
CHARACTERISTICS OF ATTENDEES WITH ABNORMAL PAP SMEAR AT COLPOSCOPY IN A HOSPITAL IN JOS AND THE DIAGNOSTIC CORRELATION BETWEEN COLPOSCOPIC FINDINGS AND HISTOLOGIC DIAGNOSIS

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ABSTRACT

Background: Premalignant lesions of the cervix are of global concern. Cervical cancer is the commonest female genital tract malignancy in Nigeria.

Aim: This was to analyse the characteristics of women who presented for colposcopy with abnormal Pap smear result and to determine the diagnostic correlation or agreement between colposcopy and histopathology.

Methodology: The medical records of 111 women with abnormal Pap smear who presented for colposcopy at the cervical cancer screening Unit of Jos University Teaching Hospital (JUTH), Jos between January 2014 to December 2016 were retrieved. The sociodemographic and clinical characteristics, cytology, colposcopy and histology diagnosis were extracted from the records and analysed using EPI INFO 3.5.4 CDC Atlanta, USA.

Results- The medical record of 111 women were retrieved. The average age of the women in this study was 46.5 years with a modal age range of 41-50 years. Majority of the women had formal education with 58% having up to tertiary education. Most (54.0%) of the women were civil servants, 4.6% traders, 33.3% and 8.1% were unemployed and retired respectively. The risk factors for abnormal cytology studied during the study period include early coitache (54.1%), multiple sexual partners (25.2%), use of oral contraceptive pills (29.9%). High Grade Squamous Intraepithelial Lesion (HSIL) accounted for 71.2% of abnormal cytology results. Women with Low Grade Squamous Intraepithelial Lesion on two consecutive occasions (LSILX2) accounted for 20.7%, ASCUS, ASC-H constituted the remaining 8.1%. High Grade Cervical Intraepithelial Lesion (HGCIN) was the colposcopy diagnosis in 36.0% of women, normal was in 27% and LGCIN was in 15.3% of the women reviewed. In this study 27.4% of the women had histopathologic diagnosis of cervicitis, 21.2% had CINIII, 20.2% had CIN II and 4.0% had invasive cancer. The overall correlation between colposcopy and histology diagnosis was 50.5%. Colposcopy diagnosis was underestimated in 33.3% of cases and overestimated in 16.2% of cases after histology.

Conclusion- The average age of the women with abnormal Pap smear who presented for colposcopy was 46.5 years and were mostly women with formal education and employed. Early coitarche and multiple sexual partners were the risk factors for premalignant lesion of the cervix present in these women. The most common indication for colposcopy was HSIL and the most common colposcopy impression was HGCIN. Most of the cervical biopsies sent for histology turned out to be cervicitis. The rate of underestimation was higher especially for HGCIN. Only half of the colposcopic diagnosis correlated with histology. We suggest that biopsies should be performed when colposcopy is abnormal. Continuous retraining of colposcopist and regular auditing of colposcopy services will improve its performance in cervical screening.

KEY WORDS- Correlation, Abnormal Pap Smear, Colposcopy, Histology, Over diagnosis, under diagnosis

BACKGROUND

According to the World Health Organization cervical cancer is a leading cause of death among women.¹ It was stated that in 2020 about 604 000 cases were diagnosed and about 342 000 died from the disease and most of these deaths are in low income countries.¹ It is the commonest female genital tract malignancy in Nigeria.^{2,3} Reports from Ibadan Cancer Registry showed that cervical cancer is the most common cancer among women after breast cancer in Nigeria.⁴ According to the GLOBOCAN report of 2012 it accounted for 11.5% of all mortalities from cancer.⁵ Despite the associated morbidity and mortality associated with cervical cancer Nigeria sadly has no cervical screening policy or a population based screening programme. Most of the screenings done are opportunistic and sparsely distributed. Cervical cancer is preceded by a long preinvasive stage.⁷ Efforts at preventing it have centred on identifying and treating preinvasive lesions of the cervix.⁸ Available screening methods include visual inspection which can be aided with acetic acid or Lugol's iodine or unaided. Pap smear (cytology) and Human Papilloma Virus (HPV) DNA testing are other screening modalities.^{2,8} The introduction of cytological screening and subsequent colposcopy for identification of premalignant lesions has led to a significant reduction of the incidence.⁹ Colposcopy is a non-invasive procedure that examines the illuminated magnified view of the female lower genital tract. It determines the location, size and extent of cervical lesions. Because cervical cytology is less sensitive and associated with a high false negative rate, the value of colposcopy has been recognized, mainly in the reevaluation of patients with abnormal cervical smears. There is also poor compliance of patients with abnormal Pap smear for follow up.⁷ It has been stated that apart from cervical smears, colposcopy should be offered as diagnostic

method in all the patients with unhealthy cervix.⁸ Colposcopy allows identification, localization and delineation of premalignant lesions of the cervix and directs biopsy.¹¹

A varied correlation between colposcopy and histology has been reported.¹² A good agreement/correlation between colposcopy and histology has been demonstrated and this translates to improved detection of premalignant and malignant cervical lesions during colposcopy.¹³ Overestimated colposcopy diagnosis has been stated to lead to unnecessary cervical biopsy.¹² Expertise of the operator, interpretation and sampling errors have been recognized as common causes of disagreement between colposcopy and histology.^{12,14}

Pap smear has remained an important tool in the screening of cervical cancer.⁸

The aims of this study were to determine the clinical characteristics of women with abnormal Pap smear who presented for colposcopy, colposcopy and histology diagnosis, and to determine the correlation or agreement between histology and colposcopy diagnosis.

METHODOLOGY

This was a retrospective study of women with abnormal Pap smear who presented for colposcopy at the Cervical Cancer Screening Unit (CCU), Department of Obstetrics and Gynaecology of Jos University Teaching Hospital, Jos, Plateau State, North Central Nigeria. This was over a three-year period (January 2014-December 2016).

A proforma was used to extract information from the colposcopy register in the centre, case records of the women and histopathology register. The information extracted included the clinical characteristics of the patients, cytology diagnosis, colposcopy diagnosis and histologic diagnosis of cervical biopsies.

The colposcopies were performed by any of the Gynaecologists trained in

colposcopy. The colposcopies were all performed adhering to the routine pattern using 5% acetic acid and iodine. The colposcopic diagnosis of cervical neoplasia depended on the recognition of four main features: intensity of acetowhitening, margin and surface contour of the acetowhite areas, vascular features (punctuations and mosaics), and colour changes after iodine application.¹⁵ The colposcopic impression was considered Low Grade CIN (LGCIN) were the acetowhite epithelium is snow white, flat surface with irregular feathered demarcation; vessels are fine, irregularly shaped and of uniform calibre. High grade CIN (HGCIN) lesions are those with dull and oyster white acetowhite epithelium with irregular contour and sharp straight line demarcation; the vessels are coarse dilated with increased inter capillary distance, they may be comma, corkscrew or spaghetti shaped. Biopsies were obtained from the worst of all abnormal areas under colposcopic guidance. Biopsy specimens were immediately fixed in formalin and sent to the histopathology department for processing and reporting. The colposcopy was adjudged satisfactory when the whole (Transformation Zone) TZ was visualized. Where the examination is unsatisfactory, it was repeated at a later date or endocervical curettage is performed and the sample is sent for histology. Where colposcopy was normal or unsatisfactory biopsies were not taken for histology. Interventions were offered based on results of evaluation. Histology was considered the gold standard in this study.

Data were analysed retrospectively using EPI INFO 3.5.4 CDC Atlanta, USA. Quantitative variables were analyzed by mean and standard deviation and qualitative variables by percentage and frequency. Histology and colposcopy impressions that were inflammatory and polyps were grouped as benign. LGCIN corresponded with (Cervical Intraepithelial Neoplasia) CIN I and HGCIN

corresponded with CIN II/CIN III/ Carcinoma Insitu (Ca Insitu). Correlation was defined as the proportion of colposcopic diagnosis that was in exact agreement or concordance with histologic diagnosis. Over diagnosis is when histologic diagnosis is higher and worse than colposcopic diagnosis while under diagnosis is when histology diagnosis is milder or less severe than that by colposcopy.

RESULTS

During the period reviewed, a total of 155 women had colposcopy due to abnormal Pap smear result. A total of 111 case folders were retrieved and analyzed. This gave a retrieval rate of 71.6%. The average age of the women studied was 46.5 ± 9.6 with a modal (45.9%) age range of 41-50 years. Most of the women in this study had a parity of <5(60%) and had tertiary level of education. See table 1

Table 2 shows the other risk factors for abnormal Pap smear present in the study population. Early coitarche featured prominently (54.1%) as a risk factor for abnormal Pap smear. Others include use of oral contraceptive pill (29.9%), multiple sexual partners (25.2%)

From Figure 1 71.2% of women with abnormal Pap smears who presented for colposcopy within the study period had HSIL. This was closely followed by women who had LSIL on two consecutive occasions which accounted for 20.7%.

Of the 111 women with abnormal Pap smear who had colposcopy, HGCIN was the most common diagnosis (48.6%). Low grade CIN accounted for 19.8% of colposcopic diagnosis. Other colposcopic diagnosis is shown in Table 3 below.

Table 4 shows the histologic diagnosis of the cervical biopsies. The histology report of 27.4% of the women who had colposcopic guided biopsies revealed cervicitis. This was followed by CIN III

which accounted for 21.2% of the histology diagnosis. Cervical biopsies were normal in 10.1% of all the samples sent for histology.

Table 5 shows the correlation between colposcopic and histologic diagnosis. Of the 20 patients with benign lesions at colposcopy whose samples were sent for histology, 13 cases correlated with colposcopy while 2 cases were over-diagnosed as CIN II/CIN III/Ca Insitu. There was diagnostic correlation on

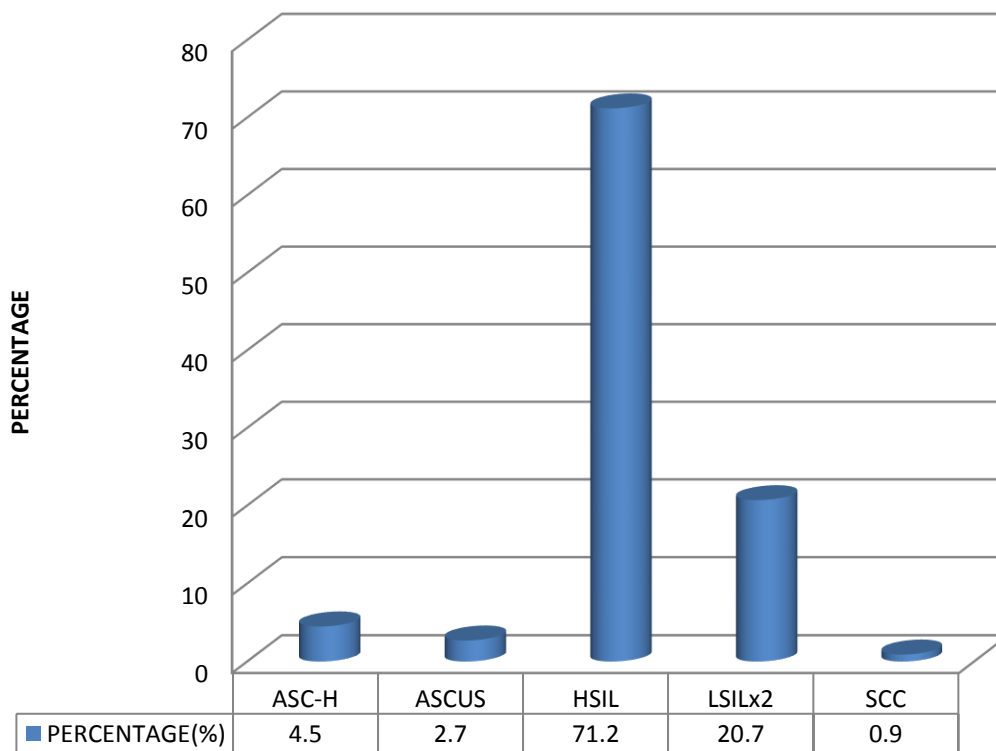
histology in 30 out of the 54 cases of HGCIN diagnosed on colposcopy. Three, 6 and 14 cases of HGCIN were wrongly diagnosed and underestimated as normal, CIN1 and benign on histology respectively. All the cases of invasive cancer diagnosed on colposcopy were confirmed as malignancies on histology. The overall correlation between colposcopy and histology was 50.5%. Of the 99 histologies 33.3% and 16.2% of cases were underestimated and overestimated respectively.

Table 1: Demographics of study population

VARIABLE	FREQUENCY	PERCENTAGE (%)
Age Group (Years)		
20-30	3	3.6
31-40	26	23.4
41-50	51	45.9
51-60	21	18.1
61-70	10	9.0
Mean age 46.5±9.6		
Parity		
<5	67	60
≥ 5	44	40
Educational Status		
Non	22	19.8
Primary	11	9.9
Secondary	20	18.0
Tertiary	58	52.3
Marital Status		
Married	103	92.8
Single	8	7.2
Occupation		
Trading	5	4.6
Civil Servant	60	54.0
Unemployed	37	33.3
Retired	9	8.1

Table 2: Other risk factors for abnormal Pap smear

VARIABLE	FREQUENCY	PERCENTAGE (%)
Alcohol		
Yes	22	19.9
No	89	80.2
Tobacco use		
Yes	1	0.9
No	110	99.1
HIV Infection		
Yes	10	9.0
No	101	89.2
Sexual Partners		
1	83	74.8
>1	28	25.2
Coitache		
≤19 yrs	60	54.1
≥20 yrs	51	45.9
Oral contraceptives		
Yes	31	29.9
No	80	72.1



ASCUS= Atypical Squamous Cell of Undetermine significance; ASC-H= Atypical Squamous Cell – High grade lesion can't be excluded; LSILX2= Low Grade Squamous Intraepithelial Lesion on 2 occasions; HSIL= High Grade Squamous Intraepithelial Lesion; SCC= Squamous Cell Carcinoma

Figure 1- Abnormal Pap smear result at presentation

Figure 1- Abnormal Pap smear result at presentation

COLPOSCOPY DIAGNOSIS	FREQUENCY	PERCENTAGE[%]
Normal	11	9.9
Low grade CIN	22	19.8
High grade CIN	54	48.6
Invasive Cancer	3	2.7
Inflammation	10	9.0
Cervical Polyp	6	5.4
Leucoplakia	4	3.6
Unsatisfactory	1	0.9
TOTAL	111	100

CIN=Cervical Intraepithelial Neoplasia

Table 4- Histology Diagnosis

HISTOLOGIC DIAGNOSIS	FREQUENCY	PERCENTAGE [%]
Normal	10	10.1
Cervicitis	27	27.4
CIN I	10	10.1
CIN II	20	20.2
CIN III	21	21.2
Carcinoma Insitu	4	4.0
Squamous Metaplasia	1	1.0
Invasive Ca	4	4.0
Cervical Polyp	2	2.0
TOTAL	99	100

CIN=Cervical Intraepithelial Neoplasia; Ca= Cancer

Table 5- Agreement between colposcopy and Histologic diagnosis

Colposcopy Diagnosis	Histological Diagnosis					Total
	Normal	Benign	CINI	CINII/CIN III/Ca Insitu	Invasive	
Benign	5(5.0)	13(13.1)	-	2(2)	-	20
LGCIN	3(3.0)	2(2.0)	4(4.0)	13(13.1)	-	22
HGCIN	3(3.0)	14(14.1)	6(6.1)	30(30.3)	1(1.0)	54
Invasive	-	-	-	-	3(3.0)	3
Total	11	29	10	45	4	99

CIN= Cervical Intraepithelial Neoplasia; Ca Insitu=Carcinoma Insitu;LGCIN=Low Grade Cervical Intraepithelial Neoplasia; HGCIN= High Grade Cervical Intraepithelial Neoplasia

DISCUSSION

The average age of the women who presented for colposcopy during the study period was 46.5 years, the modal age range was 41-50 years. This finding is similar to findings reported from a related studies.^{16,17,18,19} The age of 46 has been reported as the age for the second peak of prevalence in some countries.^{20,21} In southern Nigeria the prevalence of oncogenic HPV peaks at 15-29 years and 60-69 years.^{22,23} However, the average age of women who presented for colposcopy in Kano, Nigeria was 36 years which corresponded with the age of first peak of incidence of cervical cancer in Nigeria.¹⁰ Only 19.8% of the women in this study did not have formal education. Majority of the women had up to tertiary education. In a study to determine the acceptance of colposcopy, majority (41.7%) of the women who accepted colposcopy had tertiary education compared to those who rejected it.¹⁷ High level of education and social class has been shown to positively influence utilization of cervical cancer screening services.²⁴ A meta-analysis revealed that the odds of having cervical screening is 96% higher in women with the highest level of education that in those with a lower level of education.²⁵ It is apparent from this that to eliminate the inequalities in cervical screening policy makers should put policies in place to promote education of women to the highest level.²⁵ Also only 25.2% of the women in this study did not have a source of livelihood. Chigbu et al in their study reported that more employed women accepted colposcopy than the unemployed though not statistically significant.¹⁷ Empowered women have stronger self-efficiency and believe that cervical screening makes them more in control of their bodies.²⁶ Low socioeconomic status may increase sexual promiscuity and puts a strain on moral values.²⁷ Other prominent risk factors for cervical dysplasia in this study include early coitarche (54.1%), oral contraceptive pill utilization (29.9%), and multiple sexual partners (25.2%). In a study in Makurdi Nigeria, 62.5% of women with abnormal Pap smear attained coitarche at or earlier than 19 years of age.²⁸ Human Papilloma Virus infection, the primary aetiologic agent of cervical cancer increases with early coitarche.^{8,28} The transformation zone of the cervix is particularly susceptible to HPV infection.²⁹ Also there is no secondary immune response to HPV during this early sexual debut.²⁹ On the other hand majority of

the women with abnormal pap smear in this study did not use OCPs. The association of the use of OCP with cervical cancer has been the subject of many epidemiological studies.²⁸ Fariba et al in their study did not find any association between the use of OCPs and cervical cancer.³⁰

During the period reviewed, HSIL accounted for 71.2% of abnormal cytology result at presentation for colposcopy. This was followed by women who had 2 consecutive LSIL (20.70%). However in a similar study in Kano, LSIL was the commonest cytology result at presentation for colposcopy.¹¹³ Benus et al in Turkey reported ASCUS as the commonest (6.7%) abnormal smear results at colposcopy.³¹ The higher incidence of HSIL than LSIL in this study may be due to the fact a woman will have to have 2 consecutive LSIL result before referral for colposcopy while a single cytology result of HSIL is an indications for colposcopy in our centre.

In this study HGCIN was the most common (38.7%) colposcopy diagnosis, this was followed by normal colposcopy and LGCIN. In a similar study in Kano, Nigeria normal cervix and LGCIN were however the most common colposcopy diagnosis.¹³ Cervicitis was the most common histologic diagnosis in this study. This histologic finding is similar to the finding in a prospective randomised study on limits of colposcopy and histology.³² This was followed by CINIII and CINII which accounted for 21.2% and 20.2% of histologic diagnosis respectively.³² This is different from a study on the experience with colposcopy at a Tertiary hospital in Kano, Nigeria where the most common histology diagnosis was CINI. The difference in the colposcopy and histology diagnosis in this study and the studies mentioned above may be attributable to the difference in types of abnormal Pap smear sent for colposcopy. While in the centres where the above studies were done women with a single LSIL are sent for colposcopy, in our centre women are sent for colposcopy if they have 2 consecutive LSIL.

The diagnostic accuracy (agreement) of colposcopy with histology in this study was 50.5%. This was better than that of other studies which reported 32-37%.^{33,34} Higher diagnostic correlations of 51.9%, 87.5%, and 92.0% have however been reported.^{13,35,36} These studies however included patients that had no epithelial cell abnormalities. Colposcopy wrongly diagnosed 49.5% of premalignant lesions of the cervix. Out of this number 16.2% cases were over diagnosed and 33.3% of cases were underdiagnosed. From

this study, colposcopy was better at diagnosing HGCIN and invasive cancers as over half of HGCIN diagnosed at colposcopy was confirmed at histology and all invasive cancers diagnosed at colposcopy was confirmed with histology. Only 4 of the 22 cases of LGCIN were correctly diagnosed in this study with 13 cases being over-diagnosed as high grade lesion on histology. It has been stated that colposcopy more often overestimate severity of lesions.³² Overestimated colposcopy diagnosis leads to unnecessary cervical biopsy, however the benefits of early treatment overcomes the risk of the biopsy process.¹³ Sampling errors and interpretation have been stated as common causes of disagreement. The threshold between normal and CINI is narrow and that has been stated as a source of disagreement.¹² Also experience plays a major role in a colposcopist ability to grade abnormal cervical lesions, therefore a long time experience in a colposcopy unit is invaluable in ensuring high accuracy of colposcopy.³²

In conclusion, our data suggests that the average age of the women with abnormal Pap smear who presented for colposcopy was 46.5 years and were mostly women with formal education up to tertiary level and employed. Early coitarche and having multiple sexual partners were the prominent risk factors for premalignant lesion of the cervix. The most common indication for colposcopy was HSIL and the most common colposcopy impression was HGCIN. Most of the cervical biopsies sent for histology turned out to be cervicitis. The rate of underestimation was higher especially for HGCIN. The agreement between colposcopy and histology diagnosis in this study was average therefore biopsies should be performed during colposcopy.

DECLARATION: We declare no conflict of interest.

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