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Audit

Penile cancer – Guideline adherence produces optimum results

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ABSTRACT

Objective: To audit the management and outcome of penile cancer in a tertiary university teaching hospital, comparing our results to international best practice and published guidelines.

Methods: The Hospital Inpatient Enquiry database of the Mercy University Hospital was interrogated for penile cancer patients treated between 2001 and 2012. Data relating to presentation, local treatment, histology, lymph-node management, outcome and survival was recorded. Data were analysed using the Log Rank test, with significance defined as $P \leq 0.05$.

Results: Twenty-five patients were identified with a median age of 61 years. The majority of cases at presentation were ≥T2 (54%) and intermediate to high grade (76%). The median follow-up of patients was 3.75 years (range 9 months–10 years). Overall survival was 76% ($n = 19$), these patients are all disease free to date. Disease-specific survival was 85% at 10 years. Penile cancer related mortality was 8% ($n = 2$), 4 patients (16%) died of non-penile cancer related causes. Twenty-two patients (88%) had surgery and 3 patients (12%) had radiotherapy. Based on EAU guidelines inguinal lymph node dissection (ILND) was performed in 64% ($n = 16$) of cases with 44% ($n = 7$) of these patients requiring concurrent bilateral pelvic lymph node dissection. Fifty percent ($n = 8$) of ILNDs showed metastatic disease. Ten year disease-specific survival for node negative versus node positive disease is 100% versus 57%. Thirty-two percent ($n = 8$) of patients received chemotherapy.

Conclusions: Penile cancer is a rare oncological condition that often requires bilateral inguinal ± pelvic lymph node dissection and should be managed according to published guidelines, in specialist centres in order to maximize outcomes.

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Introduction

Penile cancer is a rare condition with its lowest incidence in developed nations. There is an average of 25 cases in Ireland each year (2000–2010).[1] The annual UK incidence is 0.9 per 100,000.[2] Penile cancer most commonly affects men aged 50–70 years with ≥95% cases being squamous cell carcinoma.[2]

Known risk factors include a history of phimosis, poor hygiene, smoking and human papilloma virus (HPV) infection (in particular HPV types 16 and 18).[3] Circumcision in childhood has a protective effect. Madden et al. has shown the risk of developing penile cancer is 3 times greater in those not circumcised in the childhood period.[4]

Penile cancer most commonly presents as a lump or nodule (47%), an ulcer (35%), erythematous lesion (17%) or an incidental finding at circumcision (0.7%).[5] Other presentations, particularly in men with phimosis, include bleeding, foul smelling discharge or penile pain.[5] The majority of lesions are located on the glans but can also be encountered on the prepuce, shaft, corona or overlapping sites.[5]

Between 30 and 60% of patients have palpable inguinal lymph nodes at presentation however based on retrospective studies it is suggested that up to 50% of palpable nodes are the result of infection rather than tumour.[6] Management of penile cancer lymph node metastasis is challenging and controversial. No Irish series of penile cancer has been reported to date. We undertook a retrospective review of the management of penile cancer in a tertiary Irish university teaching hospital from 2001 to 2012. Our aim was to compare our management and outcomes with international best practice and published guidelines during this period.[2,7–9]

Patients & methods

The Hospital Inpatient Enquiry (HIPE) database of the Mercy University Hospital was interrogated for all penile cancer patients diagnosed between 2001 and 2012. Twenty-five patients were identified and a retrospective review of all charts was undertaken. Data relating to risk factors, presentation, histology, local therapy and lymph node management, adjuvant treatment, outcome and survival was recorded. Additional information was obtained from pathology and radiology databases.

Staging was performed as per international guidelines, i.e. physical exam and cross-sectional imaging with CT and MRI. After treatment of the primary tumour, decision to proceed to inguinal lymph node dissection was based on European Association of Urology (EAU) guidelines 2002, 2004 and 2009 (summarized in Table 1).[2,7,9] Low risk patients with non-palpable nodes entered a surveillance program. High risk patients and intermediate risk patients with unfavourable pathological features (the presence of lymphovascular invasion) and impalpable nodes were scheduled for inguinal lymph node dissection (Table 1).[2] The most recent, 2009, EAU guidelines recommend that patients with palpable nodes undergo fine needle aspiration biopsy however all patients in our series with palpable nodes also had high-risk or intermediate-risk pathological features warranting lymphadenectomy.[2] Lymphadenectomy was performed one side at a time, typically 6–8 weeks following surgery of the primary lesion, with an interval of 6–8 weeks between nodal dissections.

Table 1 – Risk stratification for inguinal node metastases as per EAU guidelines.[2]

Risk	Primary	Number of patients
Low	Tis, Ta G 1–2, T1 G1	5
Intermediate	T1 G2	
- favourable (no LVI)		2
- unfavourable (LVI)		2
High	T1 G3, any ≥T2	16

LVI = lymphovascular invasion.

Indications for pelvic lymph node dissection were ≥2 proven inguinal metastases ($n = 4$), presence of extra-nodal extension ($n = 1$), involvement of the femoral (Cloquet's) node ($n = 1$), radiological suspicion of pelvic lymph node involvement ($n = 1$).[2] Dynamic sentinel lymph node biopsy (DSLB) is not yet available at our centre.

All men were followed up with a physical examination and CT, according to EAU guidelines. Review of clinical notes and the national death registry enabled calculation of survival rates and representation on Kaplan–Meier curves with significant differences determined using the Log Rank test (significance defined as $P \leq 0.05$). Overall survival was recorded from date of diagnosis to date of death or date of last follow-up whichever came first.

Results

From 2001 to 2012, 25 men underwent management for penile cancer at our institution. The median age at diagnosis was 61

Table 2 – The incidence of palpable and pathological positive lymph nodes according to T stage and grade, and the distribution of lymphovascular invasion and metastases at presentation.

Stage	(%)	Grade	No. of patients	Number with nodes	
				Palpable	Positive
pTis	(12)		3	0	–
T1	(36)	1	2	0	–
		2	4	1	1
		3	3	1	2
T2	(44)	1	1	0	–
		2	4	2	2
		3	6	2	3
T3	(8)	1	0	–	–
		2	1	1	0
		3	1	1	1
Total			25	8	8
Lymphovascular invasion					
Present	(32)		8		
Absent	(68)		17		
M0	(100)		25		
M1	(0)		0		