

Prospective Clinicopathological Study of Penile Cancer Patients : A Single Institution Experience

Sushil Kumar¹, Ashish Kumar Gupta², B B Pandey³

¹Assistant Professor, Department of Surgical Oncology, PGIMS Rohtak, ²Associate Professor, Department of Surgical Oncology, Regional Cancer centre, Agartala, ³Ex HOD, Department of Surgical Oncology, Mahavir Cancer Sansthan, Patna

Abstract

Background: Carcinoma of the penis is an uncommon malignancy in Western countries but constitutes a major health problem in many countries in Asia, Africa, and South America, where it may comprise up to 10% of all malignancies.

Materials and Method: 42 consecutive patients of carcinoma penis were treated from 2013 to 2015. Clinical and pathological profiles were recorded and studied prospectively.

Results: 20/42 (48%) patients were of the age group 60 and above. majority of patients belonged to poor socioeconomic status, 32/42 patients(76.1%). Glans of the penis was the most common site of presentation in 28/42patients(66.6%). The most common symptoms were pus discharge from the penile ulcer in 21 patients(50%). 31/42 patients were chronic smoker or tobacco chewer. Inguinal lymph nodes were palpable in 24/42 (57%). The most common complication associated with Groin node dissection was lymphedema in 19 patients (45.2%). 12/42 patients had inguinal lymph node metastasis in final histopathological examination report. 50 % patients had grade II primary tumor.

Conclusion: Incidence of carcinoma penis peaks in the 6thdecade of life. Illiteracy, low socio-economic status and phimosis appear to be main predisposing factors for carcinoma of penis. Nodal metastasis was significantly associated with factors like T₃ and high grade lesions (grade II & III). Complication rate related to groin node dissection is high, commonest being lymphedema.

Keywords: Carcinoma penis, Groin node dissection, Lymphedema

Introduction

Carcinoma of the penis is an uncommon malignancy in Western countries, representing 0.4% of male malignancies and 3.0% of all genitourinary cancers. Penile cancer constitutes a major health problem in many countries in Asia, Africa, and South America, where it may comprise up to 10% of all malignancies.

The annual age-adjusted incidence is 0.7-3.0 per 100,000 men in India, 8.3 per 100,000 men in Brazil and even higher in Uganda. The incidence of penile cancer has been declining in many countries, partly because of increased attention to personal hygiene¹. In developing countries like india where a larger population living in villages, poor socioeconomic status, with the level of maintenance of personal hygiene being low, because of lack of basic facilities and the practice of circumcision being less common, the incidence of penile carcinoma ranges between 2-10% with Reddy et al reporting an incidence of 16.7% of all male cancers in parts of india². Due to this geographical variation, literature of penile cancer from western countries is limited and hence we

Corresponding Author:

Dr Ashish Kumar Gupta,

Department of Surgical Oncology, Regional Cancer centre, Agartala, Email: drashish_1001@yahoo.com

Contact No: 8826184015

carried out a prospective study on penile carcinoma.

Materials and Methods

This prospective study of 42 biopsy proven cases of carcinoma penis was carried out at Mahavir Cancer Sansthan ,Patna from August 2013 to March 2015.

Inclusion Criteria

All patients of penile carcinoma with impalpable groin node (N0) palpable and mobile groin nodes (N1 &N2)

Exclusion Criteria

All patients of penile carcinoma with unilateral or bilateral matted and fixed groin nodes (N3) distant metastasis (M1)

Clinical profile of all biopsy proven cases were recorded and all patients underwent surgery. Ilioinguinal lymphadenectomy done by supra and infra inguinal incision placed parallel to the groin crease and sent for histopathology. Definitive procedure for the primary penile cancer carried out as partial penectomy if a 2cm proximal margin of clearance was achievable or total penectomy with perineal urethrostomy. Primary tumour and lymph nodal specimen were examined. The type, size, depth of the tumour, grade of differentiation and lymphovascular invasion were looked for. The lymph nodes were looked for their involvement, number unilateral or bilateral and classified according to p-TNM staging. Results on continuous measurements are presented on mean \pm SD and results on categorical measurements are presented in number.

Results

TABLE 1: AGE DISTRIBUTION OF PATIENTS

Age in years	Number of patients(n=42)	Percentage (%)
30-39	5	11.9
40-49	5	11.9
50-59	12	28.5
60-69	19	45.2
70-79	0	0.0
80& above	1	2.3

In the present study, the youngest patient was 34 years and oldest was 80 years old. The major age groups affected were between 50 -69 years. Maximum number of patients were in the age group 60-69 years (45.2%) followed by the 50-59 years of age group (28.5%). Mean age was 54.33 years.

32 (76.1%) of 42 patients belonged to low socioeconomic status. 10 belonged to middle and no

patient was from high socioeconomic status. 31 out of 42 patients gave history of smoking or tobacco chewing.

Glans of the penis was the most common site of presentation of carcinoma penis. Glanular lesions were seen in 28 patients(66.6%) followed by prepuce in 4 patients (9.6%) and 10 (23.8%) patients presented with lesion of both glans and shaft.

TABLE 2: CLINICAL FEATURES

CLINICAL FEATURES	NUMBER OF PATIENTS(n=42)	Percentage (%)
PAIN	6	14.2
BLEEDING	11	26.2
PUS DISCHARGE	21	50.0
DYSURIA	7	16.6
PHIMOSIS	11	26.2

The most common symptoms were pus discharge from the penile ulcer in 21 patients (50%). Next common symptom was bleeding and phimosis in 11 patients each (26.1). This was followed by dysuria in 7 patients (16.6%) and pain in 6 patients (14.2%).

TABLE 3 : COMPLICATIONS RELATED TO GROIN NODE DISSECTION

COMPLICATIONS	NO OF PATIENTS(n=42)	PERCENTAGE (%)
NO COMPLICATIONS	9	21.5
COMPLICATIONS	33	78.5
1. FLAP NECROSIS	6	14.2
2. WOUND INFECTION AND WOUND DEHISCENCE	10	23.8
3. LYMPHORREA	6	14.2
4. SCROTAL EDEMA	17	40.4
5. LOWER LIMB LYMPHEDEMA	19	45.2
6. SEROMA COLLECTION	4	9.5

The most common complication was lymphedema in 19 patients (45.2%) followed by scrotal edema 17 patients (40.2%) and wound infection in 10 patients (23.8%). 6 patients (14.2%) had prolonged lymphorrhea while 6 patients (14.2%) had flap necrosis. Seroma collection was found in 4 patients (9.5%).

TABLE 4 : pTNM Staging of patients

p TNM staging	Number of patients (n=42)	Percentage (%)
T2 N0M0	21	50.0
T3 N0 M0	9	21.4
T2 N1 M0	0	0.0
T2 N2 M0	2	4.7
T3 N1 M0	2	4.7
T3 N2 M0	5	11.9
T3 N3 M0	3	7.1

TABLE 5 : CORRELATION BETWEEN GRADE OF SQUAMOUS CELL CARCINOMA AND LYMPH NODE INVOLVEMENT

GRADE OF SQUAMOUS CELL CARCINOMA	NO. OF PATIENTS (n=42)	Lymph node involvement	
		yes	no
GRADE I	19	1 (5.2%)	18(94.8%)
GRADE II	21	10(47.6%)	11(52.4%)
GRADE III	2	1 (50.0%)	1(50.0%)
TOTAL	42	12(28.5%)	30(71.5%)

TABLE 6 : INGUINAL LYMPH NODE INVOLVEMENT

INGUINAL LYMPH NODE INVOLVEMENT	NO. OF PATIENTS (n=42)	%	95% CI
YES	12	28.6	17.06- 43.68
NO	30	71.4	56.32 – 82.94
T1	0	0.0	-
T2	2	4.8	3.50 – 46.00
T3	10	23.8	54.00 -96.50

Based on 95% confidence interval, T₃ is significantly associated with nodal involvement.

Discussion

In this study minimum age of patient was 34 years and maximum of 80 years. Maximum number of patients were in 60-69 year age group i.e 19/42 (45.2%) . This is equivalent to study done by Hernandez et al³ . Mean age of presentation was 54.3 years. Gloeckler et al have reported that the rate of penile carcinoma abruptly increases at about the age of 60 years⁴.

None of the patient had undergone circumcision. Maden et al (1993) have reported that neonatal circumcision as practiced by religious groups virtually eliminates the occurrence of penile carcinoma however delaying circumcision until puberty or adult circumcision does not have the same benefit with respect to penile cancer⁵ .

32 (76.1%) of 42 patients belonged to low socioeconomic status and most of them had no formal education. Their concern for penile hygiene was also poor. Remaining 10 (23.9%) were from middle socioeconomic status. The cause of penile carcinoma being more prevalent in low socioeconomic status, may be poor hygiene due to lack of basic facilities, illiteracy and ignorance.

Penile tumors may present anywhere on the penis but occur most commonly on the glans (48%) and prepuce (21%). Other tumors involve the glans and prepuce (9%), the coronal sulcus (6%), or the shaft (<2%) (Sufrin and Huben, 1991)⁶. Even in our study 66% Patients had lesion on the glans , 9.6% on prepuce and 23% lesions extending up to the shaft. This distribution of lesions may be due to constant exposure of the glans, coronal sulcus, and prepuce to irritants (e.g., smegma, HPV infection) within the preputial sac, whereas the shaft is relatively spared.

50% of the patients had pus discharge from the lesion followed by bleeding (26.2%), dysuria (16.6%) and pain (14.2%).

Phimosis before the onset of disease was present in 26.2% of cases in our study. J.C. Soria et al,⁷ reported phimosis in 24.5% of patients of penile carcinoma and the other authors have reported comparable rates with

the highest being 69% (Hanash KA et al)⁸ . 73.8% of the patients in our study were either chronic smokers or tobacco chewer. Hellberg et al⁹ and Harish & Ravi,¹⁰ have reported significant association between smoking and carcinoma of penis.

The treatment adopted in our hospital for the primary tumor of cancer of penis is either partial or total penectomy. In the present study 78.5% of patients had partial penectomy and 21.5% of patients had total penectomy All patients underwent bilateral ilioinguinal lymph node dissection. This was done in view of the absence of reliable indicator of nodal metastasis as well as poor patient compliance for regular and intensive follow up in a group of patients where majority of them belonged to poor socioeconomic status as well as lacking formal education. Bhagat SK et al., (2006)¹¹, also opined that as patients' compliance for regular follow up cannot be guaranteed, any tumor invasion beyond 3 mm should be considered for prophylactic groin dissection.

78.5% of the patients had one or more complication, most common being lymphedema found in 45.2% followed by scrotal edema in 40.4%, wound infection and wound dehiscence in 23.8%, prolonged lymphorrhoea and flap necrosis (marginal or complete) in 14.2% each and seroma collection in 9.5%. No death were reported in this study. Ravi et al¹² and Ornella¹³ et al have reported a complication rate of lymphedema between 23-50%, seroma formation 6-17% and death 1.3%, which is similar to the present study.

All 42 (100%) patients had squamous cell carcinoma as the type of histology. Grossman et al¹⁴ have shown that more than 95% of penile carcinomas are squamous cell. Nonsquamous cell carcinomas consist of melanomas, lymphomas, and sarcomas.

19 (45.2%) patients had grade I lesion, 21(50%) patients had grade II lesion while only 2(4.8%) patients had grade III lesion. 9 (21.4%) out of 42 patients had lymphovascular invasion. The presence of vascular invasion as a prognostic indicator of inguinal lymph node metastasis in squamous penile cancer is now evident (Ficarra et al, 2005)¹⁵.

While distant dissemination is very rare, nodal metastasis is relatively common in carcinoma of penis (Ananthakrishnan N, 2006)¹⁶. Lymph node metastasis

is the most important prognostic factor in patients with carcinoma penis (Pandey D et al, 2006)¹⁷. It has been said that the battle for control of squamous cell carcinoma of penis is either won or lost at the level of inguinal nodes. Hence dealing with nodal metastasis is very important in management of carcinoma penis.

12 out of 42 patients had inguinal lymph node metastasis in final histopathology report. In the study done by Hardner et al¹⁸ and Grabstald et al¹⁹, incidence of nodal metastasis ranges between 35-60%. The cause of incidence being low in this study may be that majority of patients had grade I & II tumors and less number of patients with lymphovascular invasion.

None of the patient had pT₁ tumor. 23 patients had pT₂ in which only 2(8.7%) had inguinal metastasis while 19 patients had pT₃ in which 10(52.6%) patients had nodal metastasis. Pizzacaro et al²⁰ have found that pathological T stage strongly correlated with the nodal metastasis. The incidence of nodal metastasis was 16% in pT₁ tumors, 82% in pT₂ tumors and 100% in pT₃ tumors. The percentage being less in our study could be again due to majority of patients having grade I and II tumors. However the association of pT₃ tumors with nodal metastasis was statistically significant with 95% confidence interval.

Solsona et al²¹ have reported the chance to spread to inguinal nodes for grade I, II& III tumors is between 0-29%, 26-65% and 80-100% respectively. In our study, incidence of nodal metastasis in grade I tumour was 5.2%, 47.2% in grade II and 50% in grade III tumours.

Conclusion

Incidence of carcinoma penis rises in the 5th decade and peaks in the 6th decade of life. Lack of circumcision, illiteracy, low socio-economic status, associated with poor penile hygiene and smoking are uniform findings in majority of the cases and appear to be main predisposing factors for carcinoma of penis. Phimosis is a factor increasing the risk. Squamous cell carcinoma is the most common type of histology.

Nodal metastasis is significantly associated with factors like T₃ and high grade lesions (grade II & III). Complication rate related to groin node dissection is high, commonest being lymphedema.

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References

1. Yeole BB, Jussawalla DJ. Descriptive epidemiology of the cancers of male genital organs in greater Bombay. *Indian J Cancer* 1997;34:30-39.
2. Reddy CRRM, Raghavaiah N V, Mouli K C : Prevalance of Ca penis with special reference to india. *Int surg* 1978; 60:470
3. Hernandez BY, Barnholtz-Sloan J, German RR, et al. Burden of invasive squamous cell carcinoma of the penis in the United States, 1998-2003. *Cancer* 2008;113:2883-2891
4. Gloeckler Ries LAHB, Edwards BK(eds): cancer statistics review 1973 - 1987. National cancer institute, National institutes of health publication no. 90-2789, Bethesda. National institute of health, 1990.
5. Maden C, Sherman KJ, Beckmann AM, et al. History of circumcision, medical conditions, and sexual activity and risk of penile cancer. *J Natl Cancer Inst* 1993;85:19-24.
6. Sufrin G, Huben R. Benign and malignant lesions of the penis. In Gillenwater JY Editor: adult and paediatric urology: 2nd edition: Chicago yearbook 1991: p1997-2042.
7. J C Soria et al. Squamous cell carcinoma of the penis: Multivariate analysis of prognostic factors and natural history in a mono centric study with a conservative policy. *Annals of Oncology* 8: 1089-1098, 1997.
8. Hanash KA, Furlow WL, Utz DC et al. Carcinoma of the penis: A clinico pathologic study. *J Urol* 1970; 104: 291-7.
9. Hellberg D, Valentin J, Eklund T, Nilsson S: Penile cancer: Is there an epidemiological role for smoking and sexual behavior? *BMJ* 1987; 295: 1306- 1308.
10. Harish K, Ravi R: The role of tobacco in penile carcinoma. *Br J Urol* 1995; 75: 375-377.

11. Bhagat SK, Walter N, Gopalakrishnan G. Predicting inguinal metastases in cancer penis. *Indian J Urol* 2006; 22: 351-4
12. Ravi R, Prophylactic lymphadenectomy vs observation vs inguinal biopsy in node negative patients with invasive carcinoma of the penis. *Jpn J Clin Oncol* 1993;23(1):53-58
13. Ornellas AA, Seixas AL, Marata A et al: Surgical treatment of the invasive carcinoma of the penis; retrospective analysis of 350 cases. *J Urol* 1994;151(5):1244-49.
14. Grossman HB. Premalignant and early carcinomas of the penis and scrotum. *Urol Clin North Am* 1992;19:221-226.
15. Ficarra V, Zattoni F, Artibani W, et al and the G.U.O.N.E. Penile Cancer Project Members. Nomogram predictive of pathological inguinal lymph node involvement in patients with squamous cell carcinoma of the penis. *J Urol* 2006;175:1700-5.
16. Anathakrishnan N. Diagnosing metastatic disease in inguinal nodes in penile cancer: Do we have a test and the evidence? *Indian J Urol* 2006; 22; 345-50.
17. Pandey D, Mahajan V, Kannan RR. Prognostic factors in node-positive carcinoma of the penis. *J Surg Oncol* 2006; 93: 133-8.
18. Hardner GJ, Bhanapah T, Murphy GP, Carcinoma of the penis; an analysis of therapy in 100 consecutive cases. *J Urol* 1972;108:428
19. Grabstald H, Controversies concerning lymph node dissection for cancer of the penis. *Urol Clin North Am* 1980;7:793-99
20. Pizzacaro G, Pival, Nicolai N, treatment of lymphatic metastasis of squamous cell carcinoma of the penis, experience at the National Tumor institute of Milan, *Arch Ital Urol Androl* 1996;68:169-72.
21. Solsona E, Iborra I, Ricos JV, Corpus cavernosum invasion and tumour grade in the prediction of lymph node condition in penile carcinoma. *Euro Urol* 1992;22:115.