Clinicopathological Analysis of Prostatic Lesions in a Tertiary Hospital in Nigeria

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Abstract

Background: Prostatic neoplasms are important source of morbidity and mortality among men globally. A rising trend is noted worldwide especially involving sub-saharan African males where paradoxically data is grossly inadequate. We hereby present prostatic lesions from a tertiary center in sub-saharan Africa. **Materials and Method:** A retrospective analytic study of all prostatic samples received in the histopathology of National Hospital Abuja (NHA), a tertiary hospital in Nigeria, from 1st January 2005 to 31st December 2015 was carried out. **Result:** The major affected age group is the 61 – 70 year cohort. Majority of neoplastic lesions encountered are malignant adenocarcinomas of moderate differentiation. The predominant presenting symptoms are dysuria, frequency, and acute urinary retention in that order, while raised prostatic specific antigen (PSA) is a frequent sign. **Conclusion:** Prostatic adenocarcinoma is significant malignancy in NHA while benign prostatic hyperplasia is the commonest benign lesion. Gleason scores 5 and 7 are the predominant malignant differentiation obtained.

Keywords: Carcinoma, prostatic lesions, sub-Saharan Africa, tertiary hospital

INTRODUCTION

Prostate neoplasm is worldwide adjudged to be the most common carcinoma in males after middle age accounting for over 1.1 million cases in 2012. It was reported to represent 8% of all new cancer cases in that year and 15% of male cancers.[1] A report from GLOBOCAN 2012 posited that prostate cancer is responsible for the death of 302,000 patients in 2012, globally making it the 5th leading cause of cancer death in men. The benign lesions, particularly benign prostatic hyperplasia (BPH), are even more common than cancer in most studies and present with symptoms similar to the malignant counterpart.[2] A study reported an incidence of 105 million males globally in 2015 affected by prostatic lesions.[3] Besides being a cause of high morbidity and major public health concern, BPH is acknowledged to significantly worsen the male quality of life.[4]

Hereby, we present the incidence of prostatic lesions from a tertiary hospital in a sub-Saharan African country, Nigeria.

Setting

The National Hospital Abuja (NHA) is a 450-bedded tertiary

public hospital located in the cosmopolitan city of Abuja, the capital of Nigeria, a sub-Saharan country. The Federal Capital Territory is located in the geographical center of Nigeria with a land area of almost 8000 km² within latitudes 70 20′ North of the Equator and longitudes 60 45′ and 70 39′ (Demographia, 2015). The population of Abuja is estimated to be approximately 2 million. The NHA derives clientele mostly from the inhabitant of the Federal Capital and surrounding states of the federation, as well as referrals from other geographically distant states within the country such as Borno, Adamawa, and Bayelsa to mention a few.

MATERIALS AND METHODS

This is a retrospective study of all prostate lesions received in the Histopathology Department of the NHA from January

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1, 2005, to December 31, 2015. Records of all prostate samples (prostatectomies, transurethral resection of prostate transurethral resection of the prostate chips, and trucut biopsies) received in the department within the period were retrieved from the request forms and departmental register. Slides made from such samples were reviewed, and new slides made from the tissue blocks where necessary. Similarly, all records of clinic attendance and admission for surgical prostate diseases were obtained from the hospital health record department. Gleason's scores were reviewed and modified to conform to the current 5-tier system recommended by the International Society of Urological Pathology and adopted by the World Health Assembly in 2016. By this system, Grade Group 1 includes all Gleason's score ≤6, Grade Group 2 is Gleason's 3 + 4 = 7, and Grade Group 3 is Gleason's 4 + 3 = 7 whereas Grade Group 4 and 5 are Gleason's scores 8 and 9–10, respectively. Ward folders and mortuary records were consulted where appropriate. Data are collated and analyzed using simple statistical methods with Microsoft Excel 2011.

Exclusion criteria

Cases of prostatic lesions diagnosed by prostate-specific antigen (PSA) determination or imaging alone were excluded from the study.

Limitation

In this study, patients diagnosed by clinical examination, prostate ultrasound, and/or hormonal profile alone were not included in the study. Furthermore, patients diagnosed by fine-needle aspiration alone were excluded from the study.

Results

The number of specimen that fulfilled the inclusion criteria for our study within the specified period was 621. A gradual rise in incidence is observed over the years, increasing from 28 in 2005 to 50 in 2015, with a peak observed in 2008 ($n = 95$). This is depicted in Figure 1. The age range was from 26 to 98 years with a mean of 65.0 and a standard deviation of 9.87. The peak age group was the 61–70 years cohorts followed by the 51–60 years of age group as illustrated in Figure 2.

The most common presenting symptoms were dysuria ($n = 145$, 23.4%), urinary frequency ($n = 145$, 23.4%), acute urinary retention ($n = 117$, 18.8%), and weak urinary stream ($n = 77$, 12.4%). Others presented with urgency ($n = 69$, 11.1%), nocturia ($n = 68$, 11%), and incontinence ($n = 48$, 7.7%). The predominant findings in most of the patients are raised PSA ($n = 172$, 29.4%) with PSA values as high as 10,000 ng/mL obtained in one patient. This is followed in frequency by enlarged prostate on digital rectal examination ($n = 86$, 14.7%) [Figures 3 and 4].

Histologically, majority of the lesions were BPH accounting for 42.5% ($n = 264$) followed by prostatic adenocarcinoma with 39.3% ($n = 244$). Infective and other inflammatory conditions accounted for 5.5% ($n = 34$) and accompanied by BPH in 9.2% ($n = 57$). Cases of prostatic intraepithelial neoplasia (PIN) accounted for 3.5% of the total, with about half of the cases being high grade. This is depicted in Table 1.
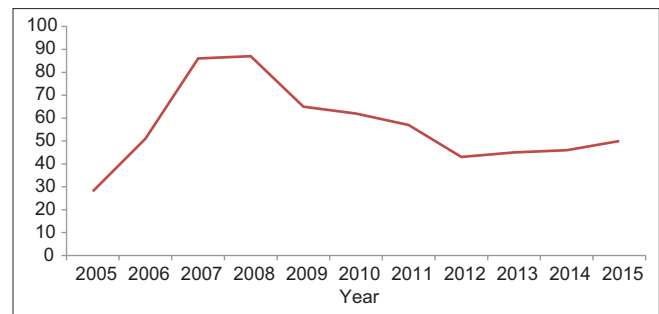

Figure 1: The temporal trend of prostatic lesions in the National Hospital Abuja over 11 years
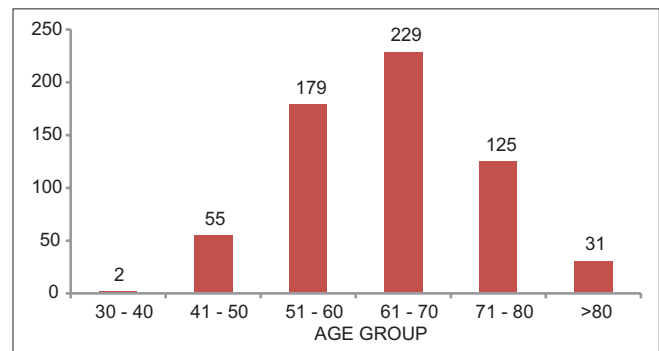

Figure 2: The distribution of prostatic lesion in the National Hospital Abuja by age group
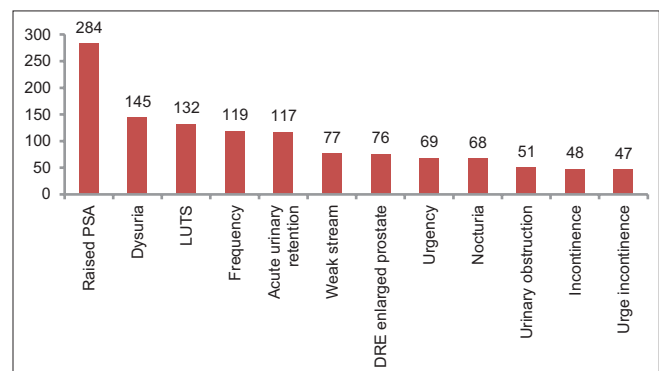

Figure 3: The distribution of clinical symptoms and signs seen in patients with prostatic lesions in the National Hospital Abuja

Most of the adenocarcinomas were moderately differentiated ($n = 112$, 45.9%), whereas the rest were well differentiated ($n = 68$, 27.9%) and poorly differentiated ($n = 64$, 26.2%). The Gleason scores in the adenocarcinoma ranged from 3 to 9 (Grade Group 1–5 in the ISUP recommended system) with the However majority ($n = 43$) of the adenocarcinomas had score 5 which falls into category Grade Group 1 of the new classification system.

Discussion

In absolute and relative terms, the incidence of prostate lesions obtained in this study is comparable to those obtained in similar studies elsewhere in the country. Thus, the frequency in our

Table 1: Prostatic histological diagnoses encountered in the National Hospital Abuja

Diagnosis	Frequency (%)
Adenocarcinoma	
Well differentiated	68 (11.0)
Moderately differentiated	112 (18.0)
Poorly differentiated	64 (10.3)
BPH	264 (42.5)
Acute prostatitis	7 (1.1)
Chronic prostatitis	27 (4.3)
BPH with prostatitis	57 (9.2)
BPH with PIN	15 (2.4)
BPH with HG PIN	7 (1.1)
Total	621 (100)

BPH: Benign prostatic hyperplasia, PIN: Prostatic intraepithelial neoplasia, HG: High grade
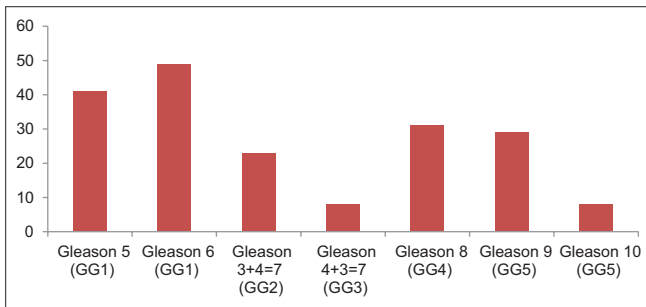

Figure 4: The frequency of Gleason scores of prostatic adenocarcinoma seen in the National Hospital Abuja. Grade: Gleason score. GG (group grade): International Society of Urological Pathology recommended grading

study concurs favorably with reports from similar studies in Lagos,[5] Zaria,[6] Ilorin,[7] and Port Harcourt.[8]

A similar study in India,[9] on the other hand, obtained a far lower incidence than in this study – supporting the concept that prostatic lesions are more common in men of African descent than in other continents. Indeed, even though two-thirds of diagnosed prostate cancers are found in developed countries, it is reported that men of sub-Saharan African descent suffer disproportionately from the scourge compared to men of other races or ethnicities.[10,11]

In addition, the International Agency for Research on Cancer (IARC) estimates that prostatic carcinoma is a growing problem in Africa with approximately 28,006 deaths in 2010 and prediction of approximately 57,048 deaths in 2030.[3]

Similar trends are observed in Negroid race of the Caribbean, the United Kingdom, and West Africa who are of West African ancestry. Indeed, it is reported that in sub-Saharan Africa alone, disability-adjusted life years from prostate cancer increased two-fold from 100,200 in 1990, to 219,700 in 2010. It is suspected that the interplay of genetic and environmental factors may contribute significantly to the observed paradigm.[12]

The ratio of benign to malignant lesions seen in this study 2.6:1 skewed in favor of benign lesions differs significantly with the findings in Kano[13] (3.5:1). However, the duration of the study (4 years) in the latter might be a contributory factor to the contrast in the two studies.

A gradual rise in the incidence of prostatic lesions over time is observed in our study in tacit concordance with the observation from other centers notably Ogunbiyi and Shittu[14] in Ibadan and Wasike and Magoha[15] from Nairobi in Kenya. Indeed, a meta-analytic study looking at prostate cancer in Africa reported a significant increase in incidence over a 35-year period.[16] This rise in incidence may subtly validate the prediction by the IARC that prostatic cancer deaths in Africa are expected to rise by 104% by 2030.[3]

In this and other researches, it will appear that the 6th and 7th decades of life are the commonly affected age group. This is also borne out in the reports from Lagos[6] Southeastern,[17] and Southwestern[18] states of Nigeria, Maiduguri,[19] Nairobi,[15] and in distant shores of Pakistan.[20]

Histologically, all the malignant prostatic lesions encountered in our studies were adenocarcinomas with variation in the degree of differentiation from the well to the poorly differentiated. Majority of the adenocarcinomas were moderately differentiated, followed by the well-differentiated and poorly differentiated variants in almost equal proportion. This contrasts with findings from some centers[21] and concurs with others.[9,13,14,22] One plausible reason for the relatively higher incidence of moderate and poorly differentiated adenocarcinoma in this center may be the fact that the center is a referral center where mostly advanced cases present.

Gleason's scoring of the adenocarcinomas has undergone a radical review using multi-institutional and multimodal therapy data to enhance the prognostic and therapeutic values of the diagnostic investigations.[23] In our study, a significant percentage (42%) of the adenocarcinomas fall within the Grade Group 1 category (encompassing the previous Gleason scores 6 and below). The prognostic value of this scoring system in our center and indeed in Nigeria requires further evaluation.

A significant proportion of our patients presented with obstructive lower urinary tract symptoms (LUTS) similar to the finding in Port Harcourt in a study on corroboration of LUTS and prostatic lesions.[24] This is not surprising as LUTS are common symptoms of both BPH and prostatic carcinomas.

Conclusion

Prostate lesions are an important cause of morbidity among men in Nigeria. Benign prostatic hypertrophy is the most common benign prostatic lesion, while moderately differentiated adenocarcinoma is the predominant prostatic malignancy in our study.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, *et al*. GLOBOCAN 2012 v1.1, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11. Lyon, France: International Agency for Research on Cancer; 2014. Available from: http://globocan.iarc.fr. [Last accessed on 2015 Jan 16].

2. Lim KB. Epidemiology of clinical benign prostatic hyperplasia. Asian J Urol 2017;4:148-51.

3. GBD 2015 Disease and Injury Incidence and Prevalence Collaborators. Global, regional, and national incidence, prevalence, and years lived with disability for 310 diseases and injuries, 1990-2015: A systematic analysis for the global burden of disease study 2015. Lancet 2016;388:1545-602.

4. Lu SH, Chen CS. Natural history and epidemiology of benign prostatic hyperplasia. Formosan J Surg 2014;47:207-10.

5. Nwafor CC, Keshinro OS, Abudu EK. A histopathological study of prostate lesions in Lagos, Nigeria: A private practice experience. Niger Med J 2015;56:338-43.

6. Dawam D, Rafindadi AH, Kalayi GD. Benign prostatic hyperplasia and prostate carcinoma in native Africans. BJU Int 2000;85:1074-7.

7. Ajape AA, Ibrahim KO, Fakeye JA, Abiola OO. An overview of cancer of the prostate diagnosis and management in Nigeria: The experience in a Nigerian tertiary hospital. Ann Afr Med 2010;9:113-7.

8. Obiorah CC, Nwosu SO. A histopathological study of carcinoma of the prostate in Port Harcourt, Nigeria. Niger J Clin Pract 2011;14:363-7.

9. Arya RC, Minj MK, Bhardwaj A, Tiwari AK, Singh D, Deshkar AM. Pattern of Prostatic Lesions in Chhattisgarh Institute of Medical Sciences, Bilaspur: A retrospective tertiary hospital based study. Int J Sci Stud 2015;3:179-82.

10. Odedina FT, Akinremi TO, Chinegwundoh F, Roberts R, Yu D, Reams RR, *et al*. Prostate cancer disparities in black men of African descent: A comparative literature review of prostate cancer burden among black men in the United States, Caribbean, United Kingdom, and West Africa. Infect Agent Cancer 2009;4 Suppl 1:S2.

11. Rebbeck TR, Devesa SS, Chang BL, Bunker CH, Cheng I, Cooney K, *et al*. Global patterns of prostate cancer incidence, aggressiveness, and mortality in men of African descent. Prostate Cancer. 2013;2013:560857.

12. Odedina FT, Ogunbiyi JO, Ukoli FA. Roots of prostate cancer in African-American men. J Natl Med Assoc 2006;98:539-43.

13. Mohammed AZ, Alhassan SU, Edino ST, Ochicha O. Histopathological review of prostatic diseases in Kano, Nigeria. Niger Postgrad Med J 2003;10:1-5.

14. Ogunbiyi JO, Shittu OB. Increased incidence of prostate cancer in Nigerians. J Natl Med Assoc 1999;91:159-64.

15. Wasike RW, Magoha GA. Descriptive case series of patients presenting with cancer of the prostate and their management at Kenyatta National Hospital, Nairobi. East Afr Med J 2007;84:S31-5.

16. Adeloye D, David RA, Aderemi AV, Iseolorunkanmi A, Oyedokun A, Iweala EE, *et al*. An estimate of the incidence of prostate cancer in Africa: A systematic review and meta-Analysis. PLoS One 2016;11:e0153496.

17. Ekwere PD, Egbe SN. The changing pattern of prostate cancer in Nigerians: Current status in the Southeastern states. J Natl Med Assoc 2002;94:619-27.

18. Badmus TA, Adesunkanmi AR, Yusuf BM, Oseni GO, Eziyi AK, Bakare TI, *et al*. Burden of prostate cancer in Southwestern Nigeria. Urology 2010;76:412-6.

19. Yawe KT, Tahir MB, Nggada HA. Prostate cancer in Maiduguri. West Afr J Med 2006;25:298-300.

20. Aslam HM, Shahid N, Shaikh NA, Shaikh HA, Saleem S, Mughal A. Spectrum of prostatic lesions. Int Arch Med 2013;6:36.

21. Sapira MK, Eke N, Nwofor AM. Ethnicity and prostate cancer in Southern Nigeria: A preliminary report. Niger J Surg 2015;21:96-101.

22. Ugare UG, Bassey IE, Jibrin PG, Ekanem IA. Analysis of Gleason grade and scores in 90 Nigerian Africans with prostate cancer during the period 1994 to 2004. Afr Health Sci 2012;12:69-73.

23. Epstein JI, Zelefsky MJ, Sjoberg DD, Nelson JB, Egevad L, Magi-Galluzzi C, *et al*. A Contemporary prostate cancer grading system: A validated alternative to the Gleason Score. Eur Urol 2016;69:428-35.

24. Bock-Oruma A, Iboh SO, Prince DJ. Prostate cancer in primary care, Port Harcourt, Nigeria. J Family Med Prim Care 2014;3:151-3.

doi: 10.1155/2013/560857. Epub 2013 Feb 13.