

Original Article

The Pattern of Urological Cancers in Zambia

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ABSTRACT

Objective: To examine the pattern of urological malignancies, particularly cancer of the bladder, seen at the University Teaching Hospital (UTH) in Lusaka and to compare the findings with previous studies on the same parameters done at UTH.

Material and Methods: A retrospective study of urological cancers in Zambia was performed, based on histopathology reports of specimens reviewed at the UTH Pathology Laboratory in Lusaka, Zambia, between January 1990 and December 2005. The parameters studied were the histological type of the cancer, patient age and trends over a 15-year period.

Results: In total, 8829 cancers were diagnosed during the study period, of which 749 (8.5%) were urological malignancies affecting the kidney, bladder, prostate, testis or penis. The male-to-female ratio of the urological cancers was 10.7 to 1. Cancer of the prostate was the most common urological malignancy (54.6%), followed by bladder cancer (21.1%) and penile cancer (18.6%). The histological type of bladder cancer was mainly squamous cell carcinoma (46.2%), transitional cell carcinoma (23.4%) and adenocarcinoma (22.2%); other types (8.2%) included rhabdomyosarcoma, small cell carcinoma and lymphoma. The majority of patients (79%) with bladder cancer were between 56 and 65 years of age. Whereas 20 years ago prostate cancer comprised only 26% of urological malignancies, it accounted for 55% of urological cancers diagnosed in Zambia between 1990 and 2005. In contrast, cancer of the penis, kidney and testis have shown no change in frequency distribution compared to 20 years ago.

Conclusion: Over the last 15 years there has been an increasing proportion of cancer of the prostate and squamous cell carcinoma of the bladder. This is associated with high levels of schistosomiasis, cystitis (some of which is HIV-related) and bladder stones. It may also be due to the extension of urological services and the diagnostic armamentarium (PSA, cystoscopy and histological diagnosis) to indigent rural populations, where the incidence of squamous cell carcinoma is likely to be higher than in affluent urban populations.

Keywords : urological cancers, Zambia

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INTRODUCTION

Zambia is a landlocked country in south central Africa. The University of Lusaka Teaching Hospital (UTH) is the main reference hospital and the only national reference laboratory in Zambia and has an immediate local referral area of 1.3 million people (Lusaka Province). It is estimated that up to 90% of all biopsy samples obtained nationally are sent to the UTH Pathology

Laboratory for reviewing and reporting^{1,2}. The National Cancer Registry which is still poorly developed is based on the clinical reports issued by the attending physicians, which are not always based on pathology reports. It is therefore estimated to capture only 10-15% of clinically diagnosed cancers nationwide^{1,2}.

Previous studies done at the hospital showed that urological malignancies affecting the kidney, bladder, prostate, testis or penis represented 12% of all histologically confirmed cancers in specimens sent to the UTH nationwide^{1,2}.

The purpose of this study was to examine the pattern of urological malignancies, with special emphasis on bladder cancer, seen at the UTH in Lusaka between January 1990 and December 2005.

MATERIAL AND METHODS

Data on all urological cancers diagnosed histologically at the UTH Pathology laboratory between January 1990 and December 2005 were retrospectively analyzed. The key parameters included patient age, sex, type of cancer and year of diagnosis. The International Classification of Diseases (ICD) 10 was used.

The specimens collected were fixed in formalin, embedded in paraffin wax and microtome sectioning was done. The slides were routinely stained with hematoxylin and eosin. All slides were analyzed by a team of three consultant pathologists at the UTH. Bladder cancer was further analyzed to determine the histological type. The data are descriptive and no statistical analysis was performed.

RESULTS

In total, 8829 cancers were diagnosed during the study period, of which 749 (8.5%) were urological malignancies distributed as follows: prostate 409 (54.6%), bladder 158 (21.1%), penis 139 (18.6%), kidney 32 (4.3%) and testis 11(1.5%).

The male-to-female ratio of urological cancers was 10.7 to 1 (685 male and 64 female patients), while the male-to-female ratio for bladder cancer alone was 2:1 (107 male and 51 female patients).

The histological type of bladder cancer was mainly squamous cell carcinoma (SCC) (46.2%), transitional cell carcinoma (TCC) (23.4%) and adenocarcinoma (22.2%); other types (8.2%) included rhabdomyosarcoma, small-cell carcinoma and lymphoma.

The majority of patients (79%) with bladder cancer were between 56 and 65 years of age.

Regarding the tumor type, it was found that the incidence of SCC had increased over the 15-year period of our study, accounting for 53% of all histologically diagnosed cancers.

Most prostate cancers were of mild or moderate grade (65%), while most bladder cancers were of high grade (78%).

DISCUSSION

Urological cancers in this study represented 8.5% of all cancers seen at the Pathology Laboratory of UTH Lusaka in the period January 1990 to December 2005. Previous studies conducted between 1980 and 1989 at the same institution showed a higher proportion (12%)². This implies a proportional decline in urological cancers which may be due to a relatively greater increase in non-urological HIV-related cancers, in particular cancer of the eye, which was unknown 20 years ago. The incidence of HIV infection in the period 1980-89 was less than 10% and schistosomiasis control in Zambia was poor. It is difficult to determine if, in addition, there has been an increase in lower urinary tract stones. In the United Kingdom urological cancers represented 16.5% of all new malignancies seen in 2006³.

The male to female ratio of 10.7 to 1 in this study is similar to that in other studies²⁻⁴. Of course, this reflects the fact that cancers of the prostate, penis and testis occur only in men, whereas bladder and kidney cancers

are known to have a male:female ratio of approximately 2:1.

Prostate cancer is currently the most common type of urological malignancy in Zambia, as in other African countries⁴. In the late 1980s, bladder cancer was the most common, representing 51% of all urological cancers in Zambia, while cancer of the prostate comprised 26%^{2,5-7}. However, during the last 20 years the overall prevalence of prostate cancer has increased to 54.6% according to our study. This finding may be related to an actual increased incidence, or may be related to better health education programs and improved urology services and diagnostic methods, such as PSA testing and prostatic biopsy⁸. Cancers of the penis and kidney have shown no change in frequency distribution compared to 20 years ago, while testicular cancer has increased elevenfold^{2,5-7}.

The histological type and the male-to-female ratio of bladder cancer in Zambia corresponds to the pattern of bladder cancer seen in developing countries, where it presents in younger patients, runs an aggressive course and is largely of the squamous cell type⁹⁻¹¹. Other studies on bladder cancer in Africa carried out in 1995¹² and 1996¹³ showed a lower proportion of ADC of the bladder than in our series and an increasing proportion of TCC, which they suggest may be related to the high incidence of HIV infection. The high incidence of ADC in our series (22%) may be related to spread from prostate cancer rather than to a urachal origin of bladder cancer. It has also been noted that the histological type of bladder cancer in Caucasians is TCC in up to 90% of cases and usually presents in the 8th decade of life¹³⁻¹⁵. In this study we found a high proportion of SCC (46%) and the majority of patients (79%) presented in the 6th decade of life.

In conclusion, over the last 15 years there has been an increasing proportion of SCC

relative to TCC and ADC of the bladder, which can possibly be attributed to the increasing incidence of lower tract stone disease and schistosomiasis (which is found in 20-35% of school children in our population)^{8,16-18}. It may also be due to the extension of urological services and an improvement of diagnostic methods (cystoscopy and histological diagnosis) in indigent rural populations, where the incidence of SCC is likely to be higher than in affluent urban populations. In some other African countries the incidence of SCC of the bladder seems to be decreasing relative to TCC⁹.

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