ORIGINAL ARTICLE

Clinico-pathological characteristics of cervical cancer in Ghanaian women

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Cervical cancer is a major cause of cancer related mortality in the developing countries, although preventable. The aim of this study was to use a retrospective descriptive study to determine the prevalence and the clinico-pathological characteristics of cervical cancer among genital tract malignancies. This study reviewed all histologically confirmed female genital tract malignancies for cervical cancers from January 2002 to December 2011. The clinico-pathological features of women with cervical cancer were analyzed using SPSS software (version 18). A total of 1011(70.8%) out of 1,427 female genital tract malignancies were cervical cancers. The average prevalence of cervical cancer was 71.0%. The mean age of women with cervical cancer was 57.8(SD=13.8) years. The youngest patient was 22 years. The commonest (76.9%) presentation was bleeding per vaginalm followed by fungating cervical masses (12.4%). Majority (88.9%) of the bleeding were unprovoked and in postmenopausal women (98.8%). The major types of cervical cancers were Squamous cell carcinoma (SCC) (90.1%) and adenocarcinoma (5.8%), both were common in the elderly. The common histological subtypes of cervical cancers in the study were; keratinizing SCC (73.3%), non-keratinizing SCC (14.7%), endometroid adenocarcinoma (4.5%), adenosquamous carcinoma (2.6%) and basaloid SCC (1.4%). This study found high prevalence of cervical cancer among female genital tract cancers in Accra Ghana. The women were relatively older and presented with advanced stage of the disease. SCC was the major histological type of cervical cancer.
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INTRODUCTION

Cancer of the uteri cervix is a common cause of morbidity and mortality in women world-wide (AIHW & AACR, 2012; Jemal *et al.*, 2011; Wittet and Tsu, 2008). More than 85% of the women with cervical cancer are found to live in the developing countries (Ferlay *et al.*, 2010), especially in Africa, where the prevalence is found to be high (Denny and Anorlu, 2012; Nkyekyer, 2000). The high prevalence in Africa is attributed to the lack of population-based screening programs and vaccines against the

high-risk strains (serotype 16, 18, 35,45,33) of human papillomavirus (HPV) that are known to cause the condition (Denny *et al.*, 2014, Surveillance Epidemiological and End Results,2013). The burden of cervical cancer in some African countries is further worsened by the high prevalence of HIV infection.

The mean age at diagnosis varies from about 48.0 years (Reagan and Hicks, 1953; Vinh-Hung *et al.*, 2007) to 53.4 years (Patten, 1966). Women in Africa commonly present with symptoms of advanced disease such as; unprovoked vaginall bleeding, contact bleeding, vaginall discharge, vaginall mass and moderate pain during sexual intercourse (Canavan and Doshi, 2000; Hamad, 2006; Kumar *et al.*, 2007; Nanda, 2006). This study sought to use retrospec-

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tive descriptive study to determine the prevalence and the clinico-pathological characteristics of cervical cancer in women diagnosed with genital tract malignancies and offer recommendations.

MATERIALS AND METHODS

Study design
This retrospective histopathological descriptive study was conducted in the Department of Pathology, Korle-Bu Teaching Hospital. This is the largest tertiary Teaching hospital in Ghana.

Data collection and statistical analysis
All histologic reports from 2002 to 2011 were reviewed for cases of female genital tract malignancies. For each case the patient's age, clinical symptoms and the histological subtype were abstracted. Data were entered into SPSS software (version 18), and analyzed. Results were presented in a bar charts and frequency tables. All the investigations were done on paraffin-embedded tissues and the diagnoses were based on H&E stained slides.

RESULTS
During the study period, 1,427 female genital tract malignancies cases were reviewed. Of these cases (i.e. 1,427 reviewed cases), 1,011(70.8%) were cervical carcinomas. The average annual prevalence of cervical carcinomas was 71.0%. The lowest prevalence 61.9% was recorded in 2008 while the highest prevalence of 78.5% was recorded in 2006 (Figure 1). The ages of women with cervical cancer ranged from 22 to 96 years with a mean age of 57.8 (SD=13.8) years. More than 90.0% of the women were older than 40 years.

A total of 863(85.4%) out of the 1,011 women had symptoms at presentation, 664(76.9%) of whom had bleeding per vaginalm. The great majority (88.9%) of the bleeding were unprovoked and in postmenopausal women (98.8%) (Table 1 and 2) The second most common symptom of cervical cancer was fungating (ulcerated) cervical masses 107(12.4%) (Table 2). Duration of symptoms at presentation was available for 209(20.7%). About 40% (43.1%) of the women with symptoms, presented within three
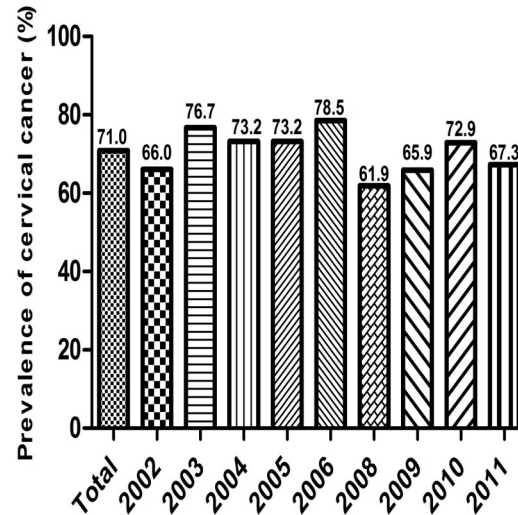

Figure 1: Prevalence of cervical cancer among female genital tract malignancies stratified by year

months of noticing the symptom. Cervical cancer was commonly (93.7%) diagnosed in small surgical biopsy specimens (Table 2).

The major types of cervical cancer in this study were: squamous cell carcinoma (SCC) 908(90.1%), adenocarcinoma 59(5.8%) and adenosquamous carcinoma 26(2.6%) (Table 3). Of the 908 SCC, 741(81.6) were keratinizing, with 149(16.4%) non-keratinizing and basaloid 14(1.5%). Majority 368 (40.5%) of the SCC were moderately differentiated, with 290(32.0%) well differentiated and 250(27.5%) poorly differentiated carcinomas. A total of 45 (76.3%) out of the 59 adenocarcinoma were endometriod, with 7(11.9%) papillary. Both SCC and adenocarcinoma were common in the elderly (Table 3).

The common histological variants of the 1,011 cervical cancers in the study were; keratinizing SCC (73.3%), non-keratinizing SCC (14.7%), endometriod adenocarcinoma (4.5%), adenosquamous carcinoma (2.6%), basaloid SCC (1.4%) and papillary adenocarcinoma (0.7%) (Table 4).

Table 1: Prevalence of cervical cancer among the studied population classified by age, type of bleeding and year

Variables	Total	2002	2003	2004	2005	2006	2008	2009	2010	2011
n	1008	128	69	90	131	142	39	122	151	136
Age group										
≤29	10(1.0%)	1(0.8%)	1(1.4%)	0(0.0%)	0(0.0%)	2(1.4%)	0(0%)	2(1.6 %)	2(1.3%)	2(1.5%)
30-39	73(7.2%)	10(7.8%)	6(8.7%)	2(2.2 %)	18(13.7 %)	5(3.5%)	4(10.3%)	10(8.2%)	7(4.6%)	11(8.1%)
40-49	212(21.0%)	27(21.1%)	20(29.0%)	15(16.7 %)	25(19.1%)	31(21.8%)	10(25.6%)	26(21.3%)	34(22.5%)	24(17.6%)
50-59	255(25.3%)	33(25.8%)	14(20.3%)	28(31.1%)	29(22.1%)	37(26.1%)	7(17.9%)	40(32.8%)	32(21.2%)	35(25.7%)
60-69	232(23.0%)	24(18.8%)	12(17.4%)	23(25.6%)	29(22.1%)	36(25.4%)	11(28.2%)	22(18.0%)	41(27.2%)	34(25.0)
≥70	226(22.4%)	33(25.8%)	16(23.2%)	22(24.4%)	30(22.9%)	31(21.8%)	7(17.9%)	22(18.0%)	35(23.2%)	30(22.1%)
Bleeding PV										
n (%)	664(76.9%)	82(63.3%)	50(69.6%)	63(68.9%)	89(67.9%)	91(64.1%)	28(71.8%)	70(57.4%)	99(65.6%)	91(66.9%)
Bleeding type										
Post coital BD	53(8.0%)	4(3.1%)	2(2.9%)	3(3.4%)	15(15.7%)	10(11.0%)	3(10.7%)	6(8.6%)	7(7.1%)	4(4.4%)
Contact BD	21(3.1%)	1(0%)	2(0%)	1(0%)	2(1.1%)	4(4.4%)	1(3.6%)	6(8.6%)	2(2.0%)	2(2.2%)
Unprovoked BD	590(88.9%)	77(60.0%)	46(66.7%)	59(66.3%)	74(83.2%)	77(84.6%)	24(85.7%)	58(82.9%)	90(90.9%)	85(93.4%)

Table 2: Clinical symptoms, durations and type of surgical specimens

Variables	n(%)
Clinical symptoms	
Bleeding per vaginalm	664(76.9)
Cervical mass	107(12.4)
Vaginal discharege	70(8.1)
Menorrhagia	6(0.9)
Abdominal mass	6(0.6)
Others	10(1.1)
Duration (months)	
≤3	90(42.7)
4-6	47(23.2)
7-9	12(5.7)
10-12	41(19.4)
>12	19(9.0)
Total	219(100.0)
Specimen	
Small biopsies	946(93.7%)
TAH/BSO	56(5.5)
Others	8(0.8)
Total	1011(100.0)

TAH/BSO = Total abdominal hysterectomy with or without bilateral Salpingo-oophrectomy

DISCUSSIONS

During the period of study, the average annual prevalence of cervical cancer among histologically confirmed female genital tract malignancies was high (71.0%) and ranged from 61.9% - 78.5%. The high prevalence of cervical cancer among female genital tract malignancies in this study agreed with statistics in some parts of the world outside Africa, such as Pakistan where it accounts for 60.3% (Farkhunda *et al.,* 2010), and 88% in India (Paymaster 1964). Similarly, the high prevalence of cervical cancer in Accra, Ghana supports findings from other studies conducted in Africa where it accounts for about 85.0% of female genital tract malignancies, making it a major cause of cancer related morbidity and mortality (Denny and Anorlu, 2012; Ferlay *et al.*, 2010; Nkyekyer, 2000; Wittet and Tsu, 2008).

Among the reasons for the high prevalence rate of

Table 3: Prevalence of major groups of cervical cancer (histological diagnosis) stratified by age

Variables	Total	≤29	30-39	40-49	50-59	60-69	≥70
Adenocarcinoma	59(5.8)	0(0.0)	5(8.5)	17(28.8)	11(18.6)	16(27.1)	10(16.9)
Adenosquamous	26(2.6)	0(0.0)	1(3.8)	9(34.6)	7(26.9)	6(23.1)	3(11.5)
SCC	908(90.1)	8(0.9)	67(7.4)	185(20.4)	231(25.4)	207(22.4)	210(22.8)
MMMT	3(0.3)	0(0.0)	0(0.0)	0(0.0)	1(33.3)	0(0.0)	2(3.1)
Choriocarcinoma	3(0.3)	1(33.3)	0(0.0)	2(66.7)	0(0.0)	0(0.0)	0(0.0)
Adenoid cystic ca	5(0.5)	1(20.0)	0(0.0)	0(0.0)	0(0.0)	1(20.0)	3(60.0)
Others	7(0.8)	0(0.0)	0(0.0)	0(0.0)	4(57.1)	2(28.6)	1(14.3)

Table 4: Histological variants of cervical cancers

Histological Type	Distribution, n(%)
Keratinizing SCC	741(73.3)
Non-keratinizing SCC	149(14.7)
Basaloid SCC	14(1.4)
Small cell SCC	2(0.2)
Spindle SCC	1(0.1)
Verrucous SCC	1(0.1)
Endometriod Adenocarcinoma	45(4.5)
Papillary Adenocarcinoma	7(0.7)
Clear cell Adenocarcinoma	4(0.4)
Serous Adenocarcinoma	1(0.1)
Mucinous Adenocarcinoma	1(0.1)
Signet ring Adenocarcinoma	1(0.1)
Adenosquamous carcinoma	26(2.6)
Choriocarcinoma	3(0.3)
Adenoid cystic carcinoma	5(0.5)
Lymphomas	5(0.5)
Alveolar rhabdomyosarcoma	1(0.1)
Malignant spindle sarcoma	1(0.1)
MMMT	3(0.3)
Total	1011(100.0)

cervical cancer in Africa are the lack of population-based screening programs to detect early premalignant lesions, lack of vaccine against high-risk strains (serotypes 16, 18, 33, 35, 45) of human papillomavirus (HPV), that are known to cause the condition and the high prevalence of HIV co-infection in some parts of Africa (Denny *et al.*, 2014). Studies in the developed countries have shown that, organized screening programs have contributed significantly to the decline in morbidity and mortality of cervical cancer (Surveillance Epidemiological and End Results, 2013). On the contrary due to lack of these programs in Sub-Saharan African developing countries including Ghana, cervical cancer remain the major killer of women (Franco *et al.*, 2001; Kyari *et al.*, 2004).
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Majority (70.0%) of the women diagnosed with cervical cancer were older than 50 years, with a mean of 57.8 years. These age characteristics are similar to studies that found cancer of the uterine cervix to be commoner in relatively older (mean age of 53.4 years) women (Patten, 1966). This however differs from other studies that found young women (mean age of 48.0 years), to be at risk (Reagan and Hicks, 1953; Surveillance Epidemiological and End Results, 2013; Vinh-Hung *et al.*, 2007). The older age group in this current study may be due to the fact that majority of the women were postmenopausal.

This study found that women with cervical cancer presented with vaginal bleeding (76.9%), fungating masses (12.7%) and vaginal discharge (8.1%). These symptoms are suggestive of an advanced stage of the disease at presentation. In Ghana, there is no population-based cervical cancer screening program. There are a few institutional based screening centres at Korle-Bu teaching hospital, Ridge hospital and other private medical laboratories, all within Accra. If screening facilities were available, accessible and affordable, many of these women would have had the lesion detected early and treated appropriately, thus reducing the number of women presenting at an advanced stage of the disease. The findings in this current study are therefore similar

to studies that showed that women living in areas where availability and accessibility of screening programs to detect premalignant lesion are lacking, present with cervical which is usually clinically advanced (Canavan and Doshi, 2000; Hamad, 2006; Kumar *et al.*, 2007; Nanda, 2006). Our findings are therefore similar to other developing countries with limited screening facilities (Kidanto *et al.*, 2002; Ngwalle *et al.*, 2001).

The common major histological types of cervical cancer in this study were: SCC (90.1%), adenocarcinoma (5.8%) and adenosquamous carcinoma (2.6%). This pattern of cervical cancer, with SCC as the predominant histological type is similar to studies in both the developed and developing countries (Abdul *et al.*, 2006; Frumovitz, 2013; Vizcaino *et al.*, 2000). The commonest histological variant of cervical in this current study was keratinizing SCC and is similar to findings by Ng and Reagan, (1988).

COCLUSION

There is high prevalence of cervical cancer among female genital tract cancers in Accra, Ghana. The clinical presentation is that of advanced disease in relatively older women, majority of who were post-menopausal. Squamous cell carcinoma was found to be the major histological type of cervical cancer. It is strongly recommended that national screening programs for early detection of premalignant lesion be initiated and made available, accessible and affordable to women in Ghana.

COMPETING INTERESTS

The authors declare that they have no competing interests.

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