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Socio-demographic characteristics of patients with cervical cancer who are eligible for brachytherapy

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Abstract:
Background: Today, the standard of care for women who develop locally advanced cervical cancer has moved on from external beam radiation therapy (EBRT), to combined EBRT associated with brachytherapy and concomitant chemotherapy. We aim to assess socio-demographic characteristics of patients with cervical cancer who are eligible for brachytherapy.
Methods: A prospective case series study was conducted during 2009-2012, with 202 females patients diagnosed with cervical cancer and eligible for brachytherapy. The socio-demographic information collected included: age, marital status, level of education, place of residence, employment status, ethnicity and age of first sexual intercourse.Descriptive statistics, Fisher's exact test and chi-square test were used to compare groups of interest.
Results: The average age of patients was 54.5, 95%CI (53.2-55.8), meanwhile, the average age of first sexual intercourse was 19.8, 95% CI (19.5-20.1).Most respondents reported being married and employed, lived in urban settings and had higher education.The majority of younger patients (under the age of 50) (69%) lived in urban settings, whereas the majority of older patients (over the age of 50) (50.4%) lived in rural settings, $p<0.05$. Patients with higher education and employed were younger than patients with lower education and unemployed, $p<0.001$. There were no significant differences between various categories of marital status and ethnicity on one side and age on the other.
Conclusions: Knowing the sociodemographic characteristics of patients with cervical cancer eligible for brachytherapy is important for understanding risky groups, hospital planning and prevention. Younger patients had higher education, were employed and lived in urban areas, factors such as these may have facilitated access to health care, diagnosis and treatment with combined EBRT associated with brachytherapy and concomitant chemotherapy.
Keywords: Socio-demographic factors, young age, cervical cancer, brachytherapy

INTRODUCTION

Cervical cancer is the second most common cancer in women worldwide, with approximately 528,000 new cases and 266,000 deaths among women annually (1). About 90% of cervical cancers occur in low- and middle-income countries where organized HPV screening and vaccination programs are not in place (2). Even though cervical cancer screening in Albania was limited to opportunistic Pap tests only in 2018, since 2019 Albania has integrated the HPV screening program (3). According to current estimates in Albania, 133 women are diagnosed with cervical cancer every year and 74 die as a result (4). Today, the standard of care for women who develop locally advanced cervical cancer has moved on from external beam radiation therapy (EBRT), to combined EBRT associated with brachytherapy with concomitant chemotherapy (5). From 2009, there are several of patients treated with HDR Ir-192 following EBRT radiotherapy treatment in Albania (6). The contingent of these patients is an excellent opportunity to study the socio-demographic aspects of cervical cancer and its follow-up.

METHODS

Aprospective case series study was conducted during 2009-2012.202 females are presented to the University Hospital Center: "Mother Teresa", Oncology Service, as patients diagnosed with cervical cancer. Thepatients originated from the referral system (primary and secondary healthcare).Inclusion criteriafor individuals participating in the study were: a) Patients diagnosed with cervical cancer c) Patients eligible for brachytherapyb)Given informed consent.
The socio-demographic information collected included: age, marital status, level of education, place of residence, employment status, ethnicity and age of first sexual intercourse.
Measurement of variables were categorized as below: age (categorized into: 0-49 years and ≥50 years), education (categorized into: primary, secondary and higher), employment status (categorized into: employed, unemployed, retired), place of residence (urban vs. rural areas), ethnicity (white vs

roma), and marital status (categorized into: never married, married and formerly married).Descriptive statistics were used to report frequenciesand percentages. Mean, median and standard deviation were used as measure of central tendency.

In order to compare groups of interest, the data obtained were analyzed statistically using chi-square test. In all cases, a P-value≤0.05 was considered statistically significant.

Statistical Package for Social Sciences (SPSS, version 26.0) and Microsoft Office Excel 2007 were used for all the statistical analyses.

All participants in the study were informed about the purpose and objectives of the study.Confidentiality, privacy and voluntary of participation were assured.

RESULTS

Measures of central tendency are given in Table 1. The sample of the study consisted of 202patients (100% females).The average age of patients was 54.5, 95%CI (53.2-55.8), with standard deviation (SD) = 9.5 and median = 54.0. Meanwhile, the average age of first sexual intercourse was 19.8, 95% CI (19.5-20.1), with standard deviation (SD) = 2.4 and median = 20.0**.** (Table 1)

Table 1: Descriptive measures of central tendency for age and age of first sexual intercourse among patients with cervical cancer

	Age	**Age of first sexual intercourse**
Mean	54.5	19.8
95% Confidence Interval for Mean	53.2-55.8	19.5-20.1
Std. Deviation	9.5	2.4
Median	54.0	20.0

The baseline characteristics are given in table 2.Most of respondents reported being married (91.1%), and most of them have a white ethnicity (95%). 56.4 % of study population lived in urban settlements, while 43.6% lived in rural settlements. 43.6% of patients were employed, 22.8% of patients were unemployed, and 33.7% of patients were retired.The majority of younger patients (under the age of 50) (69%) lived in urban settings, whereas the majority of older patients (over the age of 50) (50.4%) lived in rural settings, p<0.05. Patients with higher education and employed were younger than patients with lower education and unemployed (59.2% vs 32.8%) and (77.5% vs 25.2%), respectively, p<0.001. There were no significant differences between various categories of marital status and ethnicity on one side and age on the other. (Table 2)

Table 2: Distribution of socio-demographic characteristics among patients with cervical cancer

Baseline characteristics	**N (%)***	**Age**		**P value†**
		0-49 years	**> 50 years**	
Marital Status				
Single	5 (2.5)	4 (5.6)	2 (0.8)	0.134
Married	184(91.1)	63 (88.7)	121 (92.4)	
Formerly married	13 (6.4)	4 (5.6)	9 (6.9)	
Residence				
Rural	88 (43.6)	22 (31.0)	66 (50.4)	0.008
Urban	114(56.4)	49 (69.0)	65 (49.6)	

Education level				
Primary				
Secondary	37 (18.3)	5 (7.0)	32 (24.3)	<0.001
Higher	80 (39.6)	24 (33.8)	56 (42.7)	
	85 (42.1)	42 (59.2)	43 (32.8)	
Employment status				
Yes	88 (43.6)	55 (77.5)	33 (25.2)	<0.001
No	46 (22.8)	16(22.5)	30 (22.9)	
Retired	68 (33.7)	0 (0.0)	68 (51.9)	
Ethnicity				
White	192 (95.0)	68 (95.8)	124 (94.7)	0.727
Roma (Gypsies)	10 (5.0)	3 (4.2)	7 (5.3)	

* Absolute numbers and their respective percentages
†P value

DISCUSSION

The incidence of cervical cancer was 13 1 per 100,000 females worldwide and varied considerably from one country to another, with rates ranging from under 2 to 75 per 100,000 women(7).In our three-year study, only women with cervical cancer who underwent brachytherapy were included, with an incidence of over 2 women per 100,000.Advanced brachytherapy may reach very high levels of local control with a reduction in morbidity(8).The average age at which cancer of the cervix is diagnosed worldwide is 50 years(9).The average age of the patients in our study was 54.5 years old, this is also due to the fact that the patients were not newly diagnosed but were contingent on brachytherapy treatment, without leaving aside other socio-demographic factors that affect the early or late diagnosis of cervical cancer.Most of the women in our study lived in urban areas, especially young women.Similar studies have shown that women living in urban areas are more likely to be screened, diagnosed and treated with advanced treatment protocols (such as brachytherapy)(10).Infection with HPV (the known risk factor for cervical cancer) can occur during the first sexual interaction(11).Within this framework, the age of the first sexual intercourse is particularly important, thus determining the duration of exposure.Evidence shows that women under the age of 16 who have had sexual intercourse, as well as those aged 16-20, have a higher likelihood of cervical cancer than women over the age of 21 whohave had sexual intercourse(12). The average age of the first sexual interacourse of the patients in the study was 19.5, a non-negligible age as a risk factor.The rate of screening and diagnosis for cervical cancer varied by social-demographic factorssuch as age, race, ethnicity, sexual orientation and insurance, which restricted access to preventive care for underserved groups(13).In our study, it was evident that the majority of cervical cancer patients had a larger distribution of the Caucasian race, married patients, higher education and employed patients.However, this distribution is not attributed to the risk factors "per se", but to the sociodemographic distribution of the population, in general.The strong point of the study is the recognition of the descriptive characteristics of cervical cancer patients who were eligible for brachytherapy and how this evidence can be better translated into better hospital planning.

This study may have some limitations, such as potential selection bias of case series selection, descriptive design of the study and possible information bias, due to self-reporting of the data.

CONCLUSIONS

Knowing the sociodemographic characteristics of patients with cervical cancer eligible for brachytherapy is important for understanding risky groups, hospital planning and prevention. Younger patients had higher education, were employed and lived in urban areas, factors such as these may have facilitated access to health care, diagnosis and treatment with combined EBRT associated with brachytherapy and concomitant chemotherapy.

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