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DEMOGRAPHIC CHARACTERISTICS, PRESENTATION, RISK FACTORS AND TREATMENT OF PATIENTS WITH SQUAMOUS CELL CARCINOMA OF THE PENIS AT MOI TEACHING AND REFERRAL HOSPITAL ELDORET, KENYA

E. L. Mugalo

ABSTRACT

***Background*: Squamous cell carcinoma (SCC)of the penis is a rare cancer that affects mainly elderly men. Presence of fore skin in the uncircumcised, Human Papilloma Virus (HPV) infection, tobacco smoking and Human Immune Deficiency Virus (HIV) infection are known risk factors.**

***Objective*: To describe the demographic characteristics, presentation and risk factors and treatment of patients with Squamous Cell Carcinoma of the penis in Moi Teaching and Referral Hospital (MTRH), Eldoret, Kenya.**

***Design*: This was a ten-year retrospective study.**

***Setting*: Urology unit and oncology departments at Moi Teaching and Referral Hospital, Eldoret, Kenya**

***Results*: A total of 41 patients were treated for squamous cell carcinoma of the penis at MTRH. Mean age 51.2 years (SD15.2) and range of 31-79 years. Of these 81.6% (31) were uncircumcised, 86.1% (31) were HIV positive and 70% (14) were tobacco smokers. About 63.9% (23) presented with a glanular lesion of the penis. Penectomy was performed in 76.5% (13) of the patients.**

***Conclusion*: Patients treated for SCC of the penis at MTRH are about 10 years younger than the those in developing countries. Being uncircumcised, HIV infection, use of Tobacco and low socioeconomic status were common risk factors in this study. The glans penis is the commonest site for primary lesion and penectomy is the most common mode of treatment as most cases presented at advanced disease stages.**

INTRODUCTION

Squamous cell carcinoma (SCC) is a rare condition in the developed world affecting mainly elderly men aged above 60 years (1-2). Peak incidence occurs in men aged 70 years and above, with 60% of the cases in men over 65 years in the developed world (3). It is an aggressive tumor, with poor prognosis and a five-year survival rate of 50% in good centers (4).

Circumcision status

Uncircumcision is the most important risk factor. Neonatal circumcision virtually eliminates SCC and is rare in those men circumcised at infancy. This may suggest an irritating effect of smegma (5).

Smegma elicits a chronic inflammatory process with recurrent infections causing preputial adhesions and phimosis (6). Uncircumcised men have a lifetime risk of penile cancer of 1 in 600 in the USA and 1 in 900 in Denmark (7).Worldwide ,Circumcised males have a lifetime risk of developing penile squamous cell carcinoma estimated at 1 to 50,000 and 1 to 12,000,000 (8,9). No invasive SCC was detected in neonatal circumcised males in the five major series in USA starting 1932 (5).

Viral infections

HIV positive patients have been reported to have a higher risk of penile cancer because of the observed cases of increasing number of cancers associated with HIV (10). Up to 42% of penile carcinomas are HPV positive which relates closely to number of sexual partners (3).

There is an eight-fold risk of developing Squamous cell carcinoma among HIV positive people as compared to the general population (11).

Other risk factors include low socio-economic status, cigarette smoking, human papilloma virus (HPV) infection, lack of penile hygiene, phimosis, and penile inflammation (6). Multiple sexual partners among unmarried people may expose them to infectious agents that cause inflammation which is a risk factor in cancer development. Improved social economic status may afford the population better hygienic conditions. This is supported by the finding that patients with cancer of the penis and stomach were from a lower social economic stratum (12).

Low level of education, low disposable income and marital status are also associated with increased risk of invasive penile cancer (13).

The aim of the study is to describe the demographic characteristics, presentation and risk factors and treatment of patients with SCC of the penis in Moi Teaching and Referral Hospital (MTRH), Eldoret, Kenya. There is no recent data of work on SCC aimed at improving outcomes. Data from this study will be used to improve the current preventive and treatment measures and highlight SCC of the Penis as a Urological condition that requires attention with the aim of improving outcomes.

MATERIALS AND METHODS

Study Design: This was a ten-year retrospective study involving review of records of patients who had been treated for squamous cell carcinoma of the penis covering the period of ten years from 1st Jan 2006 to 31st December 2016.

Sample Size determination and Sampling Techniques: The Records of patients treated for SCC at both the Urology clinic and Oncology clinic at MTRH over the period of study were identified from the Central registry.

Data collection and Analysis: Data was collected using a pre-designed data sheet and entered in

an excel data sheet, cleaned, and then analyzed.

Descriptive statistics using mean for continuous data and proportion for categorical data were performed and presented.

Inclusion criteria: Record of patients who had histological diagnosis of squamous cell carcinoma and managed at MTRH. Complete record in terms of age, stage of disease, clinical description of the penile disease at presentation and corroborating treatment information.

Exclusion criteria: Patients whose records could not ascertain a confirmed histological diagnosis of squamous cell carcinoma.

Ethical Consideration: Approval for this study was received from Institution Research Committee of Moi University and Moi Teaching and Referral Hospital (IREC).

RESULTS

In the period of the study 41 cases of penile cancer records were evaluated.

Table summarizing the characteristics of the case records.

Table 1

Characteristic of the patients with SSC

Total number	N=41		
Age	Mean	Range	
	51.2 years SD 15.2	31-79 years	
Marital status	Married	Single n= 39	
	92.3% (36)	7.7% (3)	
Circumcision status	Circumcised 18.4% (7)	Uncircumcised 81.6% (31)	n=38
Tobacco use	Yes	NO n=20	
	70% (14)	30% (6)	
HIV status	Positive	Negative n=36	
	86.1% (31)	13.9% (5)	

Table 2

Site and type of lesion

	Site of lesion		
Glans	63.9% (23)		
Penile shaft	25% (9)		
Inner prepuce	11.1% (4)		
	Type of Lesion		
Fungating ulcer	71.1% (27)		
Ulcerating inguinal LN Small Ulcer Ulcer	10.5% (4) 5.3% (2) 5.3% (2)		
Small sore	2.6% (1)		
Swelling	2.6% (1)		
Fungating Ulcerated Inguinal LN	2.6% (1)		

WORK	**%**	**n**
Peasant	46.4	13
Fisherman	14.3	4
Self Employed	7.1	2
Cook	7.1	2
Surveyor	3.6	1
Mason	3.6	1
Casual	3.6	1
Driver	3.6	1
Business	3.6	1
Civil Servant	3.6	1
Teacher	3.6	1
Total	**100.0**	**28**

Table 3: Occupation

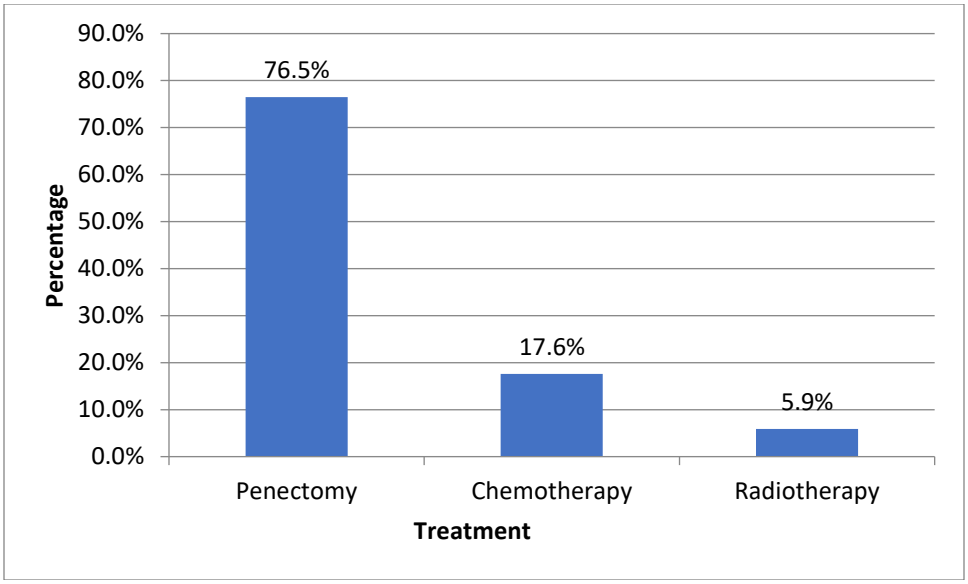

Figure1.Treatment options.

DISCUSSION

Squamous cell carcinoma (SCC) of the penis is a rare but aggressive tumor with poor prognosis. It has a global incident rate of 1/100,000 in male European population and as high as 4/100,000 in Brazilian and Ugandan male (14). In Kenya, the cases are few as seen in this study and one previous study. This study yielded 41 cases in 10 years, about 4 cases per year. These are cases treated at the second largest National Referral Hospital that serves western Kenya region which has a population of approximately 24 million people. A 30-year study at Kenyatta National Hospital (KNH) yielded only 55 cases, which makes approximately 2 cases seen per year (15).

Squamous cell carcinoma of the penis tends to affect older men with a peak incidence in men aged 70 years and above, with 60% of cases in men over 65 years in the developed world (1,2,3,16). The mean age of patients in this study was 51.2 years (SD15.2) and a range of 31 years to 79 year. A study in Bugando Tanzania had a peak age of 41years to 50 years (17) These patients were about 10 years younger compared those seen in developed countries despite their low circumcision status. In this study,63% (23) of our patients were uncircumcised. In the Bugando study, 89.8% of the patients were uncircumcised which is a high number as well (17). A high proportion of patients ,86.1% (31), in this study were HIV infected. People with HIV have been found to have a higher risk of developing cancer at any site in the body (18,19).

Compromised immune system predisposes to development of cancer by failing to clear stages of cancer development. There are increasing reports of cases of squamous cell carcinoma in patient who are HIV positive (20,21,22).

There is increased risk of developing squamous cell carcinoma among HIV patients with an 8-fold increased risk compared to the general population (23). The HIV infection may be an additional risk factor that predisposes patients to develop SSC at a younger age.

Being uncircumcised has been identified as a most important risk factor in development of squamous cell carcinoma of the penis. It rarely occurs among communities that practice

neonatal circumcision (5). No invasive SCC was detected in neonatal circumcised males in the five major series in USA starting 1932 (20). About 89.8% of patients in the study from Tanzania were uncircumcised. There was similarly higher percentage of about 81.6% (31) of uncircumcised men in this study. The prepuce conceals smegma which elicits a chronic inflammatory process with recurrent infections causing preputial adhesions and phimosis (6). Smegma in uncircumcised people harbors micro-organisms, dead skin cells, mucous and other components which create an environment for carcinogenesis (24).

In countries such as Israel, where almost all males are circumcised, the rate of penile cancer is very low at 0.1/100,000. Though most communities in Kenya perform male circumcision as a cultural requirement, there are some that do not. This study revealed that 75% (27) of patients belong to communities that do not practice male circumcision while 25% (9) were from those that circumcise. Even among communities that do not circumcise, the rate of squamous cell carcinoma is different. This is attributed to difference in sexual behavior and number of multiple sexual partners that could lead to Human Papilloma Virus (HPV) infection (25).

In this study, 92.3% (36) of the patients were married while 7.7% (3) were single. It would be assumed that in marriage multiplicity of sexual partners would not be a risk factor. However, in some communities in the region, most of the marriages are not monogamous which may predispose the men to HPV infection. Multiple sexual partners predispose to HPV infection. The sub-types of HPV-16 or HPV-18 are recognized possible causes of penile SCC (26).

However, among the uncircumcised, improved hygiene has been shown to play a role in reducing incidences of Squamous cell carcinoma of the penis. In Denmark where there is a low circumcision prevalence of only 2%, penile cancer is decreasing commensurate with increase in indoor bathrooms (27). In this study, about 25% (9) of the patients were from communities that practice male circumcision. Circumcision is known to improve penile hygiene. Carcinogenic environment under the fore skin makes the glans penis to be more susceptible as the most common site of the primary lesion. In our study, 63.9% (23) of the patients had the primary lesion on the glans penis, 25% (9) on the penile shaft and 11.1% (4) on the inner preputial skin. A study by Jill S Barnholtz-Sloan *et al* found glans penis lesion in 48% of patients, followed by the prepuce in 21%, both prepuce and glans at 15%, coronal sulcus at 6% and the shaft < 2% (28). Tumors found in men who were circumcised during childhood tend to be low grade while in those circumcised at older age tend to be high grade. Most communities in Africa practice adolescent circumcision. (29).

Majority of our patients undertake low paying jobs. Their occupation included Peasant farmers 46.4% (13), Fishermen 14.3% (4), Self-employment and Cooks 7.1% (2). The others included Surveyor, Mason, Casual laborers, Driver, Business, Civil servant, and Teacher 3.6% (1 each). Uncircumcised males living under poor social economic conditions may not have access to sanitary facilities to maintain good hygiene which plays an important role in reducing the risk of developing squamous cell carcinoma as reported in the Danish study (27). A study in Brazil revealed an unexpectedly high number (70%) of penile cancer patients were common agricultural workers (30). It was however reported that the workers tend to have a very high degree of promiscuous behavior.

In this study 76.5% (13) of our patients underwent partial penectomy. This is a salvage

procedure in invasive cancer. The study curried out in Tanzania, 63.1% of the patients in Bugando underwent partial penectomy (18). Penectomy is performed in patients with invasive disease. A study by Ciro Bezerra Viera revealed a delay of up to 18.9 months from onset of symptoms before men with cancer of the penis seek medical attention. This could be attributed to fear of embarrassment and social stigma associated with disorders of the reproductive organs (31).

Tobacco use in the form of cigarette is a known risk factor in the development of penile SCC. Smocking more than 10 stick per day for more than 5 years has a significant correlation with the development of SCC of the penis (32). Current smokers have double lifetime risk of developing penile SCC compared to nonsmokers (33). About 70% (14) of our patients were tobacco users compared to 30% (6) who were nonsmokers.

CONCLUSION

Patients treated for SCC the penis at MTRH are about 10 years younger compared to those in developing countries. Being uncircumcised, HIV infection, use of Tobacco and low socioeconomic status were risk factors in patients in this study. The glans penis is the commonest site for primary lesion. Penectomy is the most common mode of treatment which is an indicator of late presentation requiring salvage surgical intervention.

RECOMMENDATION

Early biopsy of any suspicious penile lesion will enable early diagnosis is recommended. Voluntary Medical Male Circumcision program needs to continue being promoted especially in prepubertal age groups which is a known preventive measure. None of the patient in this study had an HPV test. A baseline study on HPV prevalence in the population and among patients with SCC is also recommended to understand the magnitude of this preventable risk factor in our population.

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