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Original article

A ten-year study of prostate cancer specimens at Ahmadu Bello University Teaching Hospital (A.B.U.T.H), Zaria, Nigeria



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KEYWORDS

Prostate cancer;
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Abstract

Background: In recent years attention has focused on malignant prostatic lesions due to the perceived high incidence of prostatic carcinoma in different geographical areas worldwide.

Unfortunately, African American race/ethnicity is one of the three primary non-modifiable risk factors confirmed for prostate cancer.

Objective: To analyze the pattern of distribution of prostate cancer among men in Zaria, Northern Nigeria.

Patients and methods: This is a 10-year retrospective histopathological analysis of all prostate cancer cases diagnosed between January 1991 and December 2000 in the Department of Pathology, Ahmadu Bello University Teaching Hospital (A.B.U.T.H), Zaria, Nigeria. Haematoxylin & Eosin (H&E) stained histology slides were retrieved and studied. The patients' bio-data were retrieved from the patient case files and departmental records. After histological assessment, the tumours were classified according to WHO recommendation. Histological grading and staging of adenocarcinoma was done using the Gleason Score.

Results: Between January 1991 and December 2000, a total of 151 cases of prostate cancer were seen, constituting 4.1% of all malignancies and 10.1% of male malignancies seen during this period. The diagnosis was based on histopathological analysis of specimens obtained from Trucut needle biopsies and open prostatectomies. The patients' age ranged from 30 to 79 years with a mean age of 64.5 years. The peak age at diagnosis was in the seventh decade, while two relatively young patients were found to have prostate cancer at the age of 30 and 32, respectively. All the tumours were adenocarcinomas, 51.6% were poorly and 58.4% moderately differentiated.

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Conclusion: Prostate cancer is the most common cancer among men in Zaria, Northern Nigeria. Most of the patients presented late. The peak age at diagnosis in this review was the seventh decade and two patients aged 30 and 32 years were found to have prostate cancer.

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Introduction

The incidence of prostate cancer has tripled during the past decade, chiefly because of the widespread use of serum prostate-specific antigen (PSA) testing, digital rectal examination (DRE) and transrectal ultrasound. Needle biopsy of the prostate plays a central role in the morphologic evaluation of prostate cancer [1]. The increase in the detection of prostate cancer has induced a sharp increase in the number of radical prostatectomies [2].

Prostate cancer is the most common non-cutaneous malignancy in men and remains a leading cause of cancer-related deaths in the United States [3]. The incidence and mortality due to prostate cancer are high in the United States and Western Europe, with the highest rates among African-Americans in the United States and lower rates among the people of Asia [4].

Earlier studies on prostate cancer among African and Asian populations suggested that it was a rare disease [5–8]. However, there has been a steady increase in the number of cases due to increased men's health publicity, a raised awareness of PSA testing, health education and new medical treatment [9–11].

Although the aetiology of prostate cancer remains unknown, the most consistent risk factors are advanced age and racial/ethnic factors [12]. While genetic factors play a significant role in the development of this disease, reports documenting an increased risk of prostate cancer in Asians who immigrated to the United States from China and Japan, where the prevalence of the disease is low, strongly implicate the impact of environmental exposure [3,13]. Numerous epidemiological studies of prostate cancer have identified an association between the consumption of particular dietary constituents, such as red and/or charred meat, and prostate cancer incidence and mortality [14–16].

Subjects and methods

This is a 10-year retrospective histopathological analysis of all prostate cancer cases diagnosed between January 1991 and December 2000 in the Department of Pathology, Ahmadu Bello University Teaching Hospital (A.B.U.T.H), Zaria, Nigeria. Haematoxylin & Eosin (H&E) stained histology slides were retrieved and studied. The patients' bio-data were retrieved from the patient case files and departmental records. After histological assessment, the tumours were classified according to WHO recommendation. Histological grading and staging of adenocarcinoma was done using the Gleason Score.

Results

Between January 1991 and December 2000, a total of 151 cases of prostate cancer were seen, constituting 4.1% of all malignancies and

10.1% of male malignancies seen during this period. The diagnosis was based on histopathological analysis of specimens obtained from Trucut needle biopsies and open prostatectomies. The patients' age ranged from 30 to 79 years with a mean age of 64.5 years. The peak age at diagnosis was in the seventh decade, while two relatively young patients were found to have prostate cancer at the age of 30 and 32 years, respectively. All the tumours were adenocarcinomas, 51.6% were poorly and 48.4% moderately differentiated (Figs. 1 and 2).

Discussion

African-American black men are at an increased risk of developing prostate cancer. Studies done on African-Americans in the USA for the evaluation of prostate cancer disparities in this population have shown that African-Americans present with a more advanced stage of prostate cancer at diagnosis and have higher mortality rates due to prostate cancer than whites [17–20]. According to the American Cancer Society [21], black men have a 1-in-5 lifetime probability of developing invasive prostate cancer compared to 1 in 7 for whites.

The lifetime probability of dying from invasive prostate cancer is 1 in 23 for black men and 1 in 38 for white men. Black men also experience disparities relative to prostate cancer survival with an

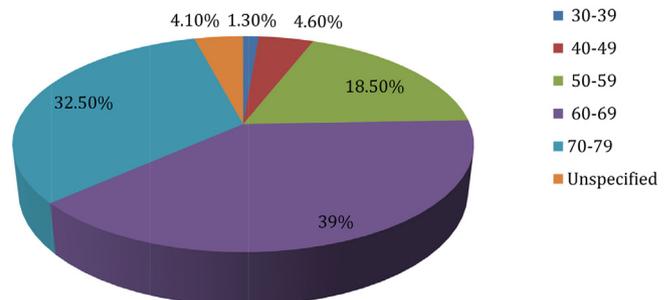


Figure 1 Age distribution of prostate cancer in A.B.U.T.H, Zaria.

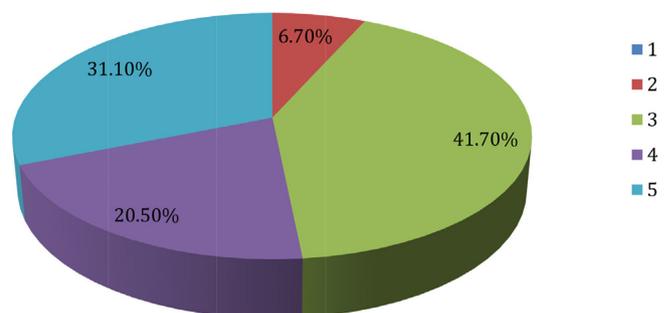


Figure 2 Distribution of the adenocarcinoma according to Gleason Grade.

overall 5-year survival rate of 95% for black men and 100% for white men [21].

Although the incidence of prostate cancer was reported to be low among Africans in the past [5–8], recent reviews across Africa have shown that prostate cancer is now emerging as the most common male malignancy [22].

The 151 prostate cancer cases studied in this review constituted 4.4% of all malignancies and 10.1% of male malignancies seen in Zaria during the period under review. This is similar to most reports from Nigeria [23–25] and from parts of West Africa [26,27]. On the other hand, in several other community-based cohort studies on cancer in men, hepatocellular carcinoma is the most common male cancer [28,29]. This disparity is due to the fact that hospital-based studies do not give a true reflection of the real situation in the community, as only those who can afford orthodox medicine come to the hospitals.

The age range in this study is 30–79 years with a mean age of 64.5 years; this is in accord with studies from Jos [23], Benin [25], Côte d'Ivoire [26], Cameroon [27] and Port-Harcourt [30] and shows that prostate cancer is mainly a disease affecting the elderly. However, prostate cancer occurred a decade earlier in our patients as compared to their white counterparts in Europe and America where it mainly presents in the eighth decade [31]. Although, in a similar review by Oluwole et al. [32] in Lokoja, Nigeria, a significant proportion of prostate cancer was found in men in their fifth decade.

Two (1.3%) cases of relatively young patients aged 30 and 32 years with moderately differentiated adenocarcinoma were found in this study. Their situation may be due to family history, genetic, dietary or environmental factors and may require further research in the African population. Similar observations were made by Sakr et al. [33] in the age group 30–40 years, although this was an autopsy study.

Most of the specimens analyzed in this study (57%) were obtained from Trucut needle biopsies of the prostate, while 43% were obtained during open prostatectomy procedures. This is similar to two studies carried out in Port-Harcourt [30] and Ibadan [24], Nigeria. However, in other studies performed in Jos [23], Benin [25] and Kano [34] in Nigeria and a study carried out in Kenya [35], the majority of specimens were obtained during prostatectomy. Incidental carcinoma constituted 35.1% of the prostate cancer cases seen in this review, which is significantly higher as compared to studies from Jos [34] (12.3%), Benin [25] (13.5%) and Kenya [35] (11.9%). Incidental carcinomas have been known to vary with the age of the patient and the sectioning techniques [36]. However, the significant number of incidental carcinomas in this study may be due to the fact that it is a histopathological rather than a clinical analysis.

The frequency of high-grade prostatic intraepithelial neoplasia was low in this study (47% vs. 49.1%, 59% and 82% reported in other series [34,37,38]).

Adenocarcinoma was the most common histological type found in this study which complies with reports from authors from other parts of the world [17,18,20].

A predominance of poorly differentiated (51.7%) and moderately differentiated (48.3%) tumours was found in this study. Most of the poorly differentiated tumours showed marked lymphocytic

infiltration with comedo-necrosis and perineural invasion. Although Milord et al. [39] established that infarcts of the ischaemic necrosis type occur predominantly in nodular hyperplasia, it was found in this study that they can occur in advanced prostate cancer as well.

Several other authors like Mandong [23] in Jos, Akang et al. [25] in Benin, Magoha [35] in Kenya and Angwafo et al. [27] in Cameroon also recorded similar findings in their series.

In the light of the current knowledge of the epidemiology of prostate cancer, some of the factors contributing to a possible improvement of the situation in our environment would include a clear-cut change in life style, improved medical care leading to a prompt diagnosis and a greater awareness of prostate cancer on the part of the patients leading to an improved utilization of tertiary health care facilities [34].

In conclusion, in order to be able to curtail a future increase in the morbidity and mortality due to prostate cancer, there is a need for an improved health education of our male population, increasing the awareness of the potential threat of prostate cancer to men's health. This would require an improved health budget to meet international standards and to ensure that this budgetary allocation gets to the end user. The government ought to have the political will to judiciously use what they have at their disposal to improve the health of the population. The role of research, especially among indigenous blacks, cannot be overemphasized as this will ensure that adequate diagnostic techniques will be developed and proper individualized patient treatment will be instituted for each patient. To achieve this, there is a need for collaboration of health institutions in Nigeria and international organizations for the exchange of technical expertise and quality assurance to help improve the quality of care to our patients.

Conflict of interest

The authors of this paper have neither conflict of interest nor financial disclosure to declare.

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