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■ Original Research Article

Age Prevalence of Cervical Cancer: Implications for Cervical Cancer Screening in Under-Screened Population

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Abstract

Introduction: Cervical cancer remains a major cause of cancer mortality in low-income countries. There are peculiar challenges in screening under-screened populations because many older women would have to be screened. The aim of this study was to determine the age prevalence of cervical cancer in our hospital and suggest appropriate screening method based on the age prevalence. **Materials and methods:** Records of all women diagnosed of cervical cancer in our hospital over a period of eight years were retrieved. Their ages, the clinical stage of their disease and the histological diagnosis were extracted and analyzed. **Results:** 174 cervical cancer cases seen in our hospital over a period of eight years were studied. In the same period, 9600 patients were admitted in the Gynaecology ward of the hospital. Cervical cancer constituted 1.81% of the admissions. The mean age was 60.92years. Women ≥60 years were 108 (62%), 50-59years were 37(21%), 40-49years were

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21(12%) and those ≤39years were 8 (5%). Majority 148 (85.1%) had stage ≥2B and only 26 (15%) had operable stage ≤2A. Most were squamous cell carcinoma, 147 (84.5%) followed by adenocarcinoma,14 (8.1%). Verrucous carcinoma was seen only in women in their 50s and clear cell carcinoma in 60years and above. All cell types were more in the older women except the verrucous subtype. **Conclusion:** The hospital prevalence of cervical cancer is still high in our centre and age prevalence is higher among older women compared to what obtains in screened populations. This peculiarity therefore has implications for the choice of screening method

Keywords: High risk *Human papilloma Virus*, cervical precancer, cervical cancer, Pap smear, visual inspection with acetic acid.

Conflict of interest: None declared.

Introduction

Cervical cancer is the commonest cause of gynaecological cancer mortality in low- and middle-income nations. [1,2] In 2018, the estimated new cases and deaths were 570,000 and 311,000 respectively world-wide. [3] About 80% of all the new cases and 90% of deaths occurred in the developing nations. [3,4]

The high-risk *Human Papilloma Virus* (HrHPV), a sexually transmitted infection has been implicated as the cause of cervical cancer. [5,6] There are about 13 serotypes. [7] Viral clearance usually occurs after infection but when there is persistence, cervical precancer develops which takes up to 15 to 20 years to become cancer. [8,9]

There is therefore the need to study the age prevalence of cervical cancer in women presenting in our hospital to determine the best screening method for our population.

Materials and Methods

The case records of all the patients with cervical cancer seen at the Gyneoncology unit of the Department of Obstetrics and Gynecology of our hospital over a period of eight years (2010-2017) were retrieved. The hospital is in Osun State, southwest Nigeria and receives referral mainly from about four other adjoining states.

The age of the patients, the clinical stage of the disease at presentation and the histological diagnosis were extracted. Case ascertainment was done by comparing the clinical records with that from the histopathological department of the hospital. All histological diagnosis was based on the FIGO staging classifications and clinical practice guidelines in the management of cancers (2000). This information was entered into a proforma designed for the study and analyzed with Statistical Package for Social Sciences (SPSS) version 20 using descriptive statistics. Data are presented in tables and figures format.

Result

During the period covered by this study, 174 out of the 9600 women admitted in the gynecology ward presented with cervical cancer. Cervical cancer represented 1.81% of all admissions during the period. Their mean age of cervical cancer patients was 60.92years, the youngest and the oldest were 32 and 96 years respectively. Majority of them, 108 (62%) were ≥60 years. Women 50-59years were 37(21%), 40-49years were 21(12%) and those ≤39years were 8 (5%) [Table 1].

Table 1: Age prevalence and Clinal stage of disease at presentation.

Age range in year	**Clinical stage**								
	1a	1b	2a	2b	3a	3b	4	Total	**%**
≤39	0	1	0	1	0	5	1	8	5
40-49	0	1	6	3	4	6	1	21	12
50-59	1	2	3	4	8	17	2	37	21
60-69	0	3	3	8	16	34	1	65	37
≥70	0	1	5	5	14	18	0	43	25
Total (%)	1(0.6)	8(4.6)	17(9.8)	21(12)	42(24.1)	80(46.0)	5(2.9)	174(100)	100

Table 2: Age distribution of the different histological types seen.

Histology	**Age range (years)**					
	30-39	40-49	50-59	60-69	≥70	**Total**
Squamous cell carcinoma (84.5%)	6	19	30	54	38	147
Adenocarcinoma (8.0%)	0	1	5	4	4	14
Adenosquamous carcinoma (4.6%)	2	1	0	5	0	8
Clear cell carcinoma (1.7%)	0	0	0	2	1	3
Verrucous carcinoma (1.1%)	0	0	2	0	0	2
Total	8	21	37	65	43	174

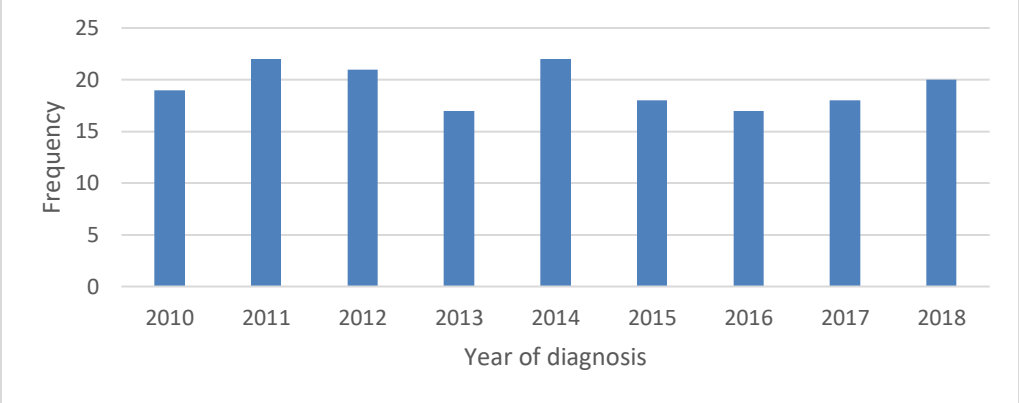

Figure 1: Yearly distribution of cervical cancer

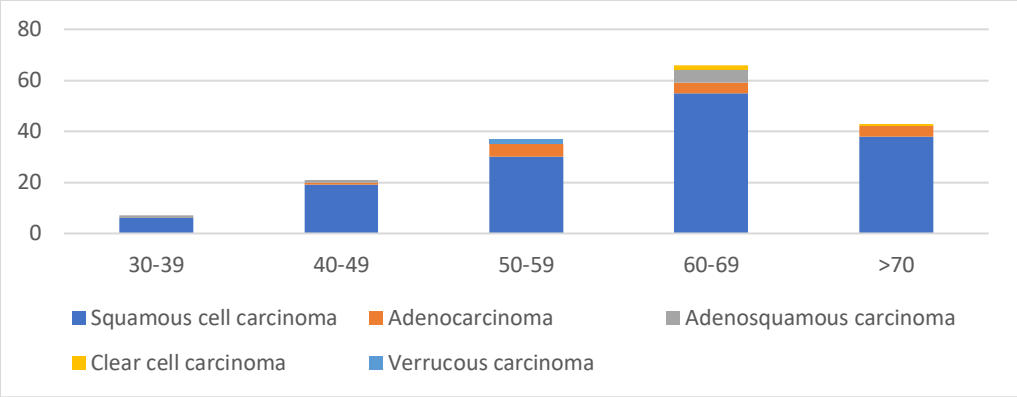

Figure 1: Age distribution of the histological types

Those with clinical stage ≥2B were 148 (85.1%) and only 26 (15%) presented in operable clinical stage ≤2A (Table 1). Late presentation was common in all the age groups (Table1). The predominant histological subtype across all ages was squamous cell carcinoma, 148 (84.5%) and this was followed by adenocarcinoma in 14 (8.0%) [Table 2]. Squamous cell carcinoma was seen across all ages with the highest numbers in women ≥ 50years. Adenocarcinoma was seen more in women ≥50years. The few clear cell carcinoma seen in this study were in women ≥60years. The two verrucous carcinomas seen were in women in their 50s (Table 2). Women ≥70years constituted a quarter of all the cases in this series; these were women who should have exited screening in developed countries.

Discussion

Over half of all women (62%) who presented with cervical cancer during the period under review in this study were ≥60 years. The overall hospital cervical cancer prevalence rate was 18.1 per1000 and the age prevalence rate for women ≥60years was 5.5per 1000. This is quite high compared to what is expected in screened population. In women adequately or inadequately screened, with only normal results between ages 51-60 years, the cumulative incidence of cervical cancer was 1.6 and 2.5 per1000 respectively. [10] Therefore, in screened population, further screening beyond the age of 61-65 was not associated with statistically significant decreases of cervical cancer. [10]

The mean age of women with cervical cancer in this study was 60.9years. Women between 60-69years constituted 37% as the single highest age group; and this was followed by women ≥70years who constituted a quarter of all the patients seen in this series. This distribution is similar to what was previously described in this same centre. [11] Sule *et al* reported peak incidences in women in the fifth and seventh decades in Kano, northern Nigeria but Ebughe *et al* found peak incidences in women in the fourth and fifth decades in Calabar, south south Nigeria. [12,13] The exact reason for the difference in age prevalence between our region and these other regions in the same country is not very clear. This more so because

there is no systematic cervical cancer screening in Nigeria and only pockets of opportunistic screening happen here and there. It is known that any screening that does not cover at least 80% of the population at risk cannot significantly alter the mortality from a disease. Our peak incidence is also higher than the mean ages reported in some North African countries, Italy, and America. [14-17]. This might be related to the presence of systematic screening programmes in these countries.

The high prevalence of cervical cancer in women 60years and older in this study corresponds closely to the age prevalence of HrHPV in two previous studies conducted in southwest Nigeria where the prevalence of oncogenic HPV was found to be high across all ages with slight peaks in women 15-29 and 60-69years. [18,19] If it takes 10-20 years for persistent HrHPV infection to transform into cervical cancer, therefore the first HrHPV peak reported in this population would

most likely lead to cervical cancer peak around 40-50years and the second HrHPV peak will correspond to another cervical cancer peak around 70-80years. Apart from this, the HPV prevalence was high across all ages, and this might further explain why the prevalence of cervical cancer was high in women ≥60years. This is most likely because the body immunity decreases with advancing age thus younger women would most likely clear the virus better than older women leading to viral persistence and consequently cancer in older women compared to younger women. [8]

Squamous cell carcinoma was the predominant histological variant, 85.1% (148) seen in this study. It was the prevalent across all ages with the peak in women in the sixties. Adenosquamous carcinoma also peaked in the sixties. Squamous cell carcinoma and adenosquamous carcinoma are traditionally reported in older women. [20] A few women, 18 (8.1%) presented with adenocarcinoma, with a peak prevalence in women in their fifties. This finding concurs with the reported incidence of adenocarcinoma which is 4-10%. [21] The histological pattern observed agrees largely with what is reported in other studies. [20,21]

The youngest and the oldest patients that had cervical cancer in the period covered by this study were 32 and 96years respectively. Ekanem *et al* in Calabar also showed that no patient in their study was less than 30years old. [13] It therefore implies that for a resource constrained country like Nigeria, the WHO recommended age of 30years for the commencement of cervical cancer screening is appropriate as most HrHPV infections contracted by younger women would be cleared as cervical cancer is not likely to be seen in a sizeable number of women until after the age of 30years. [8] The age of 65years is the point of exit for most national cervical screening programmes across the world, if the cytology results have been negative in the last 10years. This is reasonable for a population that has been well screened routinely, where screening is systematic and at least 80% of the population at risk had been covered.

In this study, the oldest woman with cervical cancer was 96yrs old, about a quarter of all the patients were seventy years and above, way above the exit point for cervical cancer screening in most screening programmes. Therefore, for an under-screened population, it might be necessary to extend the age of screening to 70years initially until there has been a stable systematic screening with appropriate coverage of the population at risk. This is very important because for screening to produce the desired result, 80% of the population at risk must be screened and positive cases must be treated and appropriately followed up. [22] Thereafter, the exit age can be reduced to 65years as done in most established systematic cervical cancer screening programs. The implication of screening older women is that more proportions of early cervical cancer would be diagnosed but at a stage that would be amenable to surgical treatment.

If we are to screen women between the ages of 30 and 80years for a start, then we must determine the most appropriate and cost-effective screening method to be deployed. The visual inspection with acetic acid apart from all its shortcomings as a screening method is inappropriate for screening post-menopausal women that constitute the majority of population at risk because their entire cervical transformation zone would no longer be visible. [23,24] Pap smear will not also be cost effective and appropriate because the personnel and infrastructures necessary are not available in most resource poor countries. [25,26] The only option that appears plausible is HrHPV DNA screening. This is very appropriate and might be cost effective in the long run. [27] Studies have shown that there is no significant difference between provider and patient collected vaginal swab for HPV testing, a large population of women could therefore be screened over a short period using self-sampling for HrHPV DNA making the coverage of 80% of the population of women at risk feasible. All women who screen negative for HrHPV DNA are not likely to have cervical precancer or develop cervical cancer for the next five to ten years and only those who screen positive will require further evaluation. The implication of this is that at the first screening, all women who are 65years and above who are negative to HrHPV DNA can be exited from the screening program without the risk of developing cervical cancer later. Importantly too, the proportion of positive cases might not be more than 20% of the screened population as already shown in a study carried out in Irun Akoko; Southwest Nigeria, which reported 14.7% prevalence of HrHPV. [19]

Most patients (80%) with cervical cancer seen in this study presented with stage 2B disease and above, when the cancer is no longer operable and this was the pattern seen in all age groups. This was also the finding in this Centre over a decade ago, implying that little or nothing has changed in our cervical cancer prevention efforts. [11,28] The year-by-year variation in the number of cases seen in this study is very minimal also corroborating this position.

Conclusion

Cervical cancer remains a disease of public health importance in most resource poor countries with high hospital-based prevalence rate and higher age prevalence in older women. Women younger than 30years are not likely to develop cervical cancer but a large proportion of elderly women are affected. Any screening programme that will be appropriate for an under-screened population must start at the age of 30years as prescribed by WHO and cover women up to the age of 70-80years initially. The screening method must be easy to administer to cover a large population at risk over a short period of time, be cost effective and possess a high negative predictive value.

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