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Histopathological Patterns of Cervical Cancer in Makurdi, North Central Nigeria

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Abstract:

Introduction: *Cervical cancer is the second most frequent malignancy in the world and a preventable cause of mortality and morbidity in females.* ***Objectives:*** *To determine the pattern and histological types of cervical cancer in Benue State University Teaching Hospital (BSUTH) Makurdi.* ***Material and Methods:*** *This is a 5year (March 2012 – February 2017) retrospective study of all cervical cancers diagnosed at the Anatomical Pathology Department of BSUTH Makurdi.* ***Results****: One hundred and twenty eight cervical cancers diagnosed during the 5years study. Patients ages ranged from 20 to 90 years (mean ± 44.5 ± standard deviation 10.61 years with highest occurrence in the fourth to seventh decade. Squamous cell carcinoma was by far the most common (72%) histological variant followed distantly by Adenocarcinoma (14%) and Adenosquamous 4%.* ***Conclusion:*** *Squamous cell carcinoma is the commonest gynaecological malignancy distantly followed by Adenocarcinoma in our study. This is consistent with most studies in Nigeria and Africa but less common in the developed world and afflicts more of the older age group.*

Keywords: *Cervical, female, gynaecological malignancies, Makurdi.*

INTRODUCTION

cancer of the cervix is the most common gynaecologic malignancy and the second most frequent cancer in women worldwide.[1] It was the leading cause of cancer deaths in women in the United States of America over 50years ago, but the death rate has declined by two thirds to its present rank as the eighth leading cause of cancer mortality.[2] These dramatic gains is the effectiveness of the pap smear test in detecting cervical precancers, colposcopy examination and biopsy.[3] Also the introduction human papilloma-virus vaccination programmes in some developed countries has accounted for this wider gap between developed and developing countries.[4] Cancer of the cervix is an AIDS-defining neoplasm hence the HIV pandemic in the developing world has worsen the burden of cervical cancer.[5] According to a review by the World Health Organisation (WHO) and International Union against cancer, the most common cancers in females worldwide from 1960 to 69 were from cervix, breast, non-hodgkin and lymphoma.[6] The same report documented that in 2002 cervical cancer once again became the most common malignancy in female followed by breast cancer in sub-Saharan Africa.[7] Cervical cancer is documented as the second most common cancer in female after breast cancers and the most common female genital cancer.[8,9]

Studies has suggested a disparity in histological types between the developed and developing worlds.[10] While squamous cell carcinoma remains predominant in the developing world, its frequency has slightly declined in the developed world with relative increase in the prevalence of adenocarcinoma.[11]

The risk factors are early age of initiation of sexual intercourse, multiple sexual partners by a woman, multiparity, having a male partner with multiple sexual partners.[12] Other risk factors include immune compromised status as seen in HIV/AIDS, used during pregnancy, poverty as well as family history.[13] These sexual risk factors favours the transmission of a carcinogen-Human Papilloma Virus (HPV) which is associated with nearly all cervical cancer. [14,15] To date more than 150 HPV types has been isolated but the high risk types are 16 and 18 which is associated with most cervical cancers.[16] Vaccination programmes covers types 16 and 18 which is reported to prevent 66.2% of cervical cancers.[17] HPVs infect immature basal cell of the squamous epithelium in areas of epithelial breaks, or immature metaplastic squamous cells at the squamocolumnar junction.[18] HPVs does not infect matured superficial squamous cells that covers the ectocervix, vagina or vulva.[19] Although the virus can infect only the immature squamous cells, replication of HPV occurs in the maturing squamous cells and results in a cytopathic effect, "Koilocytic atypia"[20] Since HPV replicates in maturing, nonproliferating squamous cells, it reactivate the mitotic cycle in such cell by interfering with the function of Retinoblastoma(Rb) and P53 tumour suppressor genes.[21] Viral E6 and E7 oncogenic proteins of the HPV promotes the cell cycle by binding to RB and up-regulating cycline E(E7), interrupt cell death pathways by binding to P53 (E6), induce centrosome duplication and genome instability and

prevent replicative senescence by up-regulating telomerase.[22] HPVs may also infect glandular cells or neuroendocrine cells in the cervical mucosa and cause malignant transformation resulting in adenocarcinomas, adenosquamous and neuroendocrine carcinomas.[23]

It is observed that HPV infections occurs mostly in sexually active women[24,25] with 90% clearing spontaneously within months.[26] Infected cells in the cervix could progress into premalignant lesions known as 'cervical intraepithelial neoplasm (CIN) graded as CINI, CIN2 and CIN3 eventually carcinoma in-situ and invasive cervical cancer via a multistep process.[27] Benue State University Teaching Hospital, Makurdi is one of the tertiary health centres offering histopathology services in the State with an estimated population of 8 million people. This study examines the pattern and histological types of cervical cancers in Makurdi and compares it with other parts of the country and the world in general.

MATERIAL AND METHODS

This is a retrospective review of 128 histologically confirmed cases of all cervical malignancies diagnosed at the Department of Anatomical Pathology BSUTH Makurdi. Histological slides of all cases were retrieved and reviewed by some authors. Fresh sections were cut from archival paraffin blocks where slides could not be retrieved. All specimen had been fixed in 10% formaline, embedded and sectioned. Biodata of all cases were Retrieved from laboratory Records. Collected results were presented in the form of tables and micrographs.

RESULTS

Within the 5 years study (March 2012 to February 2017), a total of 202 gynaecologic malignancies were reported in the department of Anatomical Pathology BSUTH Makurdi and 128 cases were cervical cancers constituted (63.4%) of gynaecological cancers. Of these, Squamous Cell Carcinoma predominated with 88(79%) cases. Adenocarcinoma 23(18%) cases, Adenosquamous 10(8%) cases, Adenoid cystic carcinoma 5(3%) cases, clear cell carcinoma 2(2%).Patients age ranged from 20 to 80 years with highest occurance in the 4th and 7th decades(mean+47.5+standard deviation 10.1 years)

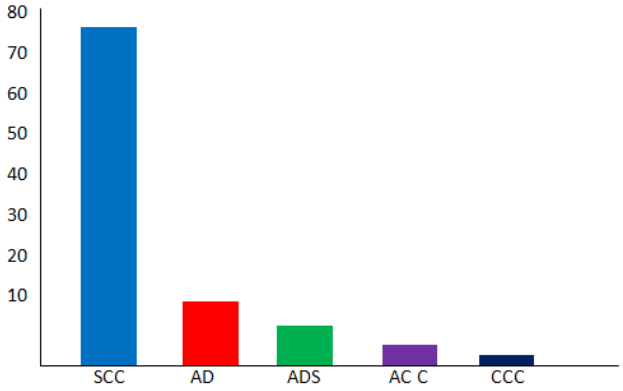
Table 1: Shows patterns of cervical cancer in BSUTH (March, 2012 to February, 2017).

Histologic type	Frequency (N=128)	Percentage
SCC	104	79
Adenocarcinoma	13	10
Adenosquamous	8	6
ACC	4	3
CCC	2	2
	128	100

SCC-squamous cell carcinoma, ACC- adenoid cystic carcinoma, CCC-clear cell carcinoma

Table 2: Shows age distribution of cervical cancer in BSUTH (March, 2012 to February, 2017).

Age group(years)	Frequency (N=128)	Percentage (%)
21-30	5	4
31-40	40	31
41-50	46	36
51-60	14	11
61-70	21	16
>70	2	2
Mean age ± SD	(47.46±10.1)	100



SCC: Squamous cell carcinoma, AD: Adenocarcinoma, ADS: Adenosquamous, ACC: Adenoid cystic carcinoma and CCC: Clear cell carcinoma.

Figure 1: Histological subtypes of cervical cancer seen in BSUTH (between March, 2012 to February, 2017) which the Squamous cell carcinoma constituted 79% of cases, while Adenocarcinoma constituted 10% of cases

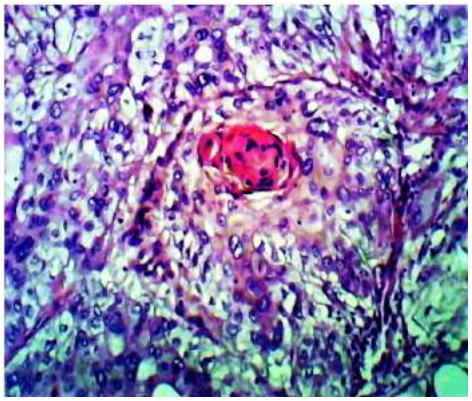


Figure 2: Section show a fibrocollagenous stroma with keratin pearls with distinct intercellular bridges and intracytoplasmic keratinisation. Chronic inflammatory cell infiltrates is also observed. (H & E x 20 magnification).

DISCUSSION

A total of 128 cases of cervical cancer were encountered over a 5 year period. This given an average of 25.6 cases per year and constituted 63.4% of female genital malignancies(Table1). Similar findings were documented in Benin, Ilorin, Port-Harcourt,

Calabar and Kano[28] were cervical malignancies constituted 63.7%, 62.3%, 63.1%, 62.7% and 52.6% of female genital tract malignancies respectively.[28-30] Higher relative frequencies of cervical cancers were documented in Maiduguri, Ibadan, and Zaria and Jos. In these studies cervical cancers accounted for 70.5%, 72.6%, 77.0% and 72.7% of female genital tract malignancies respectively.[31,32]

Slightly lower figures were reported in Uyo, Ghana, Mauritius, and Yemen were cervicals accounted for 49.2%, 57.8%, 58% and 41.9%.[33-35] and lowest figures were found in Palkistan and India where cancer of the cervix accounted for 23.9% and 18.2% of FGT malignancies respectively.[36] Several reports have shown a decrease in frequency of cervical cancer in developed countries. In the United States of America (USA) most recent data available showed that there are 4.8 women who were diagnose with cervical cancer per 100,000 and 7.4 per 100,000 new cases annually. This is attributed to effective cervical screening programmes.[3,4]

The mean age of the women in this study is 47.5±10.1 years which corroborates with other Nigerian studies(Table2),44.5 years in Zaria, 42years in Ibadan, 48years in Sokoto and 48.3years in Kano.[1] Also other parts of the world, 47.9years in Egypt, 52.1years in Tunisia, 53years in Brazil, 52.4years in Italy and 51.4years in the USA.[37-39]

In this series, squamous cell carcinoma was by far the most common histological variant(Figure1) accounting for 79% (101cases). Similar figures were documented in previous studies done in Port-Harcourt 90.2%, Nnewe 92.3%, Benin89.3%, Zaria95%, Ibadan93%, Maiduguri92%, Ilorin85.7% and Jos63.2%[1] Squamous cell carcinoma is also higher in Pakistan 88%, Malawi61.2%, central Tunisia 98%.[40]

Histologically, the invasive cervical cancers are disposed in a fibro-collagenous stroma with variously sized keratin pearls and distinct intercellular bridges as well as intracytoplasmic keratinisation(figure2).

Adenocarcinoma was the second most common histological variant in this study accounting for 10% of cervical cancers in Makurdi. This is relatively small but consistent with the study done in Benin where cervical adenocarcinoma account for 11.8% of cervical cancers and slightly higher than the 6% previous study in Benin City.[40] Other histological variants of cervical cancers seen in the study were adenosquamous carcinoma adenoid cystic carcinoma and clear cell carcinoma which constituted 6%, 3% and 2% of cervical malignancies respectively. The study shows that 78% of cervical cancers occurs between the 3rd and 5th decade which represent the most sexually active group and is consistent with findings in other parts of the country where most patients fell within the 40-69years age bracket.[40]

RECOMMENDATION

Cervical cancer is a preventable disease and unlike other cancers, its causative agents are known, (Human Papilloma virus). Public health awareness together with a well-organised cervical screening programme as well as training of Health workers. Humanpapilloma Virus vaccination should be mandatory for every young female, this will go a long way to eradicate the disease.

CONCLUSION

Cervical cancer represents 63.5% of all gynaecological malignancies in our center with squamous cell carcinoma constituting the highest variant accounting for 79% of cervical cancers. 78% of these cancer occurs between the 3rd and 7th decades.

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Conflict of Interests-None

Contribution to authorship-The manuscripts was read by all authors.

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