Prevalence Of Prostate Cancer Among Nigerians With Intermediate Total Prostate Specific Antigen Levels (4-10ng/Ml): Experience At Lagos University Teaching Hospital, Nigeria

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Citation

Abstract

Prostate cancer is a common clinical condition among adult males world wide[1], its prevalence in the intermediate total PSA values (4-10ng/ml) has not been assessed among Nigerians. This study was carried out to determine the prevalence of prostate cancer among patients with intermediate total PSA values seen in Lagos University Teaching Hospital (LUTH), a tertiary hospital located in Nigeria. A total number of 105 patients aged 50years and above with total PSA values within the intermediate PSA range (4-10ng/ml) and normal findings of the prostate on digital examination seen from January 2010 to December 2010 were recruited for the study. These patients had no features suggestive of metastasis on clinical examination. All the patients subsequently had free PSA assay and trans-rectal guided six core biopsy of the prostate. The mean age of the patients studied was 64.4years (SD=1.6) with mean total PSA value of 6.6ng/ml (SD=1.7). One hundred patients (95.1%) presented with lower urinary tract symptoms. The prostate cancer rate following analysis of biopsy specimen was 13.3 % (14 patients) with most patients (78.6%) within 61-70 year old bracket. The histology was adenocarcinoma in all the patients; Gleason scores 5-7 predominating. We therefore concluded that the prevalence of prostate cancer among Nigerian males with intermediate total PSA and palpably benign prostate gland from this study is 13.3%. Awareness of the prevalence of prostate cancer in this range should be created among Nigerians, as this will help improve the overall management of prostate cancer patients in this category.

INTRODUCTION

The prevalence of prostate cancer varies across various racial groups worldwide[1], this is attributable to differences in patients characteristics. In the United States of America, it is the leading cancer diagnosis and the second most common cause of cancer death among adult males[1]. It is the fourth most common cancer in men worldwide[1]. Nigerian males have been shown to have a high incidence of Prostate cancer as documented in the study done by Osegbe[2] in 1997 which revealed an incidence rate of 127/100,000 men. In a similar study by Eke and Sappira[3] an incidence rate of 114/100, 000 men was documented. Prostate cancer is the commonest cancer among Nigerian males[4].

Measurement of serum level of prostate specific antigen (PSA) is widely used as a screening test for early detection of prostate cancer,[5] its elevation in serum is suggestive of cancer of the prostate. The commonly used cut-off for

prostate biopsy in most centre is total PSA>4ng/ml[7], however this low cut-off for biopsy leads to significant number of unnecessary biopsies among patients with intermediate total PSA values (4-10ng/ml) where the prevalence of prostate cancer have been shown to be 22%[8]. Percentage Free PSA (%FPSA) have been shown to be very sensitive (95%) for prostate cancer in the intermediate PSA range at <25% cut-off point[9], thus it is currently used in the evaluation of this group of patients for biopsy in other to reduce the number of unnecessary biopsy.

There is however paucity of data on the prevalence of this disease in the intermediate range among Nigerian patients. Abbyesiku et al[10] noted that among Nigerian patients who had cancer of the prostate gland, 20% of them had PSA values below 10ng/ml while 10% had their own below 4ng/ml. In another study of rural Nigerian men,[11] out of the 140 men screened for prostate cancer using PSA, 10% had

elevated PSA level greater than 4ng/ml.

Though the controversy over survival benefit from early intervention for prostate cancer has not been resolved, there is no organized screening programme for prostate cancer in Nigeria. The management of this pathology in Nigeria is therefore very challenging as most cases present in advanced stage[12]. The modality of care usually adopted in this scenario is palliative, the prognosis being poor[12]. Most centres in Nigeria perform total PSA dependent biopsy when the level is above 10ng/ml, this is done to avoid unnecessary biopsies in the intermediate range but presumably cancer cases in this range are missed.

Considering that Nigerian males are plagued by high incidence of prostate cancer[2], there is a need to evaluate how prevalent this pathology is among Nigerians with palpably benign prostate in the intermediate PSA range. This will go a long way in aiding appropriate decision with regards to their evaluation and treatment.

MATERIALS AND METHOD

This study assessed the prevalence of cancer of the prostate in all patients aged fifty and above with intermediate levels of total PSA (4-10ng/ml) and palpably normal prostate gland seen in urology clinic of Lagos University Teaching Hospital (LUTH). This study spanned over a period from January 2010 to December 2010. Patients found to have urinary tract infection or prostatitis, history of treatment for prostate cancer, history of previous prostate surgery or treatment with 5-a reductase inhibitors were excluded from the study.

A comprehensive clinical evaluation involving relevant history, physical examination with digital examination of the prostate gland was conducted. Urinalysis, urine microscopy, culture and sensitivity, total, free and %free PSA levels and abdominal ultra-sonography scan of the prostate gland was also done for each patient.

All the patients subsequently had six core trans-rectal guided biopsy of the prostate following minimal bowel preparation with ducolax suppository the night before the procedure. Intravenous flagyl 500mg and ciprofloxacin 200mg were administered 30 minutes before the procedure, oral forms were continued for five days afterwards. Intra-rectal anaesthetic gel, intravenous analgesic and sedatives were also used depending on the pain threshold of the patient.

DATA ANALYSIS

The data was analyzed using a multipurpose computer statistical programme EPI-INFOF020. 100. Results were expressed using tables and Charts. Fishers exact (t) test was used where appropriate. P values < 0.05 was considered significant association.

RESULTS

The age range of the studied population was 50 –80 years, with mean of 64.4 (SD = 4.6)years. The distribution of lower urinary tract symptoms is as shown in Table 1.

Figure 1

Table 1: Distribution of lower urinary symptoms (LUTS)

Symptoms	Number (%)
Asymptomatic N= 5	5 (4.8)
Symptomatic N= 100	100 (95.2)
Voiding only	18 (18)
Storage only	5 (5)
Voiding + storage	77 (77)

The mean total PSA was 6.6ng/ml(SD=1.7), the mean prostate volume of the studied population was 87.7cm^3 with a range of 63-276cm^3.

The histological diagnosis of the patients as shown in figure 1 revealed that 13.3% (14 patients) of the patients had prostate cancer all being adenocarcinoma.

Figure 2

Figure 1: Distribution of histopathological diagnosis
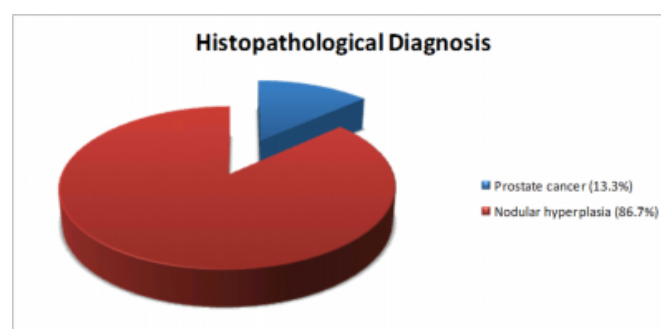
The distribution of the histological diagnosis at various %F/TPSA values revealed that all of the patients with cancer of the prostate had their %F/TPSA values <40 while the majority 81 (93.3%) of the patients with Nodular hyperplasia (BPH) had theirs above 40.

The age distribution of the histological diagnosis is as shown in figure 2, the peak age range is 60-70.

Figure 3

Figure 2: Age distribution of prostate cancer and BPH patients
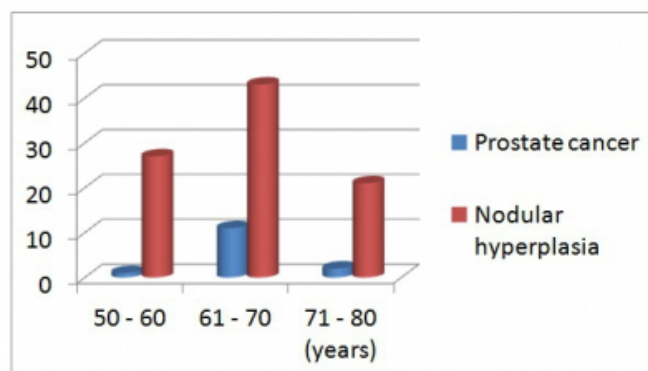
The Gleason score related inversely with the %F/TPSA of patients with cancer of the prostate, the mode was Gleason score 6 followed by Gleason score 5. Ten (71.4%) of the patients studied had moderately differentiated tumor (Gleason score 5-7), 3 patients (21.4 %) had tumors that were well differentiated (Gleason score 2-4), while a patient (7.3%) had high grade tumor (Gleason score 8-10).

DISCUSSIONS

Cancer of the prostate (CaP) is the commonest malignancy among adult male Nigerians.[4] In the United states of America, it is the leading cancer diagnosis and the second most common cause of cancer death among adult males[1].

The prevalence rate of prostate cancer in the intermediate PSA range has been shown by Catalona et al to be 22%[14.] Cancers in this range has not been studied among Nigerian males. Percentage free/total prostate specific antigen (%F/TPSA) has also been shown to have a high sensitivity and specificity value for Cancer of the prostate in the intermediate PSA range[9].

The presentation of cancer of the prostate in Nigeria is usually in late stages as there is no organized patient education and screening programmes. This study was undertaken to determine the detection rate of cancer of the prostate in patients with intermediate total PSA values and palpably benign prostate gland seen over one year.

The mean age from this study was 64.4years (SD= 4.6). This is in keeping with what was documented by Schmid et al[13] (66years) in a study of one hundred and fifty three Caucasian

men with prostate neoplasm (BPH and CaP) and PSA levels within the intermediate range. Thus most patients with prostate neoplasm (BPH and CaP) in the gray zone (4-10ng/ml) and with palpable benign glands seen in Nigeria are within the 60-70 year age bracket which is similar to what is obtainable among the Caucasians.

The high prevalence of lower urinary tract symptoms amongst these patients (95%) may be due to the fact that this is a hospital based study as most patients present at hospital in Nigeria due to symptoms and not for screening. The high mean value of 87.7cm[3.] documented for prostate volume in this study is in keeping with report that adult male Africans have a high prostate volume[14].

The prevalence rate of cancer of the prostate in the intermediate PSA range from our study is 13.3% all being adenocarcinoma. This is lower than the rate (22%) documented by Catalona et al[8] This low prevalence rate may be due to the fact that blacks of African descent have been shown to have a higher total PSA value than whites and Hispanics[15], thus when they develop prostate cancer are likely going to have total PSA values outside the intermediate PSA range (4-10ng/ml). This line of reasoning is strengthened by an earlier study conducted among Nigerian population by Abbyesiku et al[15] which showed that 80% of the patients in the prostate cancer group had their total PSA value above 10ng/ml. Digitally guided biopsy of the prostate widely used in most centres in Nigeria for Prostate cancer detection was used in this study, TRUSS biopsy will improve the yield.

The age distribution of histological diagnosis revealed that majority of patients with cancer of the prostate 11(78.6%) within the intermediate range were in the age range of 61-70. The average age of diagnosis of prostate cancer among Nigerian males is 64.8years[2], which is similar to what was observed in this study. Thus prostate cancer patients with intermediate PSA values in Nigeria have peak age of onset similar to that in the general adult male population with PSA values above the intermediate range.

Though there was predominance of moderately differentiated cancers in the studied range as shown by the Gleason's score (10 patients), the single patient that had poorly differentiated pattern emphasizes the fact that poor prognostic tissue pattern can be seen in the gray zone (total PSA 4-10ng/ml). This further strengthens the argument for this category of patients to be screened for prostate cancer.

This is the first report on prostate cancer detection rate among Nigerian men in the intermediate PSA range with normal findings of the prostate on digital rectal examination. A Larger study incorporating TRUSS biopsy is recommended in other to improve on the cancer detection rate observed in this study.

CONCLUSIONS

Prostate cancer detection rate in the intermediate PSA range found in this study was 13.3%. Awareness for prostate cancer in this range together with organized prostate cancer screening programmes should be made available to adult Nigerian males as this will help improve the management of this endemic pathology.

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