

Age and Pathology of Prostate Cancer in South-Southern Nigeria; Is there a pattern?

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SUMMARY

Background: Prostate cancer is a common health problem world wide. Age is its strong risk factor.

Objective: To study the relationship between age at presentation and pathological features of prostate cancer in patients with the disease in South-Southern Nigeria.

Materials and Methods: Pathology slides of prostate specimens and clinical data were studied. Those with histological diagnosis of prostate cancer had these features analysed statistically.

Results: Three hundred and eighty three cases of adenocarcinoma of the prostate were studied. A falling mean age at presentation was observed. Observed pathological features had no statistically significant variation with ages. Poorly differentiated adenocarcinoma was the most common variant.

Conclusion: The mean age at presentation of prostate cancer patients in Port Harcourt is decreasing. Gleason's score and level of cellular differentiation of the tumours have no statistically significant relationship with ages of the patients. These observations and the preponderance of poorly differentiated variant of the disease in Nigerian patients merit further studies.

KEY WORDS:

Age; Pathology; Prostate cancer; Nigeria

INTRODUCTION

Prostate cancer is a common malignancy that affects ageing and elderly males world wide. Age is important as its risk factor such that even the volume of its premalignant form (high grade prostatic intraepithelial neoplasia-HGPIN) also increases with it¹. Port Harcourt is a cosmopolitan city in the Niger Delta Area of Southern Nigeria with a mixed population of residents from most ethnic groups in Nigeria. The average age of patients at presentation with prostate cancer in Port Harcourt is 71.6 years, with their ages ranging from 45 to 88 years². The aim of this study is to examine the relationship between the age at presentation of prostate cancer patients in Port Harcourt, Southern Nigeria, and the pathological features of the disease.

MATERIALS AND METHODS

Stored materials of prostate specimens received at the Department of Anatomical Pathology, University of Port Harcourt Teaching Hospital, Port Harcourt (UPTH), Nigeria, within the 15-year period from January 1996 to December 2010, were studied. These materials included prepared slides and paraffin wax blocks of the specimens, laboratory request forms containing clinical details of individual patients and the prostate specimens. The clinical details included hospital and laboratory identification numbers, ages of the patients at presentation, signs and symptoms of diseases, clinical diagnoses with dates, methods of biopsies, dates of submission of specimens. Microscope slides of the specimens were retrieved from the department's stores and examined histologically using a binocular Olympus 1996 light microscope. Cases in which stored slides did not give conclusive histological results, had new slides prepared from the stored paraffin wax blocks of the particular patient's specimen. Only specimens with histological diagnosis of prostate cancer were included in this study. Gleason's scores and degree of cellular differentiation of the tumours were recorded for each specimen. Dates of specimen reception as well as histological diagnosis were recorded from the histology request forms. Data obtained were analysed using simple descriptive statistics. The Pearson's Chi-square test was used as test of significance, while the Z-test was also used for testing significance of differences of mean values of patients' ages. P (probability) values ≤ 0.05 were considered statistically significant. Results were presented in prose form, charts, line graph and tables. Microsoft Excel was used to draw the chart and tables.

RESULTS

A total of three hundred and eighty three (383) cases of prostate cancer were recorded for the period of January 1996 to December 2010. All the cases were adenocarcinomas. One hundred and ninety-five (195) cases were received from January 1996 to December 2004. Eighty-three of these (42.6%) were aged 40 to 49 years, and 112 (57.4%) 70 years and above. One hundred and eighty-eight patients were diagnosed with the disease and recorded for the second part of the study period, January 2005 to December 2010. Eighty-seven (46.3%) were aged 40 to 49 years, and 101 (53.7%) 70 years and above. The mean age of the 195 and that of the 188 patients with their standard deviations were 70.3 ± 2.5 and 69.8 ± 4.0 years respectively. The difference between the

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Table I: Age at presentation of patients with adenocarcinoma of the prostate in Port Harcourt as seen from 1996 to 2004 and 2005 to 2010.

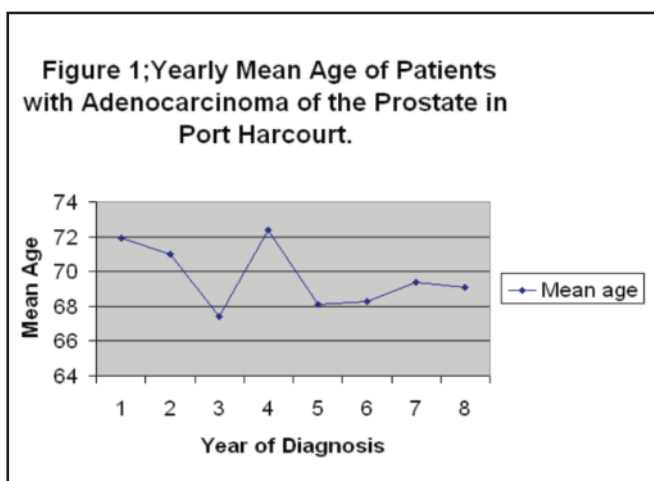
AGE :	1996-2004	2005-2010
40-49	2 (1.0)	2 (1.1)
50-59	26 (13.3)	30 (15.9)
60-69	55 (28.2)	55 (29.3)
70-79	80 (41.0)	74 (39.4)
80-89	32 (16.5)	23 (12.2)
90-99		3 (1.6)
100-109		1 (0.5)
Total	195 (100.0)	188 (100.0)

Mean age =70.4
 Mean age (years) = 69.8
 Standard deviation = ± 2.5 years
 Standard deviation ± 4.0 years.

Table II: Age and degree of differentiation/Gleason scores of adenocarcinoma of the prostate in patients with the disease in Port Harcourt, Southern Nigeria.

AGE: Years	Degree of differentiation/Gleason's Score of the tumours.			TOTAL(%)
	I (%)	II (%)	III(%)	
40-49	1 (1.7)	-	1 (1.3)	2 (1.1)
50-59	8 (13.8)	6 (11.3)	16 (20.8)	30 (15.9)
60-69	20 (34.8)	19 (35.9)	16 (20.8)	55 (29.3)
70-79	20 (34.5)	22 (41.5)	32 (41.5)	74 (39.4)
80-89	8 (13.8)	4 (7.5)	11 (14.3)	23 (12.2)
90-99	1 (1.7)	1 (1.9)	1 (1.3)	3 (1.6)
100-109	-	1 (1.9)	-	1 (0.5)
Total	58 (100.0)	(100.0)	77 (100.0)	188 (100.0)

I= Well differentiated, Gleason's score 2-5; II moderately differentiated, Gleason's score 6-7; III poorly differentiated, Gleason score 8-10.



Year of Diagnosis: 1=2003; 2=2004; 3=2005; 4=2006; 5=2007; 6=2008; 7=2009; 8=2010.

two means, using the "Z"- test, had no statistical significance. There was no statistically significant difference between the age distribution of the two groups of patients (p>0.10).

The age distributions of patients seen during the two parts of the study period were similar. The most frequently affected patients were those in their 8th decade (70-79 years) of life (Table I). The proportion of younger men (40-49 years) in the period 1996-2004 was similar to that of 2005-2010. Also the distributions of ages of patients aged 70 years and above in the two parts were similar (Table I).

A sustained lower mean age of patients seen annually was observed from before 2003 to 2010. A higher mean age was observed in 2003 (and before) than those of 2008 and 2010. The difference between the mean ages of 2003 and 2008, 2003 and 2010 were respectively statistically significant (P< 0.05).

The 188 patients seen from 2005 to 2010 were analysed for levels of cellular differentiation/Gleason scores of their tumours. Seventy-seven (41.1%) had poorly differentiated adenocarcinoma. Patients aged 46-69 years were 87 (46.3%). Thirty-three of these (37.9%) had poorly differentiated adenocarcinomas. One hundred and one of the 188 patients (53.7%) were aged 70 years and above, and 44 (43.6%) of them had poorly differentiated disease (Table II). The ages of the patients had no statistically significant relationship with the degree of cellular differentiation or Gleason's scores of the tumours (P>0.50). This observation was made using the Chi-square test, with or without Yates's correction.

DISCUSSION

University of Port Harcourt Teaching Hospital (UPTH) is a referral centre for patients with urological diseases from several states in Southern Nigeria. The data obtained therefore reflects clinical situation in a wide area of Southern Nigeria. The distribution of ages of the patients and the observation that those most affected were in their 8th decade of life reflect a familiar pattern seen in a previous Nigerian study³. This was the pattern observed throughout the two parts of the 15- year study period. This study further revealed a sustained lower mean age of patients seen between 2003 and 2010. This implies that greater population of younger men (40-69) were affected between 2003 and 2010, or that

many more elderly men (70 years and above) had the disease between 1996 and 2004. The deduction from these is that the mean age at which patients present with prostate cancer in Port Harcourt is decreasing. This decrease may be relative and probably due to the following factors: - early and better diagnosis with the use of serum PSA, a decreasing life expectancy of the study population, better imaging and biopsy techniques including prostatic ultrasonography, and availability of more Urologists in Port Harcourt during the second part of the study period. The decrease in age at presentation may also be real and attributable to reasons which are currently unknown.

The finding in this study of the predominance of poorly differentiated adenocarcinoma of predominance of prostate in Port Harcourt (Table) agrees with observations of others in different parts of Nigeria⁴. Similar observations (possession of tumours with poor prognosis) were made on American Blacks with prostate cancer in the USA⁵. In this study another salient finding was that the ages of the patients had no statistically significant relationship with the degree of cellular differentiation or Gleason's scores of the tumours they bore. Therefore, the predominance of poorly differentiated adenocarcinoma of the prostate among patients aged 70 to 79 years was not age-related but dependent on the number of prostate cancer patients observed in this age group. The second deduction from this study is that, although age may be important for the initiation of prostate cancer, it does not determine the nature and form of cell differentiation in Southern Nigerians. However, the causes of the observed preponderance of poorly differentiated adenocarcinoma of the prostate in Nigerians with the disease living in Nigeria merits further studies.

In conclusion, the distribution of the ages of prostate cancer patients in Port Harcourt, as seen in this study, had the same pattern throughout the 15-year period. Those in their 8th decade of life were most commonly affected, followed by those in the 7th decade. The mean age of prostate cancer patients in Port Harcourt is decreasing. The reasons for this observation are unclear but genetic and environmental factors, as well as life style changes are suggested as similar observations were made in other parts of Nigeria. The most common type of the disease, as observed in similar studies in some parts of Nigeria, is the poorly differentiated variant. The ages of the patients had no statistically significant relationship with the degree of cellular differentiation or Gleason's score of the tumours. Further studies of the pathological features of prostate cancer and the factors that cause decreasing age at presentation with the disease in Southern Nigeria are suggested, as these could reveal modifiable factors that may be used to control the disease.

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