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Presentation, Characteristics and Co-morbidities of Men with Prostate Cancer in Nigeria

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Authors' contributions

This work was carried out in collaboration between both authors. Authors CGO and FEM conceived this research and constructed the proforma for obtaining data. Both were involved in concept development, data retrieval, reviews and writeup. Both authors read and approved the final manuscript.

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ABSTRACT

Aims: To determine the presentation, characteristics and associated co-morbidities in Nigerian men with prostate cancer.
Study Design: Retrospective study.
Place and Duration of Study: The study was carried at the Division of Urology, Department of Surgery, Jos University Teaching Hospital, Jos, Nigeria from January 2010 to December 2018.
Methodology: Men with histologically confirmed prostate cancer were analyzed. The age of the men, PSA pattern, histologic type, Gleason score, stage of the disease, associated co-morbidities and treatment received by the men were recorded. The effect of co-morbidities on disease aggressiveness using Gleason score and PSA as determinants was determined using Pearson correlation. SPSS version 23 was used in analyzing the data. P-value of < 0.05 was considered significant.
Results: Eighty-one patients with prostate cancer from 2010 to 2018 were involved in the study. The mean age was 67.58±9.42 years with a range of 42 to 96years. Men with PSA >100 ng/ml had the highest frequency (34.60%). The mean Gleason Score was 6.28±2.13. Gleason score 7-8 had the highest frequency (35.8%). Seventy-nine patients (97.5%) had adenocarcinoma. Eighty-

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one percent of the men had advanced Pca, 58% being metastatic disease. 48.1% had co-morbidities, 39.5% had hypertension, while 8.6% had both hypertension and diabetes. Comorbidities showed no correlation with PSA level (r=0.346), (p-value 0.375) and Gleason score (r=0.194), (p-value 0.639). Seventy-nine percent of the men had androgen deprivation therapy.
Conclusion: Most of the men presented with advanced disease, with all indices pointing towards lethal disease. The commonest co-morbidity was hypertension and co-morbidities had no relationship with the aggressiveness of prostate cancer. To ensure early presentation and prevent lethal forms of Pca, health education, screening, counselling for men in the high-risk group is paramount.

Keywords: Prostate cancer; Gleason score; PSA; comorbidities; hypertension.

1. INTRODUCTION

Prostate cancer (Pca) has assumed public health importance because of its growing significance worldwide. Its aetiology, like most cancers that afflict humanity, is unknown; however, there are documented risk factors [1,2,3].

Worldwide, Pca is ranked the fifth most common cancer and the second most diagnosed cancer in men. Most of the cases were recorded in developed countries. Australia/New Zealand (104.2 per 100,000), Western and Northern Europe and Northern America, have the highest incidence rate, mainly because of the practice of prostate specific antigen (PSA) testing and subsequent biopsy [4].

In Asia, the incidence is increasing. The reasons for this increase include the implementation of PSA testing, development of cancer registry, risky behaviours associated with economic growth and the influence of environmental risk factors [5].

In Africa, the true incidence of prostate cancer is unknown due to under reporting and poor record keeping, however, current epidemiological studies have shown that prostate cancer is the leading cancer in terms of incidence and mortality in men of Sub-Saharan African origin [1,6,7]. It has also been shown that there is a higher incidence and mortality in black men when compared to other racial groups [8]. Various reasons have been adduced for these, and they include, differences in prostate specific antigen testing, higher stage-specific mortality once diagnosed, comorbidities, socioeconomic status, difference in metastatic cancer incidence, tumour characteristics, choice of treatment and physician.

The disease may be asymptomatic, and diagnosis is made during screening or patients may present with features of localized or advanced disease. Elevated prostate specific antigen (PSA >4 ng/ml) and or abnormal prostate architecture on digital rectal examination are indications for prostate biopsy [9,10]. The biopsy provides tissue sample for histologic diagnosis, immunohistochemistry and Gleason score. PSA level, Gleason score and clinical stage of the disease are determinants of treatment options. While in early disease, the treatment is with curative intent, advanced and metastatic diseases warrant palliative care, which aims to prolong and improve the quality of life [11,12].

The objective of this study is to determine the presentation, characteristics and associated co-morbidities in men with prostate cancer in Nigeria.

2. METHODOLOGY

This study is retrospective, involving men with prostate cancer who presented from January 2010 to December 2018 and was approved by the Institutional Ethics Committee. The records of patients with Pca were retrieved, and data extracted. Analyzed data were for patients with histologically confirmed prostate cancer. The patient evaluation involved history, physical examination with digital rectal examination and investigations. Prostate biopsy was recommended for men with abnormal findings on digital rectal examination (asymmetry of the gland, hard, woody, induration or difference in texture, nodule, obliterated median sulcus, indistinguishable edges, palpable seminal vesicle and immobile rectal mucosa) and elevated PSA (PSA >4 ng). These men were further evaluated using bone scan and MRI if they met the criteria. The age of the men, PSA pattern, histologic type, Gleason score, stage of the disease, associated co-morbidities and treatment received by the men were recorded. The effect of co-morbidities on disease aggressiveness using Gleason score

and PSA as determinants was determined using Pearson correlation. SPSS version 23 was used in analyzing the data. Measures of central tendencies; mean ± standard deviation, median were done for the different variables. P-value of < 0.05 was considered significant.

3. RESULTS

Eighty-one patients with prostate cancer from 2010 to 2018 were involved in the study. The mean age was 67.58 ±9.42 years with a range of 42 to 96 years.

The mean PSA was 73.36±57.36 ng/ml with a range of 2.2 ng/ml to 236 ng/ml. four patients had PSA < 4 g/ml. Table 1 shows the distribution of PSA for men with Pca.

Table 1. Showing the distribution of PSA for men with Pca

PSA level	Frequency	Percentage
0-20	17	21.0
21-40	13	16.0
41-60	9	11.1
61-80	4	4.9
81-100	6	7.4
>100	28	34.6
Not accessed	3	4.9
Total	**81**	**100.0**

The group with >100 ng/ml had the highest frequency (34.60%), followed by PSA group 0-20ng/ml (21.0%). PSA group 81-100 has the lowest frequency (7.4%). The initial PSA of three patients (4.9%) could not be accessed.

The mean Gleason Score was 6.28±2.13 with a range of 2-10. Table 2 shows the distribution of Gleason score for men with Pca. Men with scores 7-8 had the highest frequency (35.8%), while those with scores 9-10 had the lowest frequency. The Gleason score of twelve patients (14.8%) was not given.

Table 2. Showing the distribution of Gleason score for men with Pca

Gleason score	Frequency	Percentage
2-4	13	16.0
5-6	17	21.0
7-8	29	35.8
9-10	10	12.3
Not given	12	14.8
Total	**81**	**100.0**

Seventy-nine patients (97.5%) had adenocarcinoma while two patients (2.5%) had high grade prostate intraepithelial neoplasm (PIN). Eighty-one percent of the men had advanced Pca, 58% being metastatic disease (Fig. 1).

Thirty-nine patients (48.1%) had co-morbidities while forty-two patients (51.9%) had no co-morbidities. 39.5% had hypertension, while 8.6% had both hypertension and diabetes. Co-morbidities showed no correlation with PSA level (r=0.346), (p-value 0.375) and Gleason score (r=0.194), (p-value 0.639).

Androgen deprivation therapy was the main treatment option (79%). Forty-four per cent had bilateral total orchidectomy, while 15% had luteinizing hormone-releasing hormone analogue (LHRH). Two percent had radical prostatectomy. 10% of the patients did not consent to treatment. Fig. 2 shows the distribution of treatment for men with prostate cancer.

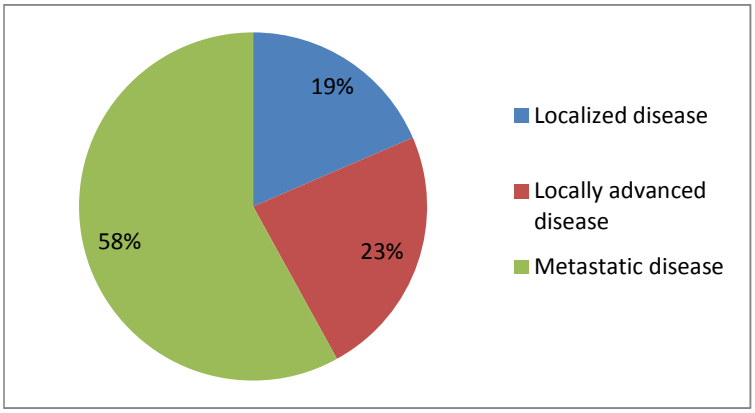

Fig. 1. Showing the staging of Pca

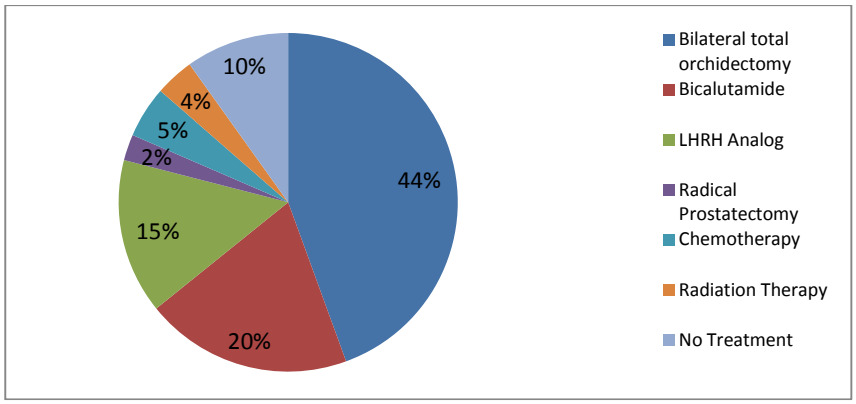

Fig. 2. Showing the distribution of treatment for men with Pca

4. DISCUSSION

Age is a non-modifiable risk for prostate cancer. This risk increases from 50 years, with more than 80% of men with prostate cancer diagnosed at 65 years or older [13]. In the index study, the mean age was 67.58±9.42 years with a range of 42 to 96 years. Similar age was recorded globally by other workers [9,14,15,16,17]. Of note, however, is the occurrence of Pca in a 42 year old man in this study. Ajape, et al. in an overview of prostate cancer diagnosis and management in Nigeria, recorded men in their forties with prostate cancer. Pca in younger men may have significant clinical implication for the families of those affected, especially in the light of the observation made by Bock et al. that the age at prostate cancer diagnosis decreased over successive generations [18].

Prostate-specific antigen (PSA) is a kallikrein produced by the prostate gland. It is used in prostate cancer for screening, early diagnosis, assessing the response to therapy, determining tumour progression and prognosis or as a signal of disease recurrence [19,20]. There is no agreed consensus to the exact cutoff for a normal PSA value. Though a PSA of 4ng/ml is regarded as the upper limit of normal, PSA values of 2.5 ng/mL have been used, especially for younger men. The pretreatment PSA level may be an indicator of cancer burden, and hence, it plays a role in predicting disease prognosis. In this study, the mean PSA was 73.36 ± 57.36 ng/ml with a range of 2.2 ng/ml-236 ng/ml. The group with PSA greater than 100 ng/ml had the highest frequency (34.60%). This is similar to the findings by other authors who reported high PSA values in men of African origin. In a study by Bassey, et al. most of the patients had pretreatment PSA values higher than 20 ng/ml (55%) at presentation with the mean value being 62.3 ng/ml [21]. High pre-treatment PSA was also recorded by Ekeke, et al. in Port Harcourt, Nigeria [11]. This elevated PSA portends grave consequences for our men as studies have shown that higher pretreatment PSA levels are associated with disease progression, time to first bone metastasis, cancer specific mortality and all-cause mortality [22,23].

The Gleason grading system is based on the architectural appearance of adenocarcinoma of the prostate on H&E section. It is defined by five histological grades. Gleason 1 is well-differentiated and has the most favourable prognosis, whereas Gleason 5 is the least differentiated and has the poorest prognosis [24]. However, in the recent update by International Society of Urologic Pathology, grades one and two as described by the classic work done by Gleason were jettisoned [25]. Gleason pattern may be more than two in Adenocarcinomas of the prostate. The Gleason score, which is a summation of two Gleason patterns, has been shown to correlate with the biological behaviour, grade, stage and prognosis of prostate adenocarcinoma and is invaluable in predicting biochemical recurrence after radical prostatectomy [20,26,27]. In this study, the mean Gleason score was 6.28±2.13. Men with scores 7-8 had the highest frequency (35.8%), while those with scores 9-10 (12.3%) had the lowest rate (Table 2). In a histopathological study of Pca in Port Harcourt, Nigeria, by Obiorah et al. Gleason grading of the clinical carcinoma showed that patients with scores 5 to 6 constituted 38.4% cases, while patients with scores 7 to 10 constituted 116 (58.6%) cases. The highest single score was 8, with 73 (36.9%) cases [28]. While Nwafor et al. in Lagos, Nigeria had Gleason score (GS) 7 as the most common

score, and this was seen in 32.3% of Pca cases [29]. These high scores are invariably associated with poor prognosis.

In this study, 48.1% had co-morbidities, 39.5% had hypertension, while 8.6% had both hypertension and diabetes. Thus, hypertension was the main co-morbidity in our study. This is equivalent to the finding by Amusan, et al. who showed that 49.1% of men with Pca had associated co-morbidities. Of these co-morbidities, hypertension was seen in 73.3% of the men, 7.5% had diabetes mellitus, and 3.7% had both hypertension and diabetes mellitus. He also recorded congestive cardiac failure and chronic renal failure in his study [11].

Similarly, Shah, et al. studied the association between hypertension and Pca. He noted that 73% of men of African American extraction had hypertension, while the rate was 72% for white men. Additionally, the overall rate for diabetes was 35% for African American men and 24% for white men.

There was no relationship between aggressive Pca and co-morbidities (hypertension/ diabetes) using PSA level and Gleason score as predictors in this study. Similarly, in a review by Liang et al., there was no association between hypertension and aggressive form of Pca [30]. Di Francesco et al. in his study noted that diabetes mellitus was not associated with an aggressive form of Pca, though he noted that obesity was independently associated with aggressive form of Pca [31]. However, Junga, et al. showed a clear association between pre-existing diabetes and mortality in men with Pca [32].

Overall, 81% of the men in this study had advanced Pca, 58% being metastatic disease (Fig. 1). Seventy-nine patients (97.5%) had adenocarcinoma. An analysis of men with Pca from the various ethnic groups in Southern Nigeria by Sapira et al. showed that most of the men presented with advanced and metastatic disease. Also, adenocarcinoma was the commonest histologic type [33]. These findings were also documented by other workers [11,17,34]. For meaningful outcome in the management of cancer, early detection and appropriate treatment with curative intent should be the goal. If prostate cancer is diagnosed early and treated, it has a 99% 5-year survival rate [35]. However, this is rarely the case in most resource-poor nations. The disease is usually at advanced stages at presentation.

Androgen deprivation therapy was the main form of treatment in this study (Fig. 2). Seventy-nine percent of the men had androgen deprivation therapy (bilateral total orchidectomy 44%, bicalutamide 20% and luteinizing hormone releasing hormone analogue 15%). Less than ten percent of the men had radical prostatectomy and radiation therapy with curative intent. It is not surprising that most of the men had androgen deprivation therapy, as they presented with advanced and metastatic disease that required palliative care.

The drawback of this study includes the fact that Prostate cancer specific mortality and all-cause mortality were not included in the study. A well-structured prospective study with well-designed follow-up may throw more light on this.

5. CONCLUSION

Most of the men in this study presented with advanced disease, with all indices pointing towards lethal disease. The commonest co-morbidity was hypertension and co-morbidities had no relationship with the aggressiveness of prostate cancer.

To stern the tide, in terms of treatment outcome for Pca in developing nations, health education, screening, counselling for men in the high-risk group is paramount.

CONSENT

As per international standard patient's informed and written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

As per international standard, written ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Giovannucci E, Liu Y, Platz EA, Stampfer MJ, Willett WC. Risk factors for prostate cancer incidence and progression in the health professional's follow-up study. Int J Cancer. 2007;121(7):1571-1578.

2. Platz EA, Kantoff PW, Giovannucci E. Epidemiology of and risk factors for prostate cancer. Management of Prostate Cancer. 2000;19–45.
3. Miocinovic R. Epidemiology and risk factors. Management of Prostate Cancer. 2012;1–11.
4. Ferlay J, Shin HR, Bray F, Forman D, Mathers C, Parkin DM. Estimates of worldwide burden of cancer in 2008: GLOBOCAN 2008. Int. J Cancer. 2010; 127(12):2893-2917.
5. Kimura T, Egawa S. Epidemiology of prostate cancer in Asian countries. Int. J Urol. 2018;25(6):524-531.
6. 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;1–12.
7. Chu LW, Ritchey J, Devesa SS, Quraishi SM, Zhang H, Hsing AW. Prostate cancer incidence rates in Africa. Prostate Cancer. 2011;1–6.
8. Taksler GB, Keating NL, Cutler DM. Explaining racial differences in prostate cancer mortality. Cancer. 2012;118(17): 4280–4289.
9. Matlaga BR, Eskew LA, Mccullough DL. Prostate biopsy: Indications and technique. Journal of Urol. 2003;169(1):12-9.
10. Streicher J, Meyerson BL, Karivedu V, Sidana A. A review of optimal prostate biopsy: Indications and techniques. Therapeutic Advances in Urology. SAGE Publications; 2019.
11. Jani AB, Hellman S. Early prostate cancer: Clinical decision-making. The Lancet. 2003;361(9362):1045-1053.
12. Sternberg CN. What's new in the treatment of advanced prostate cancer? EJ Cancer. 2003;39(2):136-146.
13. Siegel R, DeSantis C, Virgo K, Stein K, Mariotto A, Smith T, et al. Cancer treatment and survivorship statistics, 2012. CA Cancer J Clin. 2012;62(4):220-241.
14. 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(3):113-117.
15. Ekeke ON, Amusan OE, Eke N. Management of prostate cancer in Port Harcourt, Nigeria: Changing Patterns. J WACS. 2012;1(3):58-77.
16. Leitzmann M, Rohrmann S. Risk factors for the onset of prostatic cancer: Age, location, and behavioural correlates. Clin Epidemiol. 2012;4:1-11.
17. Zhou CK, Check DP, Lortet-Tieulent J, Laversanne M, Jemal A, Ferlay J, et al. Prostate cancer incidence in 43. populations worldwide: An analysis of time trends overall and by age group. IJC. 2015;138(6):1388-1400.
18. Bock CH, Peyser PA, Montie JE, Cooney KA. Decreasing age at prostate cancer diagnosis over successive generations in prostate cancer families. The Prostate. 2005;64(1):60-66.
19. Haythorn MR, Ablin RJ. Prostate-specific antigen testing across the spectrum of prostate cancer. Biomark Med. 2011; 5(4):515-526.
20. Allan GM, Chetner MP, Donnelly BJ, Hagen NA, Ross D, Ruether JD, et al. Furthering the prostate cancer screening debate (prostate cancer specific mortality and associated risks). Can Urol Assoc J. 2011;5(6):416-421.
21. Bassey I-AE, Isiwele EM, Debua A. Prognostication studies of prostate cancer in Black Africa: Findings from Calabar, South-South, Nigeria. JCMR. 2018;5(5): E1-E5.
22. Saad F, Segal S, Eastham J. Prostate specific antigen kinetics and outcomes in patients with bone metastases from castration resistant prostate cancer treated with or without zoledronic acid. Eur Urol 2014;65(1):146-153.
23. Smith MR, Cook R, Lee KA, Nelson JB. Disease and host characteristics as predictors of time to first bone metastasis and death in men with progressive castration resistant nonmetastatic prostate cancer. Cancer 2011;117(10):2077-2085.
24. Ni C, Qiao Z. The evolving Gleason grading system. Chin J Cancer Res. 2016; 28(1):58-64.
25. Kryvenko ON, Epstein JI. Prostate cancer grading: A decade after the 2005 modified gleason grading system. APLM. 2016; 140(10):1140-1152.
26. Delahunt B, Lamb DS, Srigley JR, et al. Gleason scoring: A comparison of classical and modified (international society of urological pathology) criteria using nadir PSA as a clinical end point. Pathology. 2010;42:339-343.

27. Kir G, Sarbay BC, Gümüş E, et al. The association of the cribriform pattern with outcome for prostatic adenocarcinomas. Pathol Res Pract. 2014;210:640-644.
28. Obiorah C, Nwosu S. A histopathological study of carcinoma of the prostate in Port Harcourt, Nigeria. NJCP. 2011;14(3):363-367.
29. Nwafor C, Keshinro O, Abudu E. A histopathological study of prostate lesions in Lagos, Nigeria: A private practice experience. NMJ. 2015;56(5):338-343.
30. Liang Z, Xie B, Li J, et al. Hypertension and risk of prostate cancer: A systematic review and meta-analysis. Sci Rep. 2016; 6:31358.
31. Di Francesco S, Tenaglia RL. Obesity, diabetes and aggressive prostate cancer hormone-naïve at initial diagnosis. Cent European J Urol. 2014;66(4):423-427.
32. Lee J, Giovannucci E, Jeon JY. Diabetes and mortality in patients with prostate cancer: A meta-analysis. Springer Plus. 2016;5(1):1548.
33. Sapira M, Eke N, Nwofor A. Ethnicity and prostate cancer in Southern Nigeria: A preliminary report. Nig. J Surg. 2015;21(2): 96-101.
34. Jalloh M, Niang L, Ndoye M, Labou I, Gueye SM. Prostate cancer in Sub Saharan Africa. Journal of Nephrol Urol Research. 2013;1(1):15-20.
35. Siegel RL, Miller KD, Jemal A. Cancer statistics, 2017. CA Cancer J Clin. 2017; 67:7-30.

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