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A 5 Year Review of Prostate Biopsies Taken from Men Attending Abia State University Teaching Hospital Aba, South Eastern Nigeria

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Abstract:
Prostate cancer is the most common cancer among African-American men. It is the second most common cause of cancer death in the Western world.
Prostate cancer is rarely diagnosed before the age of 50 years, but the incidence and mortality from the disease increases exponentially thereafter. This increased incidence has been attributed mainly to the introduction of screening techniques, especially (the estimation of serum prostate-specific antigen) PSA. There is a great variation in the geographic epidemiology of the disease, and environmental factors appear to be significant contributors to this difference. However, African-American men have higher incidence and mortality than white men. Within the African continent prostate cancer ranks in the top 10 and usually the top 5 for male cancers.
Male relatives of prostate cancer patients have an increased risk of developing the disease. Heredity, however, appears to play a prominent role having a small percentage of prostate cancer cases (mostly early-onset disease) with the majority of patients falling in the category of sporadic cancer. Occupation and lifestyle is significant, especially when there is association between high dietary intake of animal fat.
Heavy metal exposure (cadmium in particular) plays a role. The most consistent factor is hormone concentration and metabolism. Testosterone levels have been shown to be higher in African-American men than white men.

Keywords: *Prostate cancer, prostate biopsies, Adenocarcinoma, serum prostate specific antigen (PSA), Aba*

1. Introduction

Prostate Cancer is the most common cancer among Nigerian men (Ikueworo Et al 2013) with increasing morbidity and mortality in the recent past. Most of the cancers present at an advanced stage (Mohamed and Mohamed 2015) and (Akinremi et al 2011). There is therefore the need for establishment of definitive diagnosis at the early stage to reduce Morbidity and Mortality. There are various investigative procedures for diagnosing prostate cancer but the most accurate way for detection of cancer cells inside the prostate gland is surgical removal of the prostate followed by histopathological examination of the whole gland.

Because this approach is clinically inapplicable to each patient with suspicious findings, prostate biopsy is accepted as the best diagnostic technique to detect prostate cancer. Prostate biopsy is done using a trucut gun, through thee rectal or perineal route often with ultrasound and magnetic resonance enhancement to take extended cores of prostate tissue to increase sensitivity and reliability.

Unlike Biopsy for most other types of cancers which target abnormality found by imaging, systemic Biopsy such as was done uses a non-targeted method of taking systematically spaced samples across the prostate Gland. This method can potentially miss areas of cancer.

2. Aims and Objectives

The study is aimed at analyzing the pattern of prostate cancers in biopsies done and to review the age groups most vulnerable among men in Aba, South eastern Nigeria.

3. Methodology

The study involved a retrospective review of 198 prostate biopsies done over a five year period starting January 2016 to December 2020, in Abia State University Teaching Hospital. Only adult males above 40 years and below 100 years were biopsied. Indications for biopsy were High PSA more than 10ng per ml, Abnormal prostrate findings on digital rectal examination such as (Hard/Nodular prostrate, Obliterated fissures, Lobar asymmetry and rough immobile rectal mucosa), Previous biopsies with diagnosis of High grade prostate intraepithelial Neoplasia (HGPIN), atypical small acinar proliferation and (High rising PSA below 10ng per ml but with strong family history of prostate cancer). All the biopsies were trans rectal, digitally guided with extended sextrant approach.

3.1. Inclusion Criteria

- Patients with confirmed documented biopsy results of cancer of the prostate.
- Patients with elevated Prostate Specific Antigen (PSA) and abnormal prostate findings on digital rectal examination (DRE).

4. Results

The study is a retrospective study done within the period of 2016 to 2020, aimed at analyzing prostate cancer patterns in biopsies done and to review the age groups most vulnerable among men in ABA, South Eastern Nigeria. Case files were retrieved and their biodata obtained. A total of 198 biopsies were done.

Table 1 shows the result of biopsy results in the study. Sample size was (n= 198 biopsies). Patients were aged from 40 years to 95 years, median age was 67 and mean age was 67.5 years. For Adenocarcinoma they were 100 cases, while nodular hyperplasia had 58 cases. Both were amongst the top two, constituting 50.55% and 29.29% respectively. High grade PIN had 20 cases, with atypical small acinar proliferation being the least with 5 cases.

Table 2 showed indications for prostate biopsies, with elevated PSA of >10ng/ml being topmost of indications with 62 cases, constituting 31.31% of the biopsies. An abnormal finding of the prostate on digital rectal examination was second highest indication for rectal biopsy, with 56 cases, constituting 28.26% of the biopsies. Others would include a combination of elevated PSA and Abnormal Prostate findings on digital rectal examination (DRE) combined with 48 cases. The least indication was other factors such as (previous biopsies and rising PSA with strong family history of PSA), having 32 cases.

Of the 100 established cases of prostate cancer, the least age was 40 years and the most 95 years. Highest incidence was within age range (61-70years), the median age was 65 years (variance =6.9) and mean age was 65.5 years. Numbers of established cancer cases were 39. Followed by age range (71- 80 years), with 33 cases. Least age range was from ages (40-50 years) and (91-100 years) respectively, both having 2 cases. There was weak association between prostate cancer and increasing age brackets, there was strong statistical significance between prostate cancer cases to patient's age as seen in table 3, figure 4.

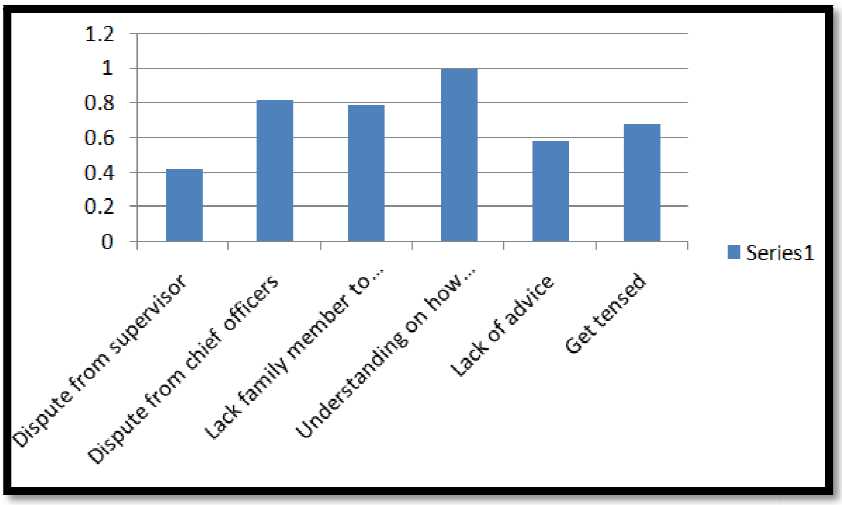

Figure 1: Age Distribution of 100 Prostate Cancer Cases seen between2016 to 2020

Table 4 showed the clinical presentations of 100 established prostate cancer cases, with 55 cases reporting with lower urinary tract symptoms, followed by 30 cases with lower back pain, 10 cases came with heamaturai, 8 cases with gross weight loss with 7 cases asymptomatic. Thus from our study of the 198 biopsy results, 50.6% were confirmatory of adenocarcinoma, with elevate PSA >10ng/ml. Of the 100 confirmed cancer cases, ages (61years to 70 years) had the highest incidence of prostate cancer, and the most common clinical presentation were lower urinary tract symptoms (LUTS). 2 cases were found bellow 50 years, one aged 43 years and another 47 years and both had strong family history of

prostate cancer. Thus prostate cancer (Adenocarcinoma) continues to increase incidence amongst males aged 40 years and above, but highest between the ages 60 and 80 years.

S/N	Result	No	Percentage
1.	Prostate Cancer (Adenocarcinoma)	100	50.55%
2.	Nodular Hyperplasia	58	29.29%
3	High Grade Pin	20	10%
4.	Atypical Small Acinar Proliferation	5	2.52%

Table 1: Table of Biopsys Result (Histopathology Results) With N= 198

S/N	Result	NO	Percentage
1.	Elevated PSA > 10ng/ml	62	31.31%
2.	ABNORMAL prostate findings on digital rectal examination (DRE)	56	28.26%
3.	Elevated PSA and abnormal prostate findings on DRE combined	48	24.24%
4.	Others -previous biopsies -rising PSA with strong FAMILY HISTORY OF PSA	32	10.16%

Table 2: Showing Indications for Prostate Biopsy (N=198)

From the above, the most common indication for prostate biopsy was elevated PSA more than 10ng per ml, followed by abnormal prostate findings on digital rectal examination.

S/N	Age Range	No	Percentage
1	40-50 YRS	2	2%
2	51-60 YRS	8	8%
3	61-70	39	39%
4	71-80	33	33%
5	81-90	16	16%
6	91-100	2	2%

Table 3: Showing Characteristics of Established Cancer Cases N=100

S/N	Age Range	No	Percentage
1	LOWER URINARY TRAVT SYMPTOMS (LUTS)	55	55%
2	LOWER BACK PAINS	30	30%
3	HEAMATURIA	10	10%
4	GROSS WEIGHT LOSS	8	8%
5	ASYMPTOMATIC	7	7%

Table 4: Showing Clinical Presentations of Established Cancer Cases N=100

4.1. Most Prevalent Symptoms in Confirmed Prostate Cancer Cases

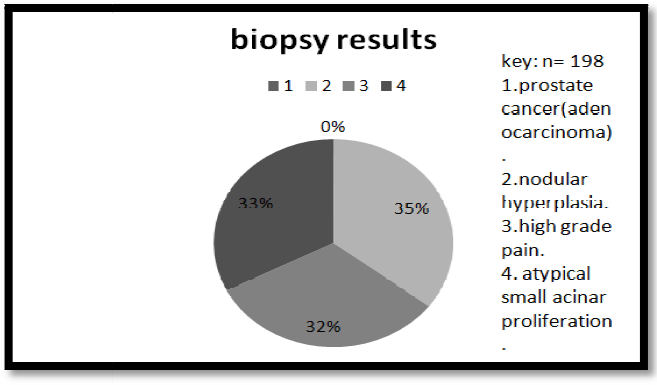

Figure 2: Indications for Prostate Biopsy

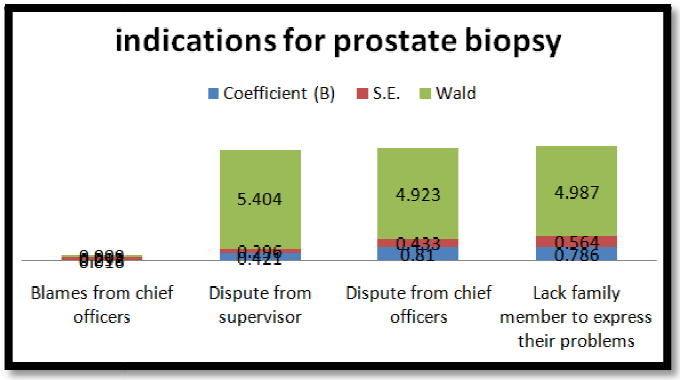

Figure 3: Clinical Presentations of Established Cancer Cases

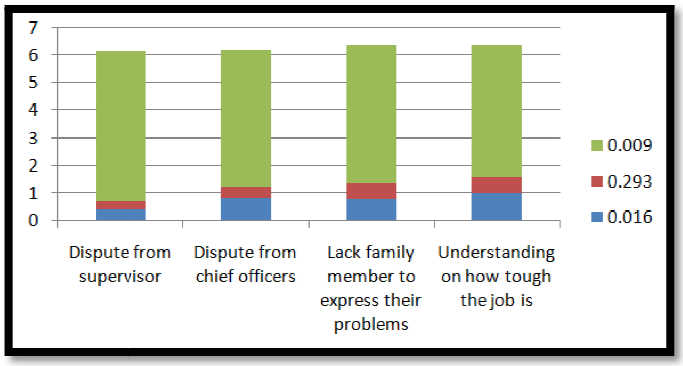

Figure 4: Age Group Characteristic of Established Cancer Cases

5. Discussion

Prostate cancer incidence has been on the increase over the years due to increasing awareness and availability of diagnostic facilities.

In a similar study done in Ahmadu Bello University Teaching Hospital Zaria which involved a ten year review of prostate cancer specimens over a 10 year period from January 1991 to December 2020. They had a total of 151 cases of prostate cancer with all being Adenocarcinoma of the prostate. The peak incidence was in the 7th decade. Like that study only two patients had prostate cancer at an age below 50 years. James T Kearns et al 2018.

In their work, they found a prostate cancer rate of 40% in prostate biopsies. Obviously, there is an increasing number of prostate biopsies with a corresponding increase in prostate cancer incidence.

However systemic biopsy as was done has a few disadvantages. In a study by National Cancer Institute in March 2020 conducted at the NHI clinical centre in Bethesda, Maryland USA it was found out that a three dimensional map of the prostate using a combined MRI targeted and systematic biopsies, greatly improved prostate cancer diagnosis as there is improved detection of prostate cancer.

Prostate cancer has been diagnosed using systematic biopsies 'blind' to the cancer cell's location for decades, it led to over diagnosis and under diagnosis and subsequently unnecessary treatment of non lethal cancers as well as missing aggressive high-grade cancers and the opportunity for cure but with the addition of MRI targeted biopsy, most lethal cancers within the prostate can identified providing patients the potentials for better treatment.

MRI targeted biopsies which merge previously taken MRI images of suspected cancers with real time ultrasound Technology are better able to detect more High grade cancers than using systematic biopsy alone.

In their study, it was found out that, systematic biopsy alone under diagnosed by 40% of cancers while MRI targeted Biopsy alone under diagnosed about 30% of cancers but combined systematic and MRI targeted biopsy under diagnosed about 14.4% of prostate cancer.

6. Conclusion

Prostate cancer is the most common male cancer in Aba South Eastern Nigeria.

The adenocarcinoma subtype is the commonest. In fact all cases were Adenocarcinoma. The peak Age is 61 to 70 years followed closely by 71 to 80 years.

A great premium on diagnosis should be placed on men between 61 to 80 years with minimum suspicions. Such a degree of scrutiny should also be extended to men below 50 years with suspicious symptoms who have a strong family history of prostate cancer.

Public institutions should strive to upgrade their facilities such as the MRI targeted protocol for the overall benefit of the patients.

7. Authors' Contribution

IU AND CC were involved in initial conception of manuscript. IU collected the data while CC analyzed the data. IU AND CC were involved in writing of the manuscript. JA read and eventually approved the final draft before submission.

8. Acknowledgements

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