Review of Pattern of Cervical Smear Cytology in a North Central Nigerian Tertiary Hospital

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Abstract

Background
Cancer of the cervix is the second most common cancer in women and the commonest genital tract cancer in women. Cervical smear cytology is a secondary preventive measure that is underutilised in this environment resulting to avoidable morbidity and mortality in third world countries.

Objectives
The study was aimed at determining the pattern of cytology of cervical smears done in National Hospital Abuja.

Methods
A retrospective cross-sectional descriptive study of all cervical (Papanicolaou) smears done in National Hospital Abuja in 2012 and 2013. Data was analysed with Microsoft Excel 2013.

Results
During the study period, 860 cervical smears were done, 799 (92.9%) of the smears were satisfactory, 710 (88.9%)of the satisfactory smearswere reported as negative for intraepithelial lesion and malignancy while 79 (9.9%) had varying degrees of epithelial cell abnormalities. Non-specific inflammatory changes were recorded in9 (1.1%) cases while1(0.1%) showed squamous cell carcinoma. Atypical squamous cells of undetermined significance(ASCUS) was the predominant epithelial cell abnormality, contributing 58.7% of the abnormal smears. The mean patient age was 43.2±17years.

Conclusion
The predominant epithelial cell abnormality in this study was ASCUSwith a good number of patients presenting late for screening. Public enlightenment and empowerment of women is needed to enable at risk individuals avail themselves of this important preventive measure.

KEYWORDS: Review, Pattern, Cervical Smear, Cytology

Introduction

Worldwide, cervical cancer accounts for an estimated 530,000 new cancer cases and about 86 percent of new cervical cancer cases are seen in developing countries.[1, 2] Globally, the mortality rate from cervical cancer is about 52 percent of diagnosed cases.[2, 3] Global incidence and mortality rates depend upon the presence of screening programs for cervical cancer and human papillomavirus (HPV) vaccination, which are most likely to be available in developed countries. Due to these interventions, there has been a 75 percent decrease in the incidence and mortality of cervical cancer over the past 50 years in developed countries.[1] About four out of every five new cases and most of the deaths from cervical cancer occur in the developing world.[1] The highest mortality rates have been reported in Western and Southern Africa, Southern and Central America, Caribbean and South-central Asia.[1] The need for cervical cancer screening cannot be overemphasized.

Screening is acknowledged as currently the most effective approach for cervical cancer control thus successfully preventing cancer death. However, in developing countries, screening programs have not had the same impact in women's health. Reasons for the lack of effectiveness of these screening programs in developing countries include low screening coverage and participation rates among women, lack of quality control, poor ability of the health care system to offer proper follow-up and access to colposcopy, and inappropriate final diagnosis and treatment.[3, 4]Even among health workers the practice of routine pap smear is poor.[5,6]

Cervical cancer unlike other gynaecological cancers is a preventable disease because it has a pre-invasive phase that can be detected and treated if women are screened. It affects women in their prime with the peak age at 51 years.[7, 8]it is a social problem because of the effect of the deaths of these women on their children and families.

Risk factors for cervical cancer includes early age at initiation of sexual intercourse, multiple sexual partners or high risk sexual partner with history of multiple sexual partners, human papillomavirus (HPV) infection, lower genital tract neoplasia, or prior sexual exposure to someone with cervical neoplasia, a history of sexually transmitted diseases(STDs), as well as cigarette smoking, human immunodeficiency virus (HIV) infection, acquired immune deficiency syndrome (AIDS) and any other form of immunosuppression.[7,8]

Human papilloma virus, a sexually transmitted infection is the prime etiologic factor in the development of cervical intraepithelial neoplasia (CIN)and cervical cancer. Persistent HPV infection especially with the high risk serotypes causes dysplastic changes in the cervical epithelium. Cervical cancer generally develops slowly, taking over several decades from pre-invasive to invasive lesion. This gives ample opportunity for the detection and treatment of the pre invasive lesions.[7]The method of cervical cancer screening by cervical smear cytology was introduced in 1940's by Papanicolaou and has been the mainstay of cervical cancer screening in the developed countries and this has contributed greatly to the reduction in the incidence of cervical cancer in these countries. In recent years, the array of options used in screening for cervical cancer has expanded substantially with the development of new technologies such as liquid-based cytology (LBC) and by testing for high risk human papillomavirus.[8]

Materials and Methods

This was a retrospective cross-sectional descriptive study of all (cervical) Pap smears done in National Hospital Abuja over a 2 year period (1st January2012- 31st December 2013). The study centre is located within the Abuja municipal area council. It is a tertiary health care centre in the country and serves as a referral centre for both primary and secondary health centres in the Federal capital territory and surrounding states. It delivers specialized care in obstetrics and gynaecology, paediatrics, surgery, internal medicine, radiology, laboratory medicine, anaesthesiology, radiotherapy, oncology and radiation physics. There is no formal cervical cancer screening programme in the hospital so screening is basically opportunistic.

The hospital numbers and age of the patients were extracted from the Cytology clinic register and results retrieved from the histopathology department. The slides were reported according to the 2001 version of the Bethesda System for reporting Pap smear results.[9] This adopts descriptive diagnoses, including – negative for intraepithelial lesion and malignancy(NILM), benign cellular reactive changes including infections, inflammation, atrophy and epithelial cell abnormalities which are classified as atypical squamous cells of undetermined significance (ASCUS) and cannot exclude HSIL (ASC-H), Low-grade squamous intraepithelial lesion (LSIL), High-grade squamous intraepithelial lesion (HSIL), atypical glandular cells (AGC), atypical glandular cells-(AGC-NOS), squamous cell carcinoma(SCC) and adenocarcinoma.

Categorical variables were reported as percentages while continuous variables were reported as means and standard deviation. Confidentiality was maintained in this study. Data was analysed with Microsoft Excel 2013.

Results

A total of 860 Pap smears were done during the study period. The mean patient age was 43.2±17.5 years(range 18-85 years).A total of 799(92.9%) of the smears were satisfactory.

Table 1: Age Distribution of the Patients

Age	Frequency	Percentage
10-19	2	0.2
20-29	69	8.1
30-39	247	28.7
40-49	318	36.9
50-59	147	17.1
60-69	54	6.3
70-79	4	0.5
80-89	3	0.3
Not Specified	16	1.9
Total	860	100

Table 1 shows the age distribution of patients. The modal age group was 40-49 years, 318(36.9%)

Table 2: The Pattern of Distribution of all Cervical Smears

Smear	Frequency	Percentage
Unsatisfactory	61	7.1
Negative	710	82.6
ASCUS	47	5.6
ASC-H§	2	0.2
AGC-NOS‡	1	0.1
LSIL†	24	2.7
HSIL¶	5	0.6
SCC ‡‡	1	0.1
Inflammatory	9	1
Total	860	100

* Atypical squamous cells of undetermined significance, § Atypical squamous cells-cannot exclude HSIL, ‡ Atypical Glandular cells, not otherwise specified, † Low grade squamous intraepithelial lesion (LSIL), ¶ High grade squamous intraepithelial lesion, ‡‡ Squamous cell carcinoma

Table 2 shows the breakdown of the pattern of distribution of all cervical smears. Normal smears were710 (82.6%), ASCUS was reportedin 47 (5.6%)and LSIL in 24 (2.7%). Invasive cancer was the least 1 (0.1%) of the total smears and 61 (7.1%) of the smears were unsatisfactory.

Table 3: Distribution of the Satisfactory Cervical Smears

Lesion	Frequency	Percentage
Negative	710	88.9
Epithelial Cell Abnormalities	79	9.9
Squamous Cell Car cinoma	1	0.1
Inflammatory	9	1.1
Total	799	100

Table 3 shows the pattern of distribution of the satisfactory smears only. While 88.9% were negative for intraepithelial lesion or malignancy, 9.9% had different degrees of epithelial cell abnormalities, 1.1% and 0.1% however showed nonspecific inflammatory changes and squamous cell carcinoma respectively.

Table 4: Pattern of Epithelial Cell Abnormalities

Epithelial Cell Abnormality	Frequency	Percentage
ASCUS*	47	58.7
LSIL†	24	30
HSIL¶	5	6.3
ASC-H§	2	2.5
AGC-NOS‡	1	1.25
SCC‡‡	1	1.25
Total	80	100

Atypical squamous cells of undetermined significance, †Low grade squamous intraepithelial lesion, ¶ High grade squamous intraepithelial lesion, §Atypical squamous cells-cannot exclude HSIL,‡Atypical Glandular cells, not otherwise specified, ‡‡ Squamous cell carcinoma Table 4 shows the distribution of epithelial cell abnormalities. Atypical squamous cells of undetermined significance (ASCUS) contributed 47 (58.7%), ASC-H 2 (2.5%), AGC-NOS 1 (1.25%), LSIL 24 (30%), HSIL 5 (6.3%) and SCC 1 (1.25%)

Table 5: Pattern of Distribution of Abnormal Smears across Different Age Groups

Age	ASCUS*	ASC-H§	AGC-NOS‡	LSIL†	HSIL¶	SCC‡‡	INFLAM‖	Total	%
10-19	1	-	-	-	-	-	-	1	1.1
20-29	5	1	-	1	-	-	1	8	9.0
30-39	11	-	-	8	2	-	2	23	25.8
40-49	16	-	1	7	2	1	2	29	32.6
50-59	11	-	-	5	-	-	4	20	22.5
60-69	2	1	-	3	1	-	-	7	7.9
70-79	-	-	-	-	-	-	-	-	0
80-89	1	-	-	-	-	-	-	1	1.1
Total	47	2	1	24	5	1	9	89	100

Atypical squamous cells of undetermined significance, †Low grade squamous intraepithelial lesion, ¶ High grade squamous intraepithelial lesion, §Atypical squamous cells-cannot exclude HSIL,‡Atypical Glandular cells, not otherwise specified,‡‡Squamous cell carcinoma,‖Inflammatory

Table 5 shows the distribution of the abnormal smears among different age groups. The modal age group for ASCUS was 40-49 years (34.04%), while age group 10-19 and 80-89 contributed the least. Low grade squamous intraepithelial lesion(LSIL) was found mostly in the 30-39 age group (33.3%), closely followed by 40-49 age group. High grade squamous intraepithelial lesion (HSIL)had an equal incidence in the 40-49 and 30-39 age group. The only case of squamous cell carcinomawas found in the 40-49 age group. Only a case of AGC-NOS was reported and the patient was in the 40-49 age bracket.

Discussion

A total of 860 smears were done during the period out of which 61(7.1%) were unsatisfactory. This number of smears over the two year period was comparable to the 1274 smears reported from a three year study in Gwagwalada, Abuja but much higher than 2082 and 815 smears reported from 14 and 10 year studies in Maiduguri and Enugu respectively.[10,11,12] This shows a higher level of utilization of Pap smear in this area compared to Enugu and Maiduguri.[11,12] This can be explained by the fact that Abuja being the Federal capital territory has a greater number of the populace who are enlightened and in the higher socioeconomic class and so can afford the cost of cervical cytology.

The proportion of satisfactory smears (92.9%)was comparable to a study done by Nwosu et al at Nnewi in which 93% of the smears were satisfactory.[13] Bukar et al also got a comparable value of 92.15% in Maiduguri.[11] Standardization of

the technique of sample collection and preservation is imperative in order to improve the yield of cervical smears.

Epithelial cell changes were identified in 9.9% of the satisfactory smears. This was a little higher than 8.4% and 7.8% from studies in Ibadan and Maiduguri but much higher than 4.2%, 4.8% and 1.07% from studies in Lagos, Zaria and Enugu respectively.[11,12,14,15,16] A study done in Gwagwalada, Abuja by Isah et al however gave a higher incidence of 20.4%.[10] The fact that screening in the study centre is usually in patients with indications must have accounted for the higher figures. Additionally, Abuja is cosmopolitan with the different geopolitical zones represented, the higher incidence may be a reflection of cumulative risk factors from the different zones.

Atypical squamous cells of undetermined significance(ASCUS) was found to be the commonest epithelial cell abnormality in this study, this was in discordance with studies in Benin and Gwagwalada, Abuja which showed LSIL to be the commonest.[10,17] In contrast also, studies by Odusolu et al in Calabar showed that HSIL was the commonest lesion.[18] This may be a reflection of the time of presentation for screening and inter observer differences.

The modal age group of women who had cervical smears was 40-49 years and this concurs with studies in Benin and Calabar but slightly differ from values from Gwagwalada in which the modal age group was 30-39 years.[10, 17,18] This late presentation for screening was not as expected as routine counselling on cytology is usually given at our facility at the post-natal clinic. This underscores the importance of sustained public enlightenment on the need for early onset of screening.

The modal age group of patients with abnormal smears was 40 to 49 years(36.9%), this was similar with a study in Calabar in which 43.4% of the patients with abnormal smears were in the 40-49 age bracket.[18] Isah et al however found the modal age of abnormal smears to be 30-39 years (39.8%).[10] This may not be a true representation of the distribution as this was likely because of predominance of older women among those screened. In contrast, Henk et al in a study in USA reported the highest incidence of abnormal smears among the age bracket of 21-30.[19]Thisis likely due to the practice of early onset of cervical cancer screening in USA.[20]

Normal smears contributed 88.9% of the smears and this was comparable with studies done in Enugu in which the proportion was 87.8% but higher than 55.3% and 58% recorded in Ibadan and Nnewi respectively.[12,13,14]

An inflammatory smear rate of 1.1% in this study was low when compared to 52.7% and 35.6% reported in Lagos and Ibadan respectively, also the 0.1% incidence of invasive cancer in this study was very low when compared to 2.26% in Calabar but compares to 0.6% and 0.8% from studies in Ibadan and Lagos respectively.[14, 15, 18]The differences may be as a result of varying techniques of sample collection and inter-observer variation in pathologists' interpretation. It may also be a reflection of differences in the pattern of sexual activity and antibiotic use.

The limitation of this study was that it was a retrospective study so inaccurate record keeping may have undermined the accuracy of findings.

Conclusion

Atypical squamous cells of undetermined significance (ASCUS) was the most

common epithelial cell abnormality detected with a good number of patients presenting late for screening. Efforts should be put in place to enlighten the public and also subsidize the cost of screening in order to encourage more women to present early for screening.

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