronic PID group) was 18.4 years while that of control was 18.6 years. The difference was not significant (P value=0.345). 73% of the women screened were married once while 17.3% were in their second order of marriage. Only 9% had married thrice or more. 38.5% of the married women were in polygamous union. The mean age at first coitus in the study population was 17.9±2.7 years. 252

women (68.3%) commenced coitus before the age of 20 years. The minimum age at first coitus was 12 years and the maximum age was 33years. Seventy-three percent of the women screened had a single sexual partner while 27% had two or more sexual partners. This is against a background polygamous rate of 38.5% encountered in this study. Only 10% of women in this study belonged to high social class that is tertiary education and (or their spouses) skilled occupation while 38% and 52% belong to the middle and low social class respectively. Sixty-eight percent of the women screened were of parity four or less while 32% were grandmultiparas. Of the 369 women screened, only 30% had ever heard of cervical cancer and a mere 11% were even aware of Pap smear for cervical cancer screening. The hospital was the main source of their awareness, accounting for 57%, followed by friends and or relations (25%). Only 13% of women derived their knowledge of cervical cancer/Pap smear from the electronic /print media.

Cervical Smear Pattern

Table 1 and 2 shows the age group distribution with all Pap smear result and specifically for CIN respectively. There were 52 dysplastic smears encountered in this study giving a prevalence rate of 141/1,000 or 14% and a mean age of 37.5± 8.3yrs years for CIN. There were more dysplastic smears in cases than in control in all the age groups and this was statistically significant. The 50-59 years age group shows the highest prevalence rate (60%). Table3 and 4 reveals all Pap smears and dysplastic smears distribution among 'cases' and 'control' respectively. Inflammatory, HPV associated changes / dysplasia were higher in the chronic PID group than the control. This difference was significant ($p<0.05$). Of the 52 dysplastic smears, 33 (63.5%) were in patients with chronic PID while 19 (36.5%) were in the control group. This difference was statistically significant (X^2=29.01, df=4, P value= 0.0025, Odds Ratio= 1.7). Forty-five cases of CIN (86.5%) were seen in women who had their first coitus before 20 years(n=252) while 7 or 18.5% were seen in women who had their first sexual experience at or above 20years(n=117). This difference in proportion was statistically significant (X^2=27.8, df=3, P value=0.013). Fifty-eight percent of women with dysplasia were of parity >4(n=118) while the remaining 42% or 22 were of parity 4(n=251). The difference is statistically significant (X^2= 31.52, df=3, P value= 0.004).

Table1: **Age Group Distribution of Women Screened with Pap smear Results.**

Age group(years)	Normal/Negative	Inflammatory	CIN I/HPV	CIN II	CIN III	TOTAL
≤19	6	11	-	-	-	17(4.6%)
20-29	79	50	10	1	1	141 (38.2%)
30-39	68	56	18	5	1	148 (40.1%)
40-49	21	24	7	2	4	58 (15.7%)
50-59	-	2	3	-	-	5 (1.3%)
Total	**174**	**143**	**38**	**8**	**6**	**369**

X2= 32.67 df=4 P value = 0.157
CIN = Cervical intraepithelial Neoplasia
HPV = Human Papilloma Virus.

Table2:**Age Specific Group Distribution of Dysplasia (CIN) between Cases and Controls.**

Age Group (years)	Dysplastic smears		Total
	Cases	Control	
≤19	-	-	-
20-29	7	5	12
30-39	15	8	23
40-49	9	5	14
50-59	2	1	3
Total	**33**	**19**	**52**

X2= 27.88 df=4 P value = 0.0035
CIN = Cervical intraepithelial Neoplasia.

Table 3:**Pap smear Result in Patients with Chronic Pelvic Inflammatory Disease and Control.**

Smear Result	Chronic PID	Non-chronic PID (Control)	Total
Normal/Negative	50	124	174
Inflammatory	80	63	143
CIN I /HPV Infection	23	15	38
CIN II	6	2	8
CIN III	4	2	6
Total	**163**	**206**	**369**

X^2= 39.59,df=3, P value=0.0015
HPV = Human Papilloma Virus
CIN = Cervical intraepithelial Neoplasia
PID = Pelvic inflammatory disease.

Table 4:**Distribution of Cervical Intraepithelial Neoplasia (Dysplasia) Between Patients with Chronic Pelvic Inflammatory Disease and Control.**

CIN	Chronic PID	Non-chronic PID (control)	Total
CIN I	23	15	38
	(69.7%)	(78.9%)	(73.1%)
CIN II	6	2	8
	(18.2%)	(10.5%)	(15.4%)
CIN III	4	2	6
	(12.1%)	(10.5%)	(11.5%)
Combined CIN	33	19	52
	(63.5%)	(36.5%)	

X^2=29.01, df=4, Pvalue= 0.0025
CIN = cervical intraepithelial Neoplasia
PID = Pelvic inflammatory Disease

DISCUSSION

The prevalence rate of 141/1,000 or 14% Cervical Intraepithelial Neoplasia encountered in this study is remarkable. It is much higher than the rate of 77/1,000 reported from Jos,[10] 120/1,000 reported from Ondo,[16] 110/1,000 reported from Enugu[11] and 43.5/1,000 from Yaounde, Cameroon[17] and 11.8% in Ibadan.[9] This may partly be due the small sample size in this study, exclusion of postmenopausal women in this study and partly because of the different socio-demographic structure particularly the high polygamous rate of 39% in our study population.The significant differences in the prevalence of dysplasia among patients with chronic pelvic inflammatory disease compared to those without chronic PID, revealed the potential of chronic PID as a risk factor to cervical dysplasia. This finding seems to be in agreement to the observation of Anorlu and colleaques[18] that prevalence of abnormal cervical smears is high in patients with genital tract disease. It is probable that PID patients are more likely to be infected with Human papilloma virus than non-PID patients. Also the cervicitis which is usually associated with PID, may damage the defensive barrier mechanisms of the cervical epithelium and thus faclitate HPV associated changes resulting in dysplasia /carcinoma. Hence screening programmes in this group of patients should be intensive. Further studies are needed to determine the true association between PID and cervical dysplasia. The higher number of cases of dysplasia among grandmultiparous patients than among patients with low parity (4), observed in this study is consistent with established data.[19,20] Also consistent with existing knowledge is the observation of higher cases of dysplasia in patients who commenced coitus before 20 years than in patients who had their first coitus at or after 20 years.[19,20] The finding of low awareness of Pap smear/cancer of the cervix and utilization of screening services in this study is similar to established data in Nigeria.[6,18,21-23] The need for intensive and sustained public health education on cervical cancer and its prevention need not be overemphasized.

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