# Penile Carcinoma in Northern Trinidad and Tobago

MJ Ramdass, V Naraynsingh, Q Young-Sing, J Mooteeram, S Barrow

***ABSTRACT***

***Objective:*** *To determine the current incidence as well as general and ethnic trends of penile carcinoma in northern Trinidad and Tobago.*
***Methods:*** *A retrospective analysis was conducted on all cases of penile carcinoma presenting in north and east Trinidad, as well as Tobago over an eight-year period.*
***Results:*** *There were 19 cases from October 2003 to February 2012 with an age range of 42–96 years, mean of 59 years; peak age of presentation was 41–50 years and the number of cases presenting per year varied from one to four, with an average of three new cases yearly. Of 19 cases, 63% (12) originated from Port-of-Spain General Hospital (POSGH), 26% (5) from Sangre Grande (SGH) and 11% (2) from Tobago (TRH). There were 14 (74%) patients of African descent, three mixed and two of East Indian descent. There were four associated inflammatory lesions, five with ulcers, five verrucous lesions and two (10.5%) with human papillomavirus (HPV). One case presented with metastatic disease to the groin with erosion into the common femoral artery resulting in a blow-out of the vessel. The patient had the vessel oversewn and an extra-anatomic bypass done. He later had an above-knee amputation due to graft infection and failure.*
***Conclusion:*** *The incidence of penile carcinoma in north Trinidad and in Tobago is low and has halved in the past two decades. It stands at 0.6 cases per 100 000 males with the peak age group being 41–50 years, and with 95% of cases occurring between 41 and 80 years. There is a statistically significant association with active infection and being Afro-Caribbean. The decreasing incidence may be attributed to better hygiene, a higher rate of circumcision and low HPV rates in our population.*

**Keywords:** Incidence, penile carcinoma, Trinidad and Tobago

# Carcinoma de Pene en el Norte de Trinidad y Tobago

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***RESUMEN***

***Objetivo:*** *Determinar la incidencia actual, así como las tendencias generales y étnicas, del carcinoma de pene en el norte de Trinidad y Tobago.*
***Métodos:*** *Se realizó un análisis retrospectivo de todos los casos de carcinoma de pene presentados en el norte y el este de Trinidad y Tobago durante un período de ocho años.*
***Resultados:*** *Hubo 19 casos desde octubre de 2003 a febrero de 2012, con un rango de 42 – 96 años, edad promedio de 59 años. La edad pico de presentación fue 41 – 50 años y el número de casos presentados cada año varió de uno a cuatro, con un promedio de tres nuevos casos cada año. De 19 casos, 63% (12) tuvo su origen en el Hospital General de Puerto de España (POSGH, siglas en inglés), 26% (5) en Sangre Grande (SGH), y 11% (2) en Tobago (TRH). Hubo 14 pacientes (74%) de ascendencia africana, tres mestizos, y dos de ascendencia india. Hubo cuatro lesiones inflamatorias asociadas, cinco con úlceras y cinco lesiones verrugosas y dos (10.5%) con el virus del papiloma humano (VPH). Se presentó un caso con enfermedad metastásica en la ingle con erosión en la arteria femoral común, dando lugar a que reventara el conducto. Al paciente se le sobresuturó la vena, y se le realizó un bypass extra-anatómico. Posteriormente se le realizó una amputación por encima de la rodilla debido a infección del injerto e insuficiencia.*

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***Conclusión:*** *La incidencia del carcinoma de pene en el norte de Trinidad y en Tobago es baja y se ha reducido a la mitad en las últimas dos décadas. Su estatus actual es de 0.6 casos por 100 000 varones con un grupo de edad pico de 41 – 50 años, ocurriendo el 95% de los casos entre los 41 y 80 años de edad. Hay una asociación estadísticamente significativa con la infección activa y el origen afrocaribeño. La disminución de la incidencia puede atribuirse a una mejor higiene, una tasa más alta de circuncisión, y bajas tasas de HPV en nuestra población.*

**Palabras claves:** Incidencia, carcinoma de pene, Trinidad y Tobago

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## INTRODUCTION

The incidence of penile carcinoma varies widely depending on geographic location and is related to such factors as low socio-economic status, absence of circumcision, human papillomavirus (HPV) and AIDS. It is highest in Asian countries such as India, and the Far East where it accounts for up to 10% of cancers in men and is notably lower in African ethnic groups where circumcision is common practice. The American Cancer Society states that approximately 1570 new cases of penile cancer are diagnosed yearly with a mortality of 310 men per year (1). It is exceedingly rare in North America, the United Kingdom and Europe, with an incidence of less than 1:100 000 and accounts for less than 1% of cancers in men in the United States of America.

Little has been documented regarding penile carcinoma in the West Indies and the Caribbean with only five studies in the medical literature, four originating from Jamaica and one from Trinidad and Tobago (2–6). It is noted that the incidence reported in the first paper published in Trinidad by Raju *et al* in 1985 (5) revealed a higher incidence than is herein reported. It is against this background that this article was written to update the incidence in northern Trinidad as well as Tobago, showing the trend with a discussion and comparison to regional and world data.

## SUBJECTS AND METHODS

Retrospective data were collected from the electronic records of the Department of Pathology at Port-of-Spain General Hospital (POSGH), Trinidad, for the period October 2003 to February 2012 on all cases of penile histology received. The histology originated from two main hospitals in northern Trinidad as well as Tobago, which are the main referral centres in the islands. These include POSGH, the Sangre Grande District General Hospital (SGH) and the Tobago Regional Hospital (TRH). The data therefore did not include the Mt Hope Hospital or San Fernando Teaching Hospital since these hospitals do not send histology to the POSGH. Demographic data included age, gender, ethnicity, department and hospital of origin as well as the details of the morphologic appearance of the specimen and histology. Information on risk factors was not included in this study. Additionally, serological testing for HPV was done on all cases.

The ethnic distribution in northern Trinidad is not the same as Tobago, since Tobago consists of persons of mainly African descent and northern Trinidad has a composition of 38% African descent, 40% East Indian descent, 18% mixed, and the remaining group being of European, Chinese, Lebanese or Syrian descent.

Ethical approval was granted from the relevant authorities and the data entered into a well-designed database and analysis was done using SPSS 20. Details on demographic data and the epidemiology of penile lesions were analysed. The carcinoma rate and incidence were calculated and relevant correlations done.

## RESULTS

There were 19 patients with penile carcinoma for the period October 2003 to February 2012 (101 months). The age range was 42–96 years with a mean, median and mode of 59, 55 and 49 years, respectively. The peak age for occurrence was 41–50 years and the number of cases presenting per year varied from one to four, with an average of three cases per year (Figs. 1, 2). The main ethnic group affected was Afro-Caribbeans with 14 cases (74%), followed by persons of mixed descent (three) and East Indian descent (two).

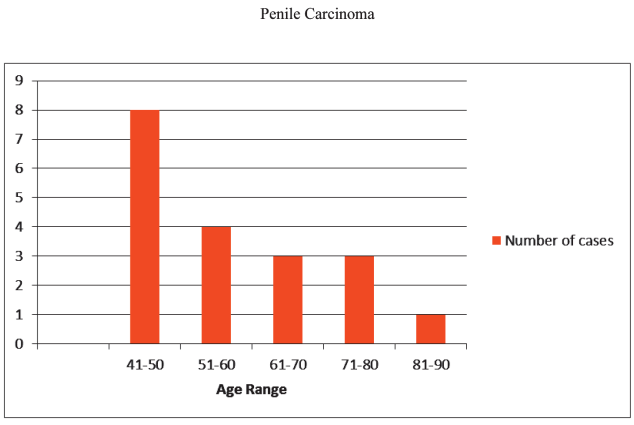


Fig. 1: Chart showing number of cases in relation to age group.

Of the 19 cases, 63% (n = 12) originated from POSGH followed by SGH, 26% (n = 5) and TRH, 11% (n = 2). There were four associated inflammatory lesions, five with ulcers,

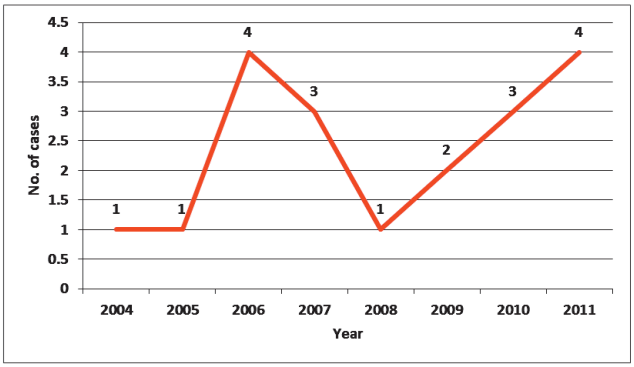


Fig. 2: Chart showing number of cases per year.

five were verrucous lesions and two with HPV by serological testing. None was associated with condylomata, hyperkeratosis or lichen planus. There was one case which presented as metastatic disease to the right groin with erosion into the common femoral artery resulting in a blow-out of the vessel. The patient had the vessel oversewn and an extra-anatomic bypass done. He later had an above-knee amputation due to graft infection and failure.

Chi-squared testing showed a correlation between having an active infection and being positive for squamous cell carcinoma ($p < 0.05$) and being of Afro-Caribbean descent. No other significant correlations were found with regard to inflammatory lesions, ulcerating lesions or HPV. These were extracted from a total of 48 penile histological specimens (both benign and malignant) over the study period which included 30 cases (62.5%) from POSGH, 12 from SGH (25%) and six from TRH (12.5%). There were 29 benign and 19 malignant lesions. Clinical presentation was as follows: 13 with inflammatory lesions, 10 ulcerating lesions and eight infective-type including four condylomata and four cases with HPV. There were two lichen planus cases and five with hyperkeratosis. Of the four cases with HPV, one presented with an ulcer, one with an inflammatory lesion and two with condylomata. Two of these were squamous cell carcinoma. They occurred in four different age groups: 21–30, 41–50, 51–60 and 71–80 years; three of the four cases originated from POSGH.

## DISCUSSION

Carcinoma of the penis is a rare condition in any setting; however, its incidence is known to be increased in certain populations where there is a high incidence of HPV or AIDS, low circumcision rates, poor hygiene and poor socio-economic conditions. In particular, phimosis, smegma, cigarette smoking, tobacco (7), ultraviolet light treatment of psoriasis and age greater than 55 years are known risk factors (1).

From a pathological point of view, squamous cell carcinoma of the penis accounts for 95% of malignant tumours of the penis and may be of a verrucous carcinoma type (Buschke-Lowenstein tumour) and look like a large genital wart. Carcinoma *in situ*, a pre-malignant state, is known as erythroplasia of Queyrat or Bowen's disease when affecting the shaft. Exceedingly rare tumours of the penis include melanomas, basal cell carcinomas, sweat gland adenocarcinomas (Paget's disease of the penis) and sarcomas.

Trinidad and Tobago is an oil-rich country with a relatively high standard of living (gross domestic product [GDP] per capita: US$20 400 for 2012) and is one of the southern-most islands adjacent to the South American continent with a population of approximately 1.3 million persons. It is composed of a diverse mix of ethnic groups due to its colourful history of occupation by the French, Spanish and British, with slaves from Africa and indentured labourers from India being brought here hundreds of years ago. Approximately 40% of the population is of East Indian descent, 38% African, 18% mixed and the remainder being of European, Chinese, Lebanese or Syrian descent. It is with this in mind that, in addition to calculating the overall incidence of penile carcinoma and showing the trend in the last two decades, an assessment with regard to ethnicity was conducted.

In terms of world data, a large audit carried out by Mistry *et al* in the United Kingdom and published in 2007 showed that the incidence of histologically confirmed squamous cell carcinoma of the penis was 0.6 cases per 100 000 population per year with a mean age of 63 years and 86% of the lesions were located on the glans or foreskin in that population (8).

Looking at India, Pahwa *et al* published their work on risk factors and presentation (9). Of 54 patients, 75% were older than 50 years, 25% presented with phimosis and 20% of patients had undergone circumcision after attaining adulthood. Seventy per cent of patients were smokers. Most patients presented with T2 disease; lymphadenopathy, both benign and malignant, was present in 56% and 76% of T1 and T2 patients, respectively. Five-year survival rates were 87% and 60% in stages I and II, respectively (9).

In Brazil, Favorito *et al* published their work on 283 cases (10). The majority of these occurred in the north, northeast and southeast regions and 79% of patients were over 46 years. Sixty per cent had phimosis with inability to expose the glans. Human papillomavirus infection and tobacco smoking were present in 6% and 36%, respectively. Seventy-three per cent of cases presented with tumours localized to the glans and prepuce and 17% localized to the glans, prepuce and the corpus penis (10).

In Nigeria, Ajekigbe *et al* published their experience over a 20-year period in Lagos in 2011 (11). Carcinoma of the penis accounted for 1.9% of malignant lesions of the male genital tracts at Lagos University Teaching Hospital. The age range was 42–79 years, with a mean of 52 years. All were well differentiated squamous cell carcinomas. It was concluded that carcinoma of the penis is rare in Lagos,

Nigeria, and may be attributed to the common practice of neonatal male circumcision (8). Supporting Ajekigbe's conclusion, Owor documented his work from Uganda and showed carcinoma of the penis was higher in uncircumcised ethnic groups (11, 12).

In terms of regional data from the West Indies, the first discussions were published by Annamunthudo in 1959, 1961 and 1966 (2–4). The incidence of penile carcinoma in the Jamaican population was found to be high and associated with granuloma inguinale.

Morrison *et al* examined the prevalence and clinicopathological correlates of penile cancer as well as the clinical outcomes in a sample of Jamaicans managed at the University Hospital of the West Indies from 1998 to 2008. Of 22 patients, the mean age was 68 years, 86% were not circumcised and 36% of the lesions involved the entire penis. Seventy-three per cent of the cases had clinically regional disease and 52% presented with advanced disease. Surgical treatment was performed in 68%. It was concluded that penile cancer is uncommon in Jamaicans and presents at an advanced age and stage (6).

In Trinidad, Raju *et al* examined 40 cases from 1975 to 1983 (5). They concluded that although penile cancer was relatively common in the Indians of India and persons of African descent in Jamaica, it was infrequent among those of Indian extractions and African descent living in Trinidad, which was probably due to better socio-economic conditions in the Trinidad population (5). The crude annual incidence was 1.3 per 100 000 males drawn from a population of 340 000 and the age standardized incidence rate was 1.9 males per annum.

## CONCLUSION

This current study shows that there is a decreasing trend in the incidence of penile carcinoma in the north Trinidad and Tobago populations with a present crude annual incidence of 0.6 cases per 100 000 males; the peak age group is 41–50 years which accounts for 42% of all cases and 95% occurs in the 41–80-year age group. Ten per cent of cases are associated with HPV. Most cases have a strong statistically significant association with an active infection, and being Afro-Caribbean (74% of all cases).

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