

Morphological Patterns of Prostatic Lesions in Benin City, Nigeria: A Twenty Year Retrospective Study

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Abstract

Background and Rationale: Prostate gland lesions constitute a substantial source of morbidity and mortality among adult male populations world-wide. Cancer of the prostate is one of the most common malignancies in men hence, the need to analyse and provide baseline data of the pattern of prostatic lesions in our local environment.

Aim: To evaluate the prevalence and histological patterns of prostatic lesions at the University of Benin Teaching Hospital (UBTH), Benin City, Nigeria.

Methods: A 20-year (1989-2008) retrospective study of case files and slides of all patients presenting with prostatic lesion to the surgical and pathology Departments.

Results: A total of 813 prostatic lesions were studied during this period. Five hundred and forty nine (67.5%) of these lesion were nodular hyperplasia with chronic prostatitis co-existing in about 1% of cases. The overall age range was between 30 to 102 years. The peak age range for nodular prostatic hyperplasia was in the 7th decade of life. Prostate cancer accounted for 252 (30.9%) of all prostatic lesions with a peak incidence in the seventh decade of life.

Adenocarcinoma constituted about 99% of cases while squamous cell carcinoma accounted for 0.8%. Chronic prostatitis accounted for 1.1% of all prostate lesions

Conclusion: The patterns and frequency of prostatic lesions were comparatively similar to the findings in Nigeria and other parts of the world.

Keywords: Prostatic Lesions, Histopathology, Prostatic Cancer

Introduction

Prostatic lesions can be inflammatory and non-inflammatory and amongst the latter are benign, pre-malignant and malignant lesions. Inflammatory lesions are of less clinical importance because they are more easily treatable. Non-inflammatory lesions of epidemiological importance are nodular

hyperplasia and cancer, which are commonly seen among middle age and elderly men. Nodular prostatic hyperplasia (NPH) and prostatic carcinoma are two important reasons for increased health costs among middle aged to elderly men.^{1,2}

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NPH is a hyperplastic process that occurs mostly in the transition zone and peri-urethral submucosal ducts of the prostate gland.² The prevalence of histological evidence of nodular hyperplasia increases from 8% in men aged 31 to 40 years to 50% in men aged 51-60 years and about 80% in men older than 80 years.³

Prostate nodular hyperplasia accounts for 83% of all prostate specimens in Benin-City, Nigeria. Its peak age incidence was in the sixth decade of life⁴. In Lagos, Amaku et al reported that nodular prostatic hyperplasia accounts for approximately 80% of all prostate specimens⁵. Prostate cancer is the 6th most common cancer world-wide. It is also the most common cancer of the male genitourinary system world-wide.¹ There is also considerable ethnic variation in the prevalence of prostate cancer. Its prevalence is highest among African Americans and the Scandinavians, followed by Caucasians and lowest in Asians⁶. African American men have a 47% higher incidence rate than white men living in the same geographical location^{1,6,7}

Prostate cancer is the second most common cause of death after lung cancer amongst American men and it represents 3% of all deaths in men over 55 years⁸. The age adjusted incidence rate in Lagos, Nigeria is 127 per 100,000.⁵ Ogunbiyi et al at Ibadan, Nigeria ranked prostate cancer as the most common cancer amongst men in Nigeria.⁹ In an earlier work done in Benin, Akang et al showed that the most common histological variant of prostate cancer is adenocarcinoma. It accounted for 98.4%, of all prostate carcinoma.⁴

Though reports from most centres in Nigeria indicate an increasing incidence,^{5,9,10} the true incidence of prostatic lesions in our environment is unknown as most previous reports were within a decade.^{4,9,10} This study aims at establishing the prevalence and histological pattern of prostatic lesions at the University of Benin Teaching Hospital between January 1989 and December 2008. Information derived from this study will be of immense value in formulating hospital policies regarding

prostatic cancer and also form a baseline data for future research including immunohistochemical evaluation of prognostic and predictive markers in prostate cancer in Benin.

Materials and Methods

All prostate specimens (needle biopsies or prostatectomies) received at the Department of Pathology of UBTH, Benin City, Nigeria from January 1st, 1989 – December 31st, 2008 were reviewed.

Demographic data regarding age, sex, and clinical information were obtained from request cards and case files. Slides were retrieved from the archives of the Department of Pathology. When necessary, new slides were made from formalin fixed, paraffin embedded blocks histologic classification was done using the World Health Organization (W.H.O) recommendation¹¹, and the histological scoring of adenocarcinoma by the Gleason's scoring system.¹²

Statistical analysis was done using the SPSS statistical package.

Results

A total of 813 prostatic lesions (473 needle biopsies, 175 transurethral prostatectomy and 165 open prostatectomies) were recorded during the study period. Majority of the

Table 1.

Frequency of prostatic lesions		
Diagnosis	Frequency	Percentage
Nodular prostatic hyperplasia	549	67.5
Adenocarcinoma	252	31.0
Squamous cell carcinoma	2	0.3
Chronic prostatitis	9	1.1
Atypical stromal hyperplasia	1	0.1
Total	813	100.0

prostatic lesions occurred between the ages of 61-80 years accounting for 559 (68.8%) of cases of all prostatic lesions. Only 22 (2.7%) and 14 (1.7%) occurred before 50 years and after 9th decades respectively.

Table 1 shows the frequency of the pathological lesions of the prostate seen in this study. Nodular prostatic hyperplasia (NPH) had the highest frequency accounting for 549 (67.5%) of all cases while adenocarcinoma accounted

Table 2 shows histological patterns of prostatic lesions in relation to age. NPH is a common finding in all age group making it the most common prostatic lesion accounting for 549 cases (67.5%). It is rare before the 4th decade and after the 8th decade of life. Only 1 case of adenocarcinoma was reported before the age of 50 years. There is a sharp rise in incidence of both NPH and Adenocarcinoma from the 5th to 7th decades of life and a decline thereafter. Chronic prostatitis accounted for only 9 cases

Table 2.

Histologic types of prostatic lesions in relation to age

Age range	NPH*	Adeno-carcinoma	Chronic prostatitis	SCC**	ASH***	Total	%
31-40	8	0	0	0	0	8	0.8
41-50	14	1	0	0	0	15	1.8
51-60	88	36	3	0	0	127	15.6
61-70	176	88	2	0	0	266	32.7
71-80	196	95	1	1	1	293	36
81-90	58	28	2	1	0	89	10.9
91-100	8	3	1	0	0	12	1.5
>100	1	1	0	0	0	2	0.2
Total	549	252	9	2	1	813	100

*Nodular prostatic hyperplasia, **Squamous cell carcinoma, ***Atypical stromal hyperplasia

for 252 cases (31%) of all prostate lesions. Chronic prostatitis accounted for about 1.1% of prostatic lesions while squamous cell carcinoma and atypical stromal hyperplasia accounted for 0.2% and 0.1% respectively.

The annual incidence ranged between 8-62 cases with a mean of 27 cases per year. The age range of cases of NPH was between 31 to 102 years and the peak frequency is in the 7th decade of life accounting for 195 cases (35%). There was a steep rise of frequency distribution from the 5th decade of life and a sharp decline from the 8th decade of life.

(1.1%) and Squamous cell carcinoma recorded only 2 cases in the 7th and 8th decades of life. Only 1 case of atypical stromal hyperplasia was recorded during this period.

Table 3 shows the histological (Gleason's) Scores of Adenocarcinoma in relation to age and frequency. Forty four percent of the adenocarcinomas were well differentiated with a Gleason score of 4 and below accounting for the highest percentage. Twenty-two percent are moderately differentiated with a Gleason score of between 5 and 7 while poorly differentiated subtypes with a Gleason score of 8 and above accounted for 33%. Gleason score of 4 have the

highest single score and score of 5 the lowest single score.

Variable amount of glandular and stromal hyperplasia were observed during microscopic examination of these cases. Almost all cases of

Table 3.

Histological scores of Adenocarcinoma in relation to age and frequency

Gleason Score	Age Range (Years)								Total
	31-40yrs	41-50yrs	51-60yrs	61-70yrs	71-80yrs	81-90yrs	91-100yrs	>100yrs	
2	0	1	6	8	5	3	1	0	24
3	0	0	3	3	6	2	0	0	14
4	0	0	6	24	19	6	1	0	56
5	0	0	1	1	4	0	0	0	6
6	0	0	4	8	6	4	0	0	22
7	0	0	2	5	7	5	1	0	20
8	0	0	4	8	13	3	0	0	28
9	0	0	3	5	10	2	0	0	20
10	0	0	0	6	12	2	0	0	20

Discussion

In this 20 years retrospective study, 813 histologically confirmed prostatic tumours and tumour-like lesions were seen, 70.0% were benign lesions and 30% malignant tumours, occurring in the ratio of 2.3:1 This data clearly indicates that benign prostatic lesions are more common than prostate cancer in this environment. This finding is in keeping with previous work done by Akang et al in Benin City and reports from other part of Nigeria.^{4,5,13,14} However, it is slightly lower when compared with the work done by Amaku et al in Lagos, Nigeria where the prevalence of NPH was observed to be 80% of all prostatic lesions.⁵ The peak incidence of NPH was found to be in the 7th decade of life, corresponding with earlier reports from Benin-City and other regions of Nigeria.^{5,9,14} This peak age of occurrence is slightly earlier than those reported in developed countries, where the incidence rises steadily with increasing age and finally peaks at the 9th decade of life.^{5,13,14} This may be due to a higher standards of living and a higher life expectancy in developed countries.

NPH (99.8%) were glandulo-stromal types and only 7 cases of stromal hyperplasia accounting for 1.3% was found in this study. However 1 case of atypical stromal hyperplasia which is reminiscent of cystosarcoma phyllodes recorded during this period. This study is slightly at variance with reports from Ilorin, Nigeria¹³ and in Saudi-Arabia¹⁶ where glandulo-stromal and stromal hyperplasia accounted for about 90% and 10% in both locations respectively. The glandulo-stromal type of hyperplasia shows a greater capacity of growth resulting in urethral obstruction.

Prostate cancer is the commonest cancer in male genito-urinary system. It is the 6th most common cancer in the world with a sharp rise in age specific incidence in blacks.^{1,7,8,11} It is also the second most common non-skin cancer in European male adults.⁷

This study recorded 252 cases of prostate cancer out of 813 prostatic lesions accounting for 30% of all prostatic lesions. The age range of the 252 cancer cases was between 50-102 years with a

peak incidence in the 7th decade of life (38%) and a sharp rise from the 5th decade and a sharp decline from the 8th decade of life. This is consistent with most Africa reports but slightly differs with reports from European Countries, United State and Canada where the incidence rises steadily with ascending age.^{1,8,9,10,16,17} The reason is possibly due to reduced life expectancy in Nigeria and other African countries.

Adenocarcinoma accounted for almost all histological type of prostate cancer (99.8%) found in this study which is in keeping with earlier work done by Akang in Benin (98.4%) and other African countries and the World.^{4,6,9,16,17,18} The rarity of other histological subtype of prostate cancer as confirmed by this study is consistent with reports from other regions as seen in the literatures. Only two cases of squamous cell carcinoma were recorded during this period. Other cases like leiomyosarcoma and Rhabdomyosarcoma were not seen.

Gleason score of 4 and below usually implies good prognosis, while Gleason score of 8 to 10 indicates a worse prognosis²². In this study most of the cases of adenocarcinomas (45%) had Gleason score of 4 and below. This is comparable to other studies in Nigeria^{4,7,9,14}.

However in terms of percentage of occurrence, this report is slightly different from earlier report from the same centre showing that well differentiated, moderately differentiated and poorly differentiated adenocarcinoma accounted for 63%, 34% and 8.4% respectively.⁴ The difference can be attributable to a larger adenocarcinoma sample size of 252 against 128 and also probably due to higher diagnostic accuracy using the Gleason scoring system rather than a subjective loose classification into well, moderate and poorly, differentiated adenocarcinoma used in the previous study.

In conclusion, this 20 year review has shown that the patterns and frequency of prostatic

lesions were comparatively similar to the findings from other centres in Nigeria and other parts of the world and that prostate cancer constitute a significant proportion of prostatic lesions in Benin.

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