Original Article

Prostate Cancer in Primary Care, Port Harcourt, Nigeria

Andrew Bock-Oruma, Oghu Iboh S.[1], Dan-Jumbo Prince[1]

Department of Family Medicine/General Practice, Shawsand Medical Centre, [1]Department of Family Medicine, University of Port Harcourt Teaching Hospital, Port Harcourt, Nigeria

Abstract

Context: Prostate cancer (PC) is under-researched in primary care settings in the developing world, and diagnostic modalities available to the primary care physician could limit the making of the diagnosis, thus affecting the prevalence. **Aims:** This study aims to determine the prevalence of prostate cancer in patients that presented with LUTS to a family medicine clinic, using the screening tools (DRE and PSA) available in the facility. **Settings and Design:** A cross-sectional study of middle-aged and elderly men that presented to the Family Medicine Clinic, University of Port Harcourt Teaching Hospital, Port Harcourt, Nigeria, with LUTS. **Materials and Methods:** Consenting and eligible males that presented to the Family Medicine Clinic with LUTS were assessed for prostate cancer using the PSA and digital rectal examination (DRE) between October 2010 and April 2012. Data were entered and analyzed using the statistical package for the social sciences (SPSS) version 16.0. Association between the variables was compared using chi-Square test with statistical significance set at $P < 0.05$. **Results:** Two hundred and ninety subjects participated in the study; the mean age of the subjects was 62.50 ± 11.66 years with an age range of 40 to 100 years. The prevalence for DRE-detected abnormal prostate was 13%, suggestive of PC. One hundred and sixty-one (55.5%) of the subjects had their PSA done and results retrieved, with 51.6% of them having PSA values within the normal range of 0-4 ng/ml, and 48.4% had PSA values outside the normal limits. An association of PSA and DRE gave 24.2% prevalence for probable PC and a significant association between elevated PSA and DRE. **Conclusion:** The diagnostic modality in study is inconclusive, but it offers the family physician the opportunity of improving the quality of life of the patient that presented to him with PC by initiating early referral for secondary care.

Keywords: Digital rectal examination, prevalence, primary care, prostate cancer, prostate-specific antigen

Introduction

Prostate cancer (PC) is the most common non-cutaneous cancer in men, a malignancy with a broad range of biological potential.[1] The most remarkable and challenging aspect of prostate cancer diagnosis and staging in the past 20 years or so has been the change from a disease that presented late with locally advanced and metastatic disease to one that is found upon screening or incidentally.[2] Population-based screening has been proposed as a means of reducing PC-specific morbidity and mortality.

Although prostate cancer incidence and mortality rates have been declining in both African American and White men since 1991, possibly due to improved diagnostic techniques, better screening and improved surgical and radiologic treatments, the rates remain comparably higher among African men.[3] A hospital-based study in Port Harcourt, Nigeria in 2002 reported an incidence rate of 114 per 100,000,[4] while a population-based study in southern Nigeria in 2003 reported a prevalence of 15.7%.[3] In the United States and the United Kingdom, the incidence rate is 258.3 and 173.1 per 100,000, respectively.[3] The above incidences are for the black population in their environment, and are reported to be higher than that of other races with the Asians having the least prevalence.[5] In fact, it is reported that the Caucasians have a 30 to 50 times prevalence of PC and the blacks about 200 times prevalence to that of the Asian race.

Starting in the late 1980s, serum PSA determinations gained prominence as a means of screening for PC. Consequently, a stage migration occurred such that most newly diagnosed prostate cancers are confined to the prostate.[1]

Many physicians regard 4.0 ng/ml as the upper limit of normal for serum PSA. However, evidence supports interpretation of PSA in a way that is more tailored to individual patients.[5] The Prostate Cancer Prevention Trial showed that among 2,950 men with PSA less than 4.0 ng/ml, there was a 15.2% prevalence of PC. Of the prostate cancers detected, there was a 14.9% incidence

Access this article online

Quick Response Code:

Website: www.jfmpc.com

DOI: 10.4103/2249-4863.137659

Address for correspondence: Dr. Andrew A. Bock-Oruma, Department of Family Medicine/General Practice, Shawsand Medical Centre, P. O. Box 6082, Port Harcourt, Nigeria.
E-mail: bockoruma@yahoo.com

of Gleason sum 7 or higher tumors, which pose a significant risk of cancer progression. Physicians should, therefore, be cautious about using the 4.0 ng/ml cutoff for all patients because PSA levels typically increase with age,[1] even though there are unclear benefits for the use of these modifications.[6]

Screening

The goal of screening is to detect clinically significant prostate cancers at a stage when intervention reduces morbidity and mortality; though the benefits and methods of screening remain debatable,[6] it is still reasonable to search for prostate cancer in the male patient who is having LUTS.[7] This is where the primary care physician becomes relevant because his early detection and referral of the patient with suspected prostate cancer for secondary care might reduce the patient's morbidity, mortality, and possibly improve the patient's quality of life. Also, coupled with the fact that prostate cancer is commoner in the black race as opposed to other races,[5] this study, therefore, aims to determine the prevalence of prostate cancer in male patients that presented with LUTS to the family physician in a family medicine clinic, using the screening tools (DRE and PSA) available in the facility.

Materials and Methods

Setting and design

A prospective cross-sectional study of middle-aged and elderly men that presented to the Family Medicine Clinic, University of Port Harcourt Teaching Hospital, Port Harcourt, south-south Nigeria, from October 2010 to April 2012. The clinic sees an average of 170 adult patients daily, and about 25% of these are men.

Sampling method

Convenient sampling method was used in selecting adult males 40 years and above for the study.

Ethical consideration

Approval for this study was sought and obtained from the Ethical Committee of the University of Port Harcourt Teaching Hospital. Also, informed written consent of the respondents was obtained before involving them in the study.

The inclusion criteria were male patients 40 years and above with LUTS attending the family medicine clinic, UPTH, Port Harcourt. The exclusion criteria were male patients below 40 years of age and male patients 40 years and above without LUTS attending the family medicine clinic, UPTH, Port Harcourt.

Data collection

Middle-aged and elderly males that presented to the Family Medicine Clinic with LUTS were assessed for prostate cancer using the PSA and digital rectal examination (DRE). They had physical examination such as an abdominal examination, palpating for distended bladder or abdominal mass; examination of the genitalia, inspecting the urinary meatus for evidence of stenosis or abnormality; and a digital rectal examination for evaluation of possible prostate induration, nodularity, or asymmetry or the presence of a rectal mass. A focused neurologic examination, including assessment of rectal sphincter tone, was also done.[3,8] Laboratory evaluations done were measurement of prostate-specific antigen (PSA) before DRE and urinalysis to exclude lower urinary tract infection, which might cause an elevated PSA value.

Questionnaires were administered by the researcher at the primary care center to generate the relevant data for the middle-aged and elderly men in the study center.

Data analysis

Results of the patients' biodata, examination, and laboratory findings were coded and entered into a data base using the statistical package for the social sciences (SPSS) version 16.0 for analysis. Association between the DRE and PSA findings was compared using chi-Square test, Yates's chi-Square, Fischer's exact test. Statistical significance was set at $P < 0.05$.

Sample size determination

The study was designed to detect at least a 5% difference in prevalence of prostate cancer, with an alpha error of 5%, acceptable beta error of 20%, and a statistical power of 80%; while the estimated prevalence will be taken as 15.7%. Using the formula for sample size determination for studying proportions in populations of more than 10,000, the minimum required sample size was thus determined to be 224 (10% attrition rate inclusive).[9]

Results

Ten thousand four hundred and sixteen middle-aged and elderly males attended the Family Medicine Clinic, University of Port Harcourt Teaching Hospital, Port Harcourt, in the period under study. Six hundred and seventy-two of them had urologic consultation giving a prevalence of 6.45%. Of the 290 subjects that participated in the study, only 161 PSA results of the subjects were retrieved, representing 55.7% of the total. The mean age of the subjects was 62.50 ± 11.66 years. The age range was 40 to 100 years.

Among majority of the subjects, 39.7% were at least 65 years of age, with only 12% being below 50 years of age [Table 1].

The result of the DRE showed that 60% of the subjects had an enlarged prostate while 13% had a hard, nodular, and/or asymmetric prostate. This gave 73% prevalence for DRE-detected enlarged or otherwise abnormal prostate and a 13% prevalence of DRE-detected abnormal prostate suggestive of PC [Table 2].

One hundred and sixty-one (55.5%) of the subjects had their PSA done and results retrieved. The PSA result for the rest

44.5% was not obtained. Of those with PSA results, 51.6% had PSA values within the normal range of 0-4 ng/ml, while 48.4% had PSA values outside the normal limits. This means that 48.6% of the subjects will require urologist review and further evaluation. Twenty (12.5%) of the subjects had PSA value of at least 20 ng/ml, suggestive of probable metastatic prostate cancer [Table 3].

An association between the PSA and DRE showed that 7.8% of the subjects representing 65% of those with PSA value of at least 20 ng/ml both had an abnormal prostate. This is opposed to 34.5% of subjects with PSA value of 10 to 20 ng/ml, 37.1% with PSA value of 4 to 10 ng/ml, and 6% with PSA value of <4 ng/ml with an abnormal prostate from DRE.

Eighty-nine (53.2%) of the subjects with known PSA values had enlarged prostate while 39 (21.8%) had an otherwise abnormal prostate. This gave 24.2% prevalence for probable PC and a significant association between elevated PSA and DRE [Table 3].

Discussion

The different screening tools gave different prevalent values for probable PC, and the prevalence rate of PC from this study supports the fact that it still remains high in men of African descent as compared to other races.[3]

Table 1: Age group of the subjects

Age group (years)	Frequency	Percentage
40-44	5	1.7
45-49	30	10.3
50-54	43	14.8
55-59	46	16.0
60-64	51	17.5
65 and above	115	39.7
Total	290	100.0

Table 2: Result of digital rectal examination on subjects with LUTS

Prostate size	Frequency	Percentage
Normal	78	27.0
Enlarged	174	60.0
Abnormal	38	13.0
Total	290	100.0

Table 3: Association between PSA and digital rectal examination

*PSA value (ng/ml)	Digital rectal exam			Total
	Normal (%)	Enlarged (%)	Abnormal (%)	
0-3.90	34 (21.1)	43 (26.7)	5 (3.1)	82 (51.0)
4.00-9.90	2 (1.2)	20 (12.4)	13 (8.1)	35 (21.7)
10.00-19.90	1 (0.6)	15 (9.4)	8 (4.9)	24 (14.9)
20.00 and above	0 (0)	7 (4.3)	13 (8.1)	20 (12.4)
Total	37 (22.9)	85 (52.8)	39 (24.2)	161 (100.0)

X^2: 54.861; *P*: 0; CI: 0.0-0.0 *PSA: Prostatic-specific antigen

The prevalence of DRE-detected PC in this study is lower than that of PSA-detected PC, but comparable to the 12.4% of patients with PSA value of at least 20 ng/ml. This means that a DRE-detected abnormal prostate is likely to be one that will metastasize or more aggressive. The prevalence of DRE-detected PC in this study is comparable to the 114/1000 of PC from the secondary care facility of the same study center as reported by Eke *et al.* in 2002.[4] However, predictive values for DRE in detecting PC are unavailable from the study.

This study shows that a normal PSA value or DRE does not rule out probable PC, supporting findings from earlier studies.[1,5] This further supports the fact that management of patients should be individualized and holistic and not solely on results from investigations.[1]

A combination of both diagnostic modalities gave a prevalence of 24.2%, which suggests that both methods of investigations could give a higher yield of PC.

Conclusion

Though the diagnostic modality in study is inconclusive, it, however, offers the family physician the opportunity of improving the morbidity, mortality, and quality of life of the patient with suspected PC that presented to him by initiating early referral for secondary care.

References

1. Sausville J, Naslund M. Benign Prostatic Hyperplasia and Prostate Cancer: An Overview for Primary Care Physicians. Int J Clin Pract 2010;64:1740-5.
2. Borley N, Feneley MR. Prostate cancer: Diagnosis and staging. Asian J Androl 2009;11:74-80.
3. 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.
4. Eke N, Sapira MK. Prostate cancer in Port Harcourt, Nigeria: Features and outcome. Nig J Surg Res 2002;4:34-44.
5. Watson E, Jenkins L, Bukach C, Austoker J. The PSA test and prostate cancer: Information for primary care. Sheffield: NHS Cancer Screening Programmes; 2002.
6. Wilbur J. Prostate Cancer Screening: The Contimuing Controversy. Am Fam Physician 2008;78:1377-84.
7. Naitoh J, Zeiner RL, Dekernion JB. Diagnosis and Treatment of Prostate Cancer. Am Fam Physician 1998;57:1531-9.
8. Cruz F, Desgrandchamps F. New concepts and pathophysiology of lower urinary tract symptoms in men. Eur Urol Suppl 2010;9:472-6.
9. Naing L, Winn T, Rush BN. Practical issues in calculating sample size for prevalence studies. Arch Orofacial Sci 2006;1:9-14.

How to cite this article: Bock-Oruma A, Iboh SO, Prince D. Prostate cancer in primary care, Port Harcourt, Nigeria. J Fam Med Primary Care 2014;3:151-3.

Source of Support: Nil. **Conflict of Interest:** None declared.