

**Research Article****Abnormal Cervical Smear in a Tertiary Hospital in Nigeria**Ayodele Omotoso<sup>1\*</sup>, Patience Odusolu<sup>2</sup>, Martin Nnoli<sup>1</sup><sup>1</sup>Department of Pathology, University of Calabar, Calabar<sup>2</sup>Department of Obstetrics and Gynaecology, University of Calabar, Calabar**\*Corresponding author**

Dr. Ayodele J Omotoso

Email: [ayomemee@yahoo.com](mailto:ayomemee@yahoo.com)

---

**Abstract:** Cervical cancer is one of the most common cancers affecting women worldwide, constituting 6% of all female malignancies. It is the most common female genital tract malignancy in Calabar, Nigeria. Although the incidence and mortality from cervical cancer have decreased substantially in the past several decades among women in the United States, cervical cancer remains the third gynecologic malignancy. When cervical cytology screening programs were introduced into communities, however, marked reductions in the cervical cancer incidence have followed. Carcinoma of the cervix is caused by high risk Human Papilloma Virus (HPV), a sexually transmitted infection. It has a defined premalignant phase of many years, which allows repeated tests to significantly reduce the impact of individual false negative test result and to allow intervention when necessary. There is no organized cervical screening programme in Nigeria, therefore the cervical smear done are basically diagnostic test for symptomatic patients or opportunistic screening for patients who visit the hospital for other conditions. This study is aimed at reviewing the pattern of abnormal cervical smear in Calabar, Nigeria using the Bethesda system of classification and comparing the age distribution of the disease. A cross sectional study of 834 cervical smears seen in Department of Pathology, University of Calabar Teaching Hospital, Calabar within a period of 10 years was analysed. 698 patients had Pap smear that was negative for squamous intraepithelial lesion and 136 had abnormal lesion. Low grade squamous intraepithelial lesion (LGSIL) was seen in 45 cases (43%) while HGSIL were seen in 54 cases (51%). Atypical glandular cells (AGC) was 10 cases (9.5%) while Atypical Squamous cells of Undetermined Significance (ASCUS) was 5 cases (4.8%) and 22 cases (21%) of the abnormal smear were positive for malignancy. There is high incidence of cases positive for malignancy among the abnormal smear with significant number of patients presenting with HGSIL. The results obtained showed that there is an urgent need to sensitize the public about the high prevalence of the disease as well as encourage the Government to embark of population-based screening.

**Keywords:** Abnormal cervical smear, HGSIL, LGSIL, Invasive cervical cancer, Calabar..

---

**INTRODUCTION**

Cervical cancer is a common malignancy in the world with varied morbidity and mortality levels [1]. It is the most common gynaecological malignancy in the developing countries, accounting for over five hundred thousand (500,000) death annually [2]. In Calabar, carcinoma of the cervix is the commonest gynaecological malignancy constituting about 64.6% of the female genital malignancies and occurring mainly in the sixth decade of life [3].

In Africa where there is high level of poverty, illiteracy, and lack of awareness of the disease condition, poor medical infrastructures and paucity of personnel, the disease often presents at an advanced stage when surgical intervention and chemotherapy will be of no significant use [4].

Cervical cancer is caused by high risk Human Papillomavirus, especially serotype 16 and 18 which is

sexually transmitted. There is often a progressive dysplasia from the time of infection to a period where there is full manifestation of the cytopathic effect of the virus [2, 5]. The period between infection and full blown invasive lesion takes 10 to 15 years, which allows intervention at any necessary stage [6, 7]. The study aims to analyze the abnormal smears seen among the pap smears done in Calabar, Nigeria with a view at reviewing the pattern seen using Bethesda system of classification.

**METHODOLOGY**

This is a ten-year retrospective study (January 2001 – December 2010). The registers for gynecological cytology for the study period were accessed at the Department of Pathology, University of Calabar Teaching Hospital (UCTH) Calabar. The diagnosis and the patients' age were retrieved from the register. The data were classified based on Bethesda system and analyzed based on simple statistical method.

**Exclusion criteria**

Samples with inadequate demographic information and those that are inadequate for proper cytologic appraisal were excluded from the study.

**The Bethesda system for reporting cervical cytology**

The nomenclature for reporting cervical cytology results has undergone several changes since the publication of the original Papanicolaou system. The Bethesda System of reporting is most widely used system in the United States (The 1988 Bethesda System for Reporting cervical/vaginal cytological diagnoses) [8]. The reporting system was first introduced in 1988, it was revised in 1991 and again in 2001 [9, 10]. The basic component of this reporting system include; specimen adequacy, negative for intraepithelial lesion or malignancy (NSIL), Atypical squamous cells (ASC), Atypical glandular cells (AGC), Low grade squamous intraepithelial lesion (LGSIL), High grade squamous intraepithelial lesion (HGSIL) [11]. The study laid emphasis on the abnormal cervical smear excluding those negative for squamous intraepithelial lesion.

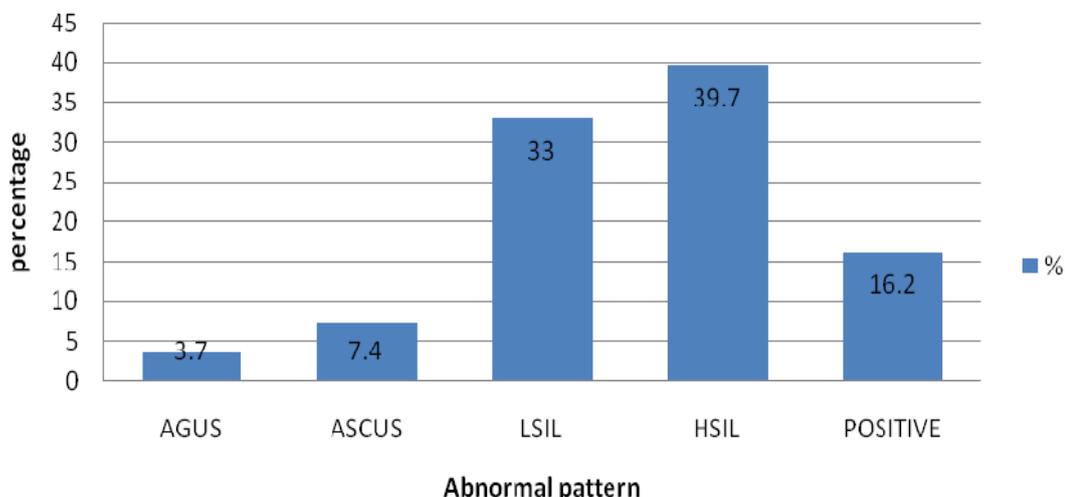
**RESULTS**

A total of 848 cervical smear were received during the study period. Among these fourteen (14) which is 1.7% of the specimens were excluded from the study for lack of adequate information. Six hundred and ninety eight (698) patients had a pap smear that was negative for malignancy, constituting 83.7% of the studied samples; only 136 of the 834 samples were of abnormal lesions. Among those with abnormal smear, Low Grade Squamous Intraepithelial Lesion (LGSIL) was seen in 45 cases (33%) while High Grade Squamous Intraepithelial Lesion (HGSIL) was seen in 54 cases (39.7%). Atypical Glandular Cells of Undetermined Significance and Atypical Squamous Cells of Undetermined Significance were seen in 10 and 5 cases respectively.

Twenty two cases were positive for malignancy, constituting 16.2% of the abnormal smear. The abnormal smear has its modal distribution in the 5<sup>th</sup> decade of life (40-50 years) except for AGC whose modal distribution is the 6<sup>th</sup> decade of life (Tables 1; Fig. 1-6).

**Table 1: Table showing abnormal lesions with age distribution and relative frequency of different lesions**

Age distribution	LGSIL	ASC	AGC	HGSIL	Positive for Malignancy	Total	%
10 – 19	2	-	-	-	-	2	1.5
20 – 29	6	2	1	4	-	13	9.6
30 – 39	8	3	1	7	6	25	18.4
40 – 49	17	5	-	25	9	56	41.2
50 – 59	9	-	2	11	5	27	19.9
60 – 69	2	-	1	5	2	10	7.4
70 – 79	1	-	-	2	-	3	2.2
Total	45	10	5	54	22	136	100
Percentage (%)	33	7.4	3.7	39.7	16.2	100	



**Fig. 1: Bar Chart showing abnormal smear pattern**

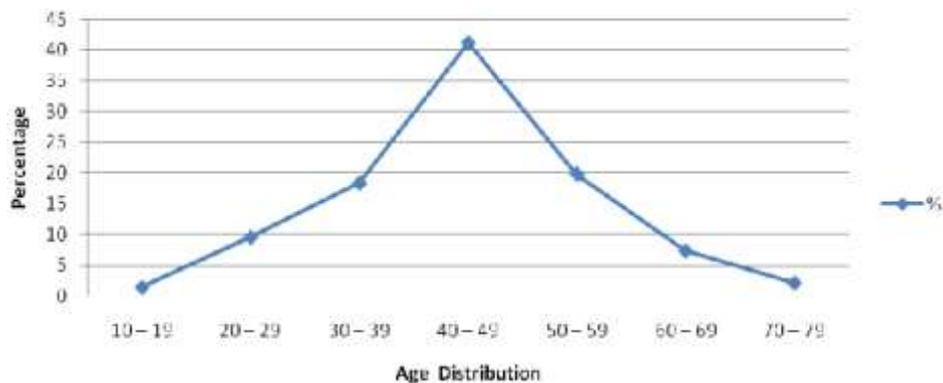


Fig. 2: Line graph showing age distribution of the abnormal smear

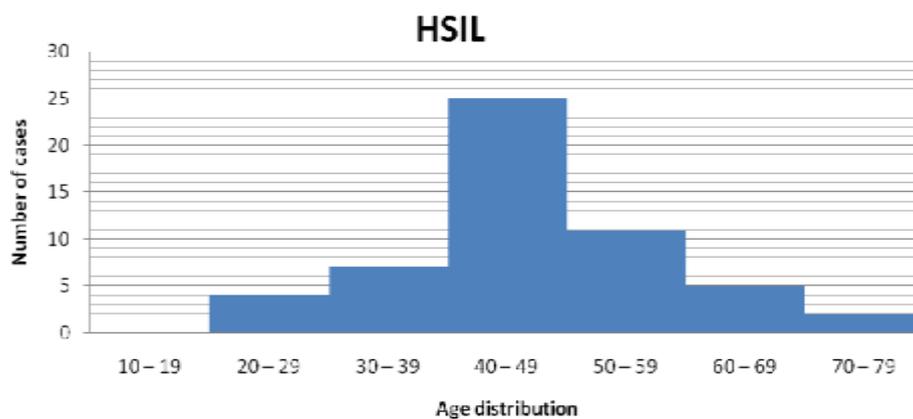


Fig. 3: Histogram showing the age distribution of patients with High Grade Squamous Intraepithelial Lesion

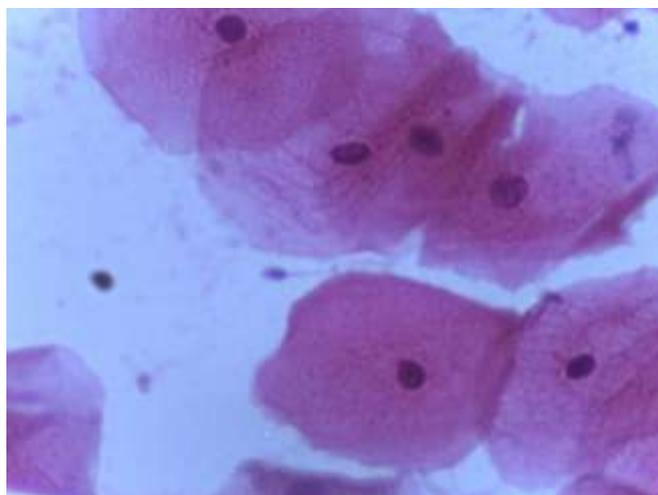
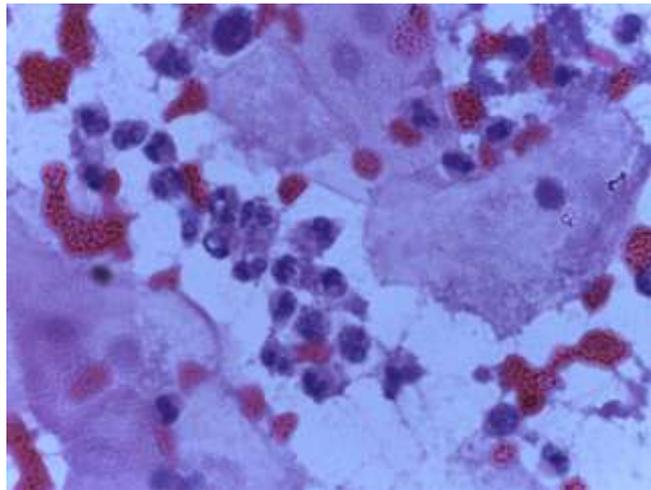
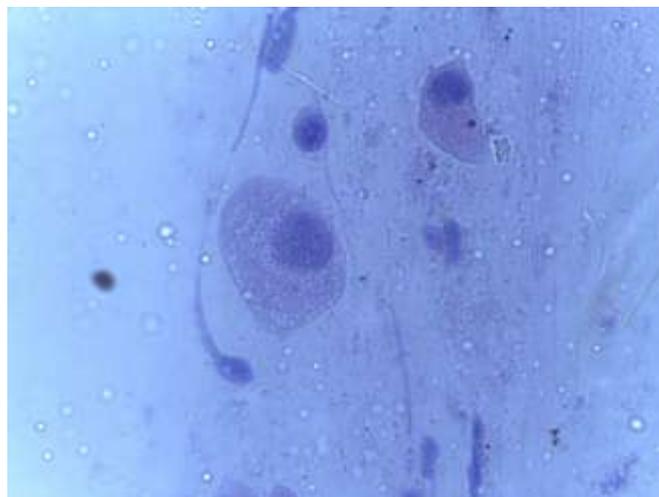


Fig. 4: Conventional smear showing superficial cells with abundant eosinophilic cytoplasm, regular nuclei having smooth edges. Negative for squamous Intraepithelial Lesion (NSIL)



**Fig. 5: Smear showing ectocervical cells in a fibrinoid background with florid infiltration by acute inflammatory cells mainly polymorphonuclear leucocytes. Also seen are red blood cells at the background. This feature is consistent with acute cervicitis.**



**Fig. 6: Conventional smear showing highly pleomorphic cells, hyperchromatic with increased nucleocytoplasmic ratio. The nuclei are large with regular nuclear edges and fine chromatin pattern. The background is fibrinoid with inflammatory cells and spermatozoa. High Grade Squamous Intraepithelial Lesion**

## DISCUSSION

In studies from developed countries where routine pap smear is a norm, the incidence of invasive lesion is very low [12] and the malignancy is often seen in individual with former atypia in which the follow up was inadequate to detect the dysplasia before becoming an invasive lesion [12]. The progression of cervical cancer, ranging from dysplasia to carcinoma *in-situ*, has generally been accepted to form a continuum [7]. Spontaneous regression is most common in the low grade dysplasia, whereas advancement to more serious lesions is most common in the higher grade of dysplasia [6, 7]. The high level of high grade intraepithelial lesions in the study is similar to those found in other studies [13, 14] but at variance with some others [15, 16]. The disparity may be due to life style difference in these localities.

A Study in Enugu, Nigeria showed that colposcopy is still not available to over 50% of gynaecologists practicing in Nigeria and that 91% of them will do either cone biopsy or hysterectomy for moderately or severely abnormal pap smears [7]. Several life style factors have been suggested as risk factors for cervical cancer, including early age at first intercourse, multiple sexual partners, use of oral contraceptives, smoking, and sexually transmitted infections, especially human papillomavirus (HPV), and herpes simplex virus (HSV) [17]. Cervical intraepithelial neoplasia is commonly regarded as a precancerous lesion which with a certain probability will progress if untreated. Thus, the pattern of risk factors of these non-invasive lesions is of interest in the prevention of cervical cancer and identification of high-risk groups. The study population is noted for high level of HIV infection

in Nigeria which is mainly transmitted sexually [18]. This may be due to early sexual exposure and other social activities which are risk factors for cervical cancer, hence the high level of the HGSIL among the abnormal smear.

A population-based study of risk factors in Greenlandic and Danish Women concluded that risk factors for invasive cervical cancer and abnormal Pap smear appear similar. Even when case group was divided into atypia and dysplasia, no substantial difference in risk predictors was observed [19]. In Mbazor *et al.* [20] study on the cervical cytology profile of infertility patients in Abakaliki the negative smears were over 80% of the cases which is similar to our results and studies from other centre in the world [21] also have abnormal smear. However, positive cases were not seen in this study.

Among the abnormal smear, HGSIL has a higher relative frequency (39.7%) compare to LGSIL (33%) in this study. This may indicate the progression of the disease and the presence of the disease condition abnatio. Progression from the carcinoma-*in-situ* to metastatic lesion has been reported in the past [22]. However the relative high frequency of these conditions among the general smear is similar to what is seen in other centre [20]. 16.2% of the abnormal smears were positive for malignancy which is 2.6% of the entire smear. This is a high percentage of the abnormal smear which may be largely due to the fact that most of these cases are opportunistic screening one while others are already symptomatic at presentation in the hospital.

Women between the ages of 20 and 39 years have higher prevalence of cervical dysplasia than younger women and literatures agreed on the increasing occurrence of abnormal smear in this age group probably related to sexual exposure and the likelihood of infection with HPV. However, in this study, there is high incidence between 30 and 59 years age group with peak incidence between 40 and 49 years and with greater percentage having a HGSIL. The high level with increasing chronologic age may be associated with the acquisition of HPV at the early age with cytopathic effect seen at this late period. Most of other studies show presentation at a lower age group [14, 16].

A study in Australia in which predictive value of diagnoses of endocervical glandular abnormalities in cervical smears was investigated, two main areas where improvement in cytological diagnosis of 'inconclusive' glandular lesions may be possible were highlighted, which were HPV DNA typing and/or other ancillary studies. In their view, the ability to perform HPV studies, as well as other potential uses of a liquid-based sample, e.g., production of a cell block, render a liquid-based cytological sample of greater value than a random punch biopsy, and perhaps endocervical curetting, in the follow-up of 'inconclusive' glandular smears

[21]. In this study, AGUS was about 7% of the abnormal smear and 0.6% of all the Pap smear for the period, whereas other study in Nigeria has none [20]. There is possibility for increase number of AGUS if other ancillary methods were introduced.

## CONCLUSION

The incidence of high grade intra epithelial lesion and those positive for malignancy is high among abnormal smears in Calabar; this calls for an urgent need to increase the awareness of the Pap smear and regular screening exercise or even planned programme. These cases would have been detected if regular screening exercise is practiced, thus reducing the burden of this preventable cancer in our society. Improved diagnostic methods such as HPV hybridization and liquid base cytology should be introduced for better diagnosis. There is also a need for vaccination of the high risked but uninfected youth to prevent continual proliferation of this disease condition.

## REFERENCES

1. Committee on Practical Bulletin – Gynecology, ACOG Practice Bulletin. No. 35 (2002). Diagnosis and Treatment of Cervical Carcinomas Obstetrics & Gynecology, 99; 5(1): 855–867.
1. Shafi MI; Premalignant and Malignant disease of the cervix. In Edmonds DK editor; Dewhurst's textbook of obstetrics and gynecology. 7<sup>th</sup> edition, Oxford: Blackwell Publishing, 2007: 614- 624
2. Omotoso AJ, Agan TU, Bassey IE, Ebughe GA, Ekanem IA, Ekanem AD; Cervical cancer in Calabar, Nigeria. J Hainan Med Coll., 2010; 16 (1)
3. Durosinmi-Etti FA; Cancer Patients in Nigeria: causes of delay in diagnosis and treatment. Nigerian Quarterly J. Hospital Med., 1985(3): 28-30.
4. Eddy DM; Screening for cervical cancer. Ann Intern Med., 1990; 113: 214-226
5. Murthy NS, Mathew A; Risk factors for pre-cancerous lesions of the cervix. Eur J Cancer Prev., 2000; 9 (1): 5-14
6. Onah HE, Iyoke CA; Abnormal Pap smears: A comparison of total abdominal hysterectomy and core biopsy in management. Obst Gynae., 2006; 26 (1): 48– 51.
7. The 1988 Bethesda System for reporting cervical/vaginal cytological diagnoses. National Cancer Institute workshop. JAMA, 1989; 262(7): 931-934.
8. Broder S; Rapid Communication—The Bethesda System for Reporting Cervical/Vaginal Cytologic Diagnoses—Report of the 1991 Bethesda Workshop. JAMA, 1992; 267(14): 1892
9. Kurman RJ, Solomon D; The Bethesda System for Reporting cervical/vaginal cytological diagnoses; definitions, criteria and explanatory

- notes for terminology and specimen adequacy, Springer-Verlag., New York, 1994.
10. Solomon D, Davey D, Kurman R, Moriarty A, O'Connor D, Prey M *et al.*; The 2001 Bethesda system terminology for reporting results of cervical cytology. *JAMA*, 2002; 287(16): 2114-2119.
  11. Andersson-Ellström A, Seidal T, Grannas M, Hagmar B; The Pap smear history of women with invasive cervical squamous carcinoma: A case-control study for Sweden. *Acta Obstet Gynecol Scand.*, 2000; 79(3): 221 – 226.
  12. Abdul MA, Shittu SO, Randawa JA, Shehu MS; The cervical smear pattern in patients with chronic pelvic inflammatory disease. *Niger J Clin Pract.*, 2009; 12(3): 289-293.
  13. Avidine S, Ahmed SA, Oguntayo A, Abu TO, Ndako JA; Pattern of cervical dysplasia among women of reproductive Age in Zaria, Northern Nigeria. *J of Medicine in the Tropics*, 2014; 16(2): 52-55.
  14. Nwosu OB, Okafor CI, Obiechina NJ, Odike MA; The pattern of cervical cytology in Obstetrics and Gynaecology clinics in Nnewi, South-Eastern Nigeria. *Oriental Journal of Medicine*, 2010; 22 (1-4).
  15. Mbamawa SU, Ukah CO, Onyiorah CW, Ikpeze O, Jen O; The pattern of cervical cytology in women attending various clinics at a tertiary hospital in Anambra, Southern Nigeria. *British J of Medicine and Medical Research*, 2014; 33(4): 21-33
  16. Brinton LA, Fraumeni JF Jr.; Epidemiology of uterine cervical cancer. *J Chron Dis.*, 1986; 39: 1051-65.
  17. Ekure EN, Etuk SJ; Factors influencing HIV seroprevalence rate among pregnant women in Calabar, Nigeria. *Sexual Health Matters*. Published Quarterly by Express Print Works, Middlesbrough, UK, 2001.
  18. Kjzer SK, Paul P, Henning J, Gerda E, Birthe JH, Chantal T *et al.*; Abnormal papanicolaou smear: A population-based study of risk factors in Greenlandic and Danish women. *Acta Obstet Gynecol Scand.*, 1990; 69(1): 79-86.
  19. Mbazor JO, Umeora OW, Ekwueta VE; Cervical cytology profile of infertility patients in Abakaliki, south eastern Nigeria. *J Obst Gyn.*, 2011; 31(2): 173-177
  20. Egal AS, Frost FA, Miranda A, Fletcher C, Sterrett GF; Predictive value of diagnoses of endocervical glandular abnormalities in cervical smears. *Pathology*, 2003; 35(3): 198–203.
  21. Punnonen R, Gronroos M, Vaajalahti P; Squamous cell carcinoma *in situ* from the Uterine cervix to the distal end Of the fallopian tube. *Acta Obstet Gynecol Scand.*, 1979; 58(1): 101-110.