

Penile Cancer in Bihar, India: 100 Cases in a Tertiary Referral Center of a Developing Country

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Abstract

Background: Background: Penile cancer is more common in India as compared to Western populations. The age-adjusted incidence rate of penile cancer in India ranges from 0.8 to 1.8 per 100,000. Due to fear, ignorance, and embarrassment patients neglect the penile tumor for months before presenting to a physician. Many of our patients are of low socioeconomic status and never attend the follow-up after local therapy of the penile tumor. Quite a few of these present late with inoperable regional lymph node (LN) metastases, thereby missing the opportunity of a cure. Penile cancer has been associated with old age, bad hygiene, smoking and lack of circumcision. This study aimed to describe the sociodemographic and clinical characteristics of patients with penile cancer who consulted to a tertiary referral hospital.

Methods: A case series of all penile cancer cases at a tertiary referral institution during 2012-2014. Socioeconomic, demographic and clinical features of patients were described, and bivariate analyses were carried out.

Results: There were 100 penile cancer cases. The average age was 60 years. The main reason for consultation was an foul smelling ulcero-proliferative mass on the penis (80%). The most common location was the glans+shaft (55%), and the more frequent histology type was the squamous cell carcinoma (95%). With regard to risk factors, 65% of the patients had history of smoking and 100% did not have circumcision.

Conclusion: Most of the patients with penile cancer found in this study had old age, history of tobacco use and lack of circumcision. Patients who presented with lymph node metastasis had to undergo more radical procedures compared with those without lymph node involvement. Robust studies to determine the risk factors among low-income populations are required.

Keywords: Penile Neoplasms; Circumcision, Male; Smoking;

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I. Introduction

Penile cancer is more common in India as compared to Western populations. The age-adjusted incidence rate of penile cancer in India ranges from 0.8 to 1.8 per 100,000 [1]. Penile cancer is a rare malignancy worldwide, accounting for less than 0.5% of all cancers diagnosed in men [2]. It is less common in high-income countries like Europe and the United States, where it accounts for 0.4%-0.6% of all malignancies, with an age-adjusted incidence of 0.3 to 1 in 100,000 men [3,4]. In low and middle-income countries such as African and South American countries, it represents about 10% of all malignancies, with an annual age-adjusted rate between 2.3 to 8.3 per 100,000 men and Brazil being the country with the highest incidence in the world [5,6]. Due to fear, ignorance, and embarrassment patients neglect the penile tumor for months before presenting to a physician. Many of our patients are of low socioeconomic status and never attend the follow-up after local therapy of the penile tumor. Quite a few of these present late with inoperable regional lymph node (LN) metastases, thereby missing the opportunity of a cure. Penile cancer usually affects men over 50 years, but up to 19% of the cases occur in men under 40 years and 7% in men younger than 30 years [6]. In 95% of the cases, penile cancer originates from the squamous cell tissue located in the inner layer of the glans (80%) or foreskin (15%) [7-12]. Risk factors that have been associated with penile cancer include poor hygiene, phimosis, dermatitis, traumatic injury of the penis, infection with the Human Papilloma Virus (HPV) and smoking [13-15]. Early circumcision acts as a protective factor since it prevents phimosis [16,17]. In 2003, Ramírez and Bermúdez-Pupo published a study describing the population with penile cancer in a referral hospital in Cali, Colombia between 1990 and 2000, in which they found a total of 59 cases of penile cancer, with a mean age of

52 years, 87% of patients had a history of smoking, 10% had HPV infection and 80% had no circumcision [18]. According to later data from the Population-based Cancer Registry of Cali (RPCC), 63 cases of penile carcinoma were reported during the 2004-2008 period. This type of carcinoma accounted for 0.7% of all diagnosed cancers, and the age-adjusted incidence was 1.3 per 100,000 person-year. Although penile cancer is a rare disease, it can yield terrible consequences on the social and emotional life of patients living with it. The cancer usually afflicts men of low socioeconomic status, and the diagnosis is frequently made in advanced stages of the disease when treatment options are drastic. It is therefore necessary to know the changes in these sociodemographic factors and the clinical features associated with the onset and the prognosis of penile cancer in this population in order to identify research areas and potential prevention strategies. The objective of this study is to describe the sociodemographic and clinical characteristics of patients with penile cancer who consulted to a tertiary referral hospital in Bihar, India during 2012-2014.

II. Methods

This is a case series study of patients admitted to tertiary referral institute in Bihar with histopathological diagnosis of penile cancer made between January of 2012 and December of 2014. The institution where the study was carried out admits patients from the entire region of Bihar and is one of the most important public institutions in the state.

The clinical records of patients registered with the diagnosis of penile cancer were reviewed. For cancer staging, the international TNM classification was used. The data collection consisted of three parts: sociodemographic characteristics, patient's clinical features and the tumor's characteristics. The database was created in Microsoft Access 2010® program, and an exploratory analysis was performed to look for extreme and missing values, and typing errors.

III. Results

Description of the Study Population

A total of 100 medical records were analyzed.

The age range was between 29 and 83 years, with a mean age of 60 years. Two patients (2%) were younger than 40 years, and 1 patient (1%) died during the study period. Most of the patients (70%) had their educational attainment recorded in their medical record. Of these, only 10% completed basic primary education. Most of the patients (85%) were from rural areas of Bihar and the remaining 15% were from the urban areas. In terms of occupation, 70% of the patients were farmers and 20% were unemployed at the time of the study. Within the group of patients who had an occupation, 59% did their work outdoors in the fields of agriculture, street vending, construction, etc. Finally, for marital status, 90% of the patients had a stable partner and 10% had no partner.

Clinical Features

The most frequent cause of consultation among patients studied was the appearance of an ulceroproliferative mass on the patient's penis (80%) (figure 1), followed by the appearance of an ulcer (20%). Most (95%) of the patients had inguinal lymphadenopathy during the first visit (table). For the physical examination item, 80% of the patients had an exophytic mass and 20% an ulcer. For tumor localization, 35% had the glans involved, 55% the penile shaft+glans, 10% the coronal sulcus and none had only foreskin involvement. Almost half of the patients (45%) reported consultation to a general physician or specialist before the diagnosis of penile cancer was made, and 78% reported an evolution time between 2 and 24 months. History of smoking was found in 65% of the patients, and 100% of the patients had no history of circumcision at the time of their first consultation.

Tumor Features

85% of the cases had an advanced T2 or T3 clinical stage. Involvement of multiple superficial inguinal nodes (N2) was found in 80% of the patients; 5% were classified as N1 and 5% had no evidence of lymph node metastasis (N0). Evidence of metastasis to distant organs was present (M1) in 5 patients. Patients with nodal involvement (N1-N3) presented metastasis more frequently than those with no evidence of nodal involvement (N0). Regarding the tumor grade, 60% of the cases were high grade. The predominant histological type was squamous cell carcinoma (95%); verrucous carcinoma was found in 5 patients. As for the treatment, 50% of the patients underwent partial amputation with bilateral node dissection and 30.0% total amputation with bilateral node dissection. Palliative chemotherapy and radiotherapy was given in 10 patients due to large fungating inguinal nodal masses (figure 2) and distant metastasis. 5 patients had metastasis in lungs.

IV. Discussion

The present study allowed for a description of the sociodemographic and clinical characteristics of patients diagnosed with penile cancer who consulted to a tertiary-level referral institution in Bihar over a period of 3 years (2012-2014).

Sociodemographic Characteristics

It was found that the age groups most commonly affected by this type of cancer were men between 43 and 77 years, similar to results of previous studies that reported a higher incidence in men above 50 years old [6,19]. Our finding is similar to Chaux et al. who reported that upto 91% of patients with penile cancer have a low educational level [19]. Our majority of patients had completed only basic primary education. Subscription to a subsidized health insurance regime in Colombia indicates a low-income status. Majority of our patients were from rural areas and from low income group, which is consistent with the study by Hernandez et al. which found a 43% greater risk of penile cancer in countries where more than 20% of the population lives in poverty compared to countries with less than 10% living in poverty [20].

Ramirez et al. found that the majority of patients with penile cancer were farmers (49.2%), which is consistent with our study as majority of patients were farmers [18]. Scientific

literature reports that farmers are at higher risk for some neoplasms, such as Hodgkin's lymphoma, multiple myeloma, leukemia, melanomas, and cancers of the lip, stomach, and prostate. However, the association between farmer-related occupation and the development of penile cancer has not yet been established although it has been proposed that chronic exposure to chemicals commonly encountered in agriculture may predispose farmers to different types of cancers [21-23].

Past Social History

This study showed that most patients with penile cancer (80%) have a smoking history. The use of tobacco in any form as a risk factor for penile carcinoma has been described in several studies [6,13,16,19]. Chaux et al., found that 76% of patients with penile cancer in Paraguay reported past or present consumption of tobacco, mainly in the form of cigarettes, and 55% of them still held the habit during the time of the study [19]. Most patients (80%) reported an evolution time around 2 and 24 months, which is similar with reports that identified the delay in care as a very common feature in these patients, where between 25% - 50% live with the injury for more than a year before being diagnosed [25].

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Clinical Characteristics of Penile Cancer

It was found that 55% of patients had the penile shaft involved, which was in contrast to most of the scientific reports that identified the body of the penis as the least common site of cancer, accounting for less than 5% of the cases [9,24]. This could be explained by the level of low social and economic resources of the population, which may cause the patients to carry the disease to more advanced stages. In the present research, 85% of the cases had a T2 or T3 stage diagnosis. This indicates that the majority of patients still present to physicians at an advanced clinical stage in a low socioeconomic group. A higher frequency of metastasis in patients with nodal involvement can be associated with the fact that penile cancer is a malignancy that progresses in a local-regional fashion, involving inguinal and pelvic lymph nodes before developing distant metastases [9,15].

Treatment

Of those patients who underwent radical amputation (30%) in our study, all had lymph node dissection and all had an ulcerative type of cancer presentation. This can be correlated with the facts that more advanced stages of the disease present with a greater involvement of lymph nodes and that ulcerative lesions are usually more infiltrative and therefore require a more radical treatment [9,26]. In our studies the predominant histologic type was squamous cell type carcinoma (95%), history of smoking was found in most of the patients and lack of circumcision was associated with the development of penile carcinoma which is consistent with findings of Ramirez et al [18].

One of the limitations of this study is that the study was conducted at a tertiary-level referral institution, which traditionally serves low-income population, so the results cannot be extrapolated to the rest of the population. However, the results reveal the most important features of these patients, which may facilitate their identification and subsequent management. In this sense, this study presents a description of the cases evaluated without giving the occurrence or incidence of the event in the city of Patna. Additionally, the nature of the study and the limitations of a retrospective study based on medical records review also have to be taken into account.

V. Conclusion

As a conclusion, most of the patients with penile cancer found at this referral center had old age, history of tobacco use, lack of circumcision and belonged to low socioeconomic status. The patients who presented in more advanced stages of the disease with lymph node metastasis had to undergo more radical procedures. It is necessary to remind the medical staff responsible for filling out the medical records about the importance of recoding minimally necessary data, including sociodemographic characteristics. In this way, more robust studies and the establishment of significant risk factors can be made.

TABLE

| CHARACTERISTICS | N=100 | %age |
|--|-------|------|
| Age | | |
| Form of presentation | | |
| Ulceroproliferative mass | 80 | 80 |
| Ulcer only | 20 | 20 |
| Tumor site | | |
| Glans | 35 | 35 |
| Shaft +Glans | 55 | 55 |
| Coronal sulcus | 10 | 10 |
| T-Stage | | |
| T1 | 10 | 10 |
| T2 | 80 | 80 |
| T3 | 5 | 5 |
| T4 | 5 | 5 |
| cN-Stage | | |
| N0 | 5 | 5 |
| N1 | 5 | 5 |
| N2 | 80 | 80 |
| N3 | 10 | 10 |
| M-Stage | | |
| M0 | 95 | 95 |
| M1 | 5 | 5 |
| pN-Stage | | |
| N0 | 75 | 75 |
| N1 | 10 | 10 |
| N2 | 10 | 10 |
| N3 | 5 | 5 |
| GRADE | | |
| High | 60 | 60 |
| Low | 40 | 40 |
| HISTOLOGY | | |
| Squamous cell | 95 | 95 |
| Others | 5 | 5 |
| TREATMENT | | |
| Partial Penectomy | 10 | 10 |
| Partial Penectomy with b/l node dissection | 50 | 50 |
| Total Penectomy with b/l node dissection | 30 | 30 |
| Paliative chemotherapy/radiotherapy | 10 | 10 |



Figure 1



Figure 2

References

- [1]. Parkin DM, Whelan SL, Ferlay J, Teppo L, Thomas DB. In: Cancer Incidence in Five Continents Vol. 8. IARC (WHO) Scientific Publications; 2002.p. 631.
- [2]. Curado MP, Edwards B, Shin HR, Storm H, Ferlay J, Heanue M, et al. Cancer Incidence in Five Continents. France: International Agency for Research on Cancer (IARC). World Health Organization; 2007p.
- [3]. Jemal A, Siegel R, Ward E, Murray T, Xu J, Thun MJ. Cancer statistics, 2007. *CA Cancer J Clin*. 2007 Jan-Feb;57(1):43-66.
- [4]. Parkin DM, Ferlay J, Curado MP, Bray F, Edwards B, Shin HR, et al. Fifty years of cancer incidence: CI5 I–IX. *Int J Cancer*. 2010 Dec 15;127(12):2918-27.
- [5]. Velazquez EF, Cubilla AL. Penile squamous cell carcinoma: anatomic, pathologic and viral studies in Paraguay (1993-2007). *Anal Quant CytolHistol*.2007 Aug;29(4):185-98.
- [6]. Favorito LA, Nardi AC, Ronalsa M, Zequi SC, Sampaio FJ, Glina S. Epidemiologic study on penile cancer in Brazil. *IntBraz J Urol*. 2008 Sep-Oct;34(5):587-93.
- [7]. Cubilla AL. The role of pathologic prognostic factors in squamous cell carcinoma of the penis. *World J Urol*. 2009 Apr;27(2):169-77.
- [8]. Cubilla AL, Velazquez EF, Young RH. Epithelial lesions associated with invasive penile squamous cell carcinoma: a pathologic study of 288 cases. *IntJ SurgPathol*. 2004 Oct;12(4):351-64.
- [9]. Kayes O, Ahmed HU, Arya M, Minhas S. Molecular and genetic pathways in penile cancer. *Lancet Oncol*. 2007 May;8(5):420-9.
- [10]. Gross G, Pfister H. Role of human papillomavirus in penile cancer, penile intraepithelial squamous cell neoplasias and in genital warts. *Med MicrobiolImmunol*. 2004 Feb;193(1):35-44.
- [11]. van Geel AN, den Bakker MA, Kirkels W, Horenblas S, Kroon BB, de Wilt JH, et al. Prognosis of primary mucosal penile melanoma: a series of 19 Dutch patients and 47 patients from the literature. *Urology*. 2007 Jul;70(1):143-7.
- [12]. Fetsch JF, Davis Jr CJ, Miettinen M, Sesterhenn IA. Leiomyosarcoma of the penis: a clinicopathologic study of 14 cases with review of the literature and discussion of the differential diagnosis. *Am J SurgPathol*. 2004 Jan;28(1):115-25.
- [13]. Daling JR, Madeleine MM, Johnson LG, Schwartz SM, Shera KA, WurscherMA, et al. Penile cancer: importance of circumcision, human papillomavirus and smoking in in situ and invasive disease. *Int J Cancer*. 2005 Sep 10;116(4):606-16.
- [14]. Calmon MF, Tasso Mota M, Vassallo J, Rahal P. Penile carcinoma: risk factors and molecular alterations. *ScientificWorldJournal*. 2011 Feb 3;11:269-82.
- [15]. Pow-Sang MR, Ferreira U, Pow-Sang JM, Nardi AC, Destefano V. Epidemiology and natural history of penile cancer. *Urology*. 2010 Aug;76(2 Suppl1):S2-6.
- [16]. Madsen BS, van den Brule AJ, Jensen HL, Wohlfahrt J, Frisch M. Risk factors for squamous cell carcinoma of the penis—population-based case- control study in Denmark. *Cancer Epidemiol Biomarkers Prev*. 2008 Oct;17(10):2683-91.
- [17]. Larke NL, Thomas SL, dos Santos Silva I, Weiss HA. Male circumcision and penile cancer: a systematic review and meta-analysis. *Cancer Causes Control*. 2011 Aug;22(8):1097-110.
- [18]. Ramírez G, Bermúdez AJ. [Penile Carcinoma in the University Hospital del Valle]. *UrolColomb*. 2004 Aug;13(2):47-50.
- [19]. Chaux A, Netto GJ, Rodríguez IM, Barreto JE, Oertell J, Ocampos S, et al. Epidemiologic profile, sexual history, pathologic features, and human papillomavirus status of 103 patients with penile carcinoma. *World J Urol*. 2013 Aug;31(4):861-7.
- [20]. Hernandez BY, Barnholtz-Sloan J, German RR, Giuliano A, Goodman MT, King JB, et al. Burden of invasive squamous cell carcinoma of the penis in the United States, 1998–2003. *Cancer*. 2008 Nov 15;113(10 Suppl):2883-91.
- [21]. Blair A, Zahm SH, Pearce NE, Heineman EF, Fraumeni JF Jr. Clues to cancer etiology from studies of farmers. *Scand J Work Environ Health*. 1992 Aug;18(4):209-15.
- [22]. Dich J, Zahm SH, Hanberg A, Adami HO. Pesticides and cancer. *Cancer Causes Control*. 1997 May;8(3):420-43.
- [23]. Blair A, Malke H, Cantor KP, Burmeister L, Wiklund K. Cancer among farmers. A review. *Scand J Work Environ Health*. 1985 Dec;11(6):397-407.
- [24]. Barnholtz-Sloan JS, Maldonado JL, Pow-Sang J, Guiliano AR. Incidence trends in primary malignant penile cancer. *Urologic Oncology: Seminars and Original Investigations*; 2007: Elsevier; 2007. p. 361-7.
- [25]. Pow-Sang MR, Benavente V, Pow-Sang JE, Morante C, Meza L, Baker M, et al. Cancer of the penis. *Cancer control*. 2002 Jul-Aug;9(4):305-14.
- [26]. Guimarães GC, Rocha RM, Zequi SC, Cunha IW, Soares FA. Penile cancer: epidemiology and treatment. *Current oncology reports*.2011;13(3):231-9.

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