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Pattern of Prostatic Lesions in Ilorin, Nigeria: A Five-Year Review

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ABSTRACT
BACKGROUND: Histopathological study of prostatic lesions was last reported in the late nineties in Ilorin. A huge gap currently exists on the knowledge of the current pattern of prostatic diseases in this cosmopolitan North Central city in Kwara State, Nigeria.
AIM: To investigate the histopathological pattern and incidence of prostatic lesions in Ilorin within five years period. **MATERIALS AND METHODS:** In this retrospective study, histopathology diagnoses of all prostate specimens received and processed by the histopathology laboratory, University of Ilorin Teaching Hospital in Ilorin, Kwara State, Nigeria from January 2013 to December, 2017 were reviewed using the records in the Departmental registers. Data were input into an excel worksheet and analyzed using SPSS software version 21 with consideration for age, frequency, histology types of lesions and Gleason scores for prostatic adenocarcinomas. Ethical considerations were upheld as required. **RESULTS:** Seven hundred and fifty-one (751) prostatic specimens were received and processed during the period. The youngest patient was 33 years while the oldest was 100 years with a mean age of 60.42 years ± 9.5 standard deviation. Most common lesion was benign prostatic hyperplasia (BPH) (61.9%), followed by prostatic adenocarcinoma (CaP), 32.4%, inadequate samples, 4.7%, incomplete data, 1.7% and metastatic carcinoma 0.1%. Peak incidence for BPH was age group 70-79 years (41.83%) and 60-69years for adenocarcinoma (38.77%). Moderately differentiated CaP, Gleason score (GS) 5-7 was 62% of CaP cases while GS 7 was the most occurring score, 36.8%. Well differentiated adenocarcinoma, GS (4) was the least occurring at 7.60% while poorly differentiated CaP, GS (8-10) was 30.41% . Four BPH cases presented with prostatitis and three with chronic inflammation while two adenocarcinomas presented with granuloma. **CONCLUSION:** Benign prostatic hyperplasia (BPH) is the most common prostate lesion closely followed by prostatic adenocarcinoma with Gleason score 7 and peak incidence between the sixth and seventh decade of life.

Key words: Benign prostatic hyperplasia, Gleason score, Prostatitis, Prostatic adenocarcinoma,

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Author's contributions: This work was conducted and approved in collaboration between all the authors who takes responsibility for its accuracy and integrity. BSA designed the study and prepared the manuscript, collated and analysed the data. FAA supervised the work and proofread the final manuscript, OOA and AOO ensured validation of the data.

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INTRODUCTION

In Nigeria, prostate cancer is the most common cancer among males and is the second most common cancer among men worldwide. It is also one of the most prevalent disorders that affects older men with alarmingly high rates of morbidity and mortality. In the North Central Region of Nigeria, it affects men on average at a rate of roughly 15.5 percent, whereas in Ilorin, Kwara State, it accounts for 12.3 percent of all instances of male cancers (1,2,3,4,5,6,7,8). A review is necessary since there is a dearth of information on the recent pattern of prostatic lesions in Ilorin.

Prostatic lesions are frequent in older men and cause significant morbidity globally (1). Prostate cancer, prostatitis, and benign prostatic hyperplasia (BPH) are the main prostatic diseases(2). The most common urological condition in men over 40 is benign prostatic hyperplasia (2). From the fourth to the eighth decades of life, the clinical incidence of BPH steadily rises (3). The two main risk factors for BPH have been identified as advanced age and an intact androgen supply(4).

The second most common malignancy in men identified globally is prostate cancer, according to literature (5). According to various studies, black men are more likely than men of other races to develop prostate cancer, and men of Sub-Saharan African origin globally appear to experience prostate cancer at a higher rate than men of other races and ethnicities(6). According to estimates on incidence and mortality, prostate cancer is the most common disease in men from Africa and the Caribbean(7). With a range of 6.7% to 46.4%, prostate cancer is the most common cancer in men in Nigeria, with bladder carcinoma taking the top spot in Sokoto State. In the North Central Region of Nigeria, it affects men on average at roughly 15.5%, whereas in Ilorin, it accounts for 12.3% of all cancer cases (8).

Prostatitis is a prostatic condition that affects males under 50 but is the third most prevalent urological disease in men over 50 (9). The literature that is available on laboratory-based histological pattern of prostatic lesions in Ilorin is over 25 years old and is insufficient for the situation as it is now. In order to better grasp contemporary reality and to update information in the literature on the subject, this study consequently gives a recent finding on the incidence of prostatic lesions in Ilorin. It is anticipated that this will advance scientific understanding of the increased prevalence of prostatic cancer in Ilorin, the age group most afflicted, and the lesion's most frequent Gleason score.

METHODOLOGY

Histopathology diagnoses of all prostate specimens, received and processed by the histopathology laboratory, University of Ilorin Teaching Hospital in Ilorin, Kwara State, Nigeria from January 2013 to December, 2017, the years that met the criteria for minimal missing data were reviewed using the records in the Departmental registers. Data retrieved included patients demography, histopathological diagnoses and the Gleason scores. The mean age, peak incidence, lowest age and highest age were all input in an excel worksheet and analyzed using SPSS version 21. Data were presented in tables, frequencies and percentages.

Table 1: Prostatic lesions frequencies and percentages

Prostatic lesions	Frequency	% Frequency
Benign prostatic hyperplasia (BPH)	429	61.69
Adenocarcinoma	246	32.42
Metastatic tumour	1	0.14

Table 2: BPH age assessment

Age group	Frequency	%
<50	1	0.24
50-59	43	10.51
60-69	147	35.94
70-79	175	42.78
80-89	40	9.7
90-99	2	0.4
100-109	1	0.24

Table 3: Prostatic adenocarcinoma age assessment

Age group	Frequency	%
<50	4	1.76
50-59	21	9.25
60-69	88	38.70
70-79	85	37.44
80-89	26	11.45
90-99	2	0.88
100-109	1	0.44

Table 4: Gleason score assessment

Gleason score	Frequency	%
4	13	7.60
5	12	7.02
6	31	18.13
7	63	36.84
8	27	15.79
9	22	12.87
10	3	1.75

Table 5: Comparison between incidence of previous and current lesions

Lesion	Previous (Anjorin *et al*., 1998)	Recent (2013-2017)
BPH	82.8%	61.69%
Prostatic adenocarcinoma	16.9%	32.42%
Metastatic tumour	0.3%	0.1%

DISCUSSION

Prostatic illnesses have been proven to significantly increase the morbidity and mortality rates in older men (see study) 2. Benign prostatic hyperplasia (BPH), prostatic cancer, and prostatitis are the pathological conditions that affect the prostate often. The Urology Unit of the Surgery Department and other Private Hospitals in Ilorin provide specimens to the Histopathology Laboratory at the University of Ilorin Teaching Hospital. Anjorin and colleagues reviewed routine prostatic surgical specimens they received at the University of Ilorin Teaching Hospital for seventeen years, and according to their reports on the Histopathology lesions in Ilorin from more than twenty years ago, 663 of 801 cases were benign prostatic hyperplasia (82.8 percent), 136 (or 16.9%) of those cases were primary adenocarcinomas while two (0.3%) were secondary carcinomas. Prostatitis was a feature in many of the cases and adjudged to be non-specific. Three cases of granulomatous prostatitis were recorded. They recommended age related assessment of patients clinically.

Another team of researchers in a nearby State in the same North Central region of Nigeria (11) took on the task of age-related assessment of prostatic lesions. According to their research, 372 of the 493 prostatic lesions (75.4%) were benign prostatic hyperplasia (BPH) with concurrent prostatitis. The seventh decade of life was when BPH was most prevalent. Prostatic cancer made up 24.6% (121) of the lesions, with the seventh decade of life being the peak age for occurrence. They predicted a likely future rise in the incidence and mortality rates of prostate cancer and suggested better facilities for diagnosis, staging, and treatment.

A 7.7 fold increase in the incidence of prostate cancer was found in an Ilorin, Nigeria, public hospital-based study on the disease in 2012. Unfortunately, histologic proof was only present in 38.9% of the cases examined over a ten-year period before care began. The authors advised against continuing this practice (12).

The Nigerian health industry frequently experiences strikes. A report on the incidence of prostatic problems has been coming from private healthcare institutions as well during times of strike because people frequently use and seek for histopathology services there. There has been a rise in the incidence of prostatic lesions in Lagos, according to a recent study conducted in a private histopathology laboratory (13). They discovered that the most frequent diagnoses were BPH (62.8%), prostatic cancer (29.3%), insufficient specimens (6.6%), prostatic intraepithelial neoplasia (1%), and metastatis (0.3 percent). Most lesions were found in people aged 60 to 69 (38.2 percent) and 70 to 79 (36.2 percent). The age range of 30-39 years and those

who are above 90 years old had the lowest incidence.

Similar to this, Forae and Aligbe(14), who have experience in private practice, documented the histological patterns of prostate cancer. According to their research, prostatic cancer accounts for 23.6% of all prostatic tumors, with a peak age range of 70-79 years. The average age was 68.

In our study, benign prostatic hyperplasia (BPH), which most commonly affects men in their sixth and seventh decades, had the greatest incidence of prostatic lesions, with a prevalence of 61.9 percent. This is in contrast to Lagos's reported highest rate for the sixth decade and other research from Nigeria {13, 14, 15, 16, and 17}. However, our study's findings are consistent with the highest incidence of the seventh decade reported in Saudi Arabia, India, Jos, and Benin (15, 16, 17, 18, and 21).

The prevalence of BPH found in our study is comparable to that found in Lagos (62.8%) but lower than that found in the Garwhal region of India (92.6%) (2). In comparison to Ilorin, BPH is more common in Lagos and India. This study's prevalence of 61.9 percent, compared to the earlier study's prevalence of 82.8 percent in Ilorin, suggests that prostatic cancer incidence has increased while BPH incidence has reduced in the years after the initial report on the histology of prostatic lesion was published. When it comes to assessing benign prostatic hyperplasia (BPH), a lot has changed in Ilorin over the course of more than two decades. The third decade, 33 was the lowest age for BPH in our study.

This has been previously documented in a 32-year-old patient from Lagos, so it is not unusual (13). The study's current prevalence, which is 61.9%, is in line with the pattern in Lagos, Nigeria, but is lower than the global and Asian rates, which are 67.5-87.5%. (13,14,15,16,17,18). The bioavailability of testosterone and its metabolite, dihydrotestosterone, has been linked to the emergence of the histological characteristics of BPH. Metabolic disorders such obesity, diabetes, heavy alcohol use, and inactivity are additional risk factors (22). In this study, three cases of chronic inflammation and prostatitis were found in four cases of BPH, whereas granulomas were present in two cases of adenocarcinoma. An earlier study from Ilorin found that the majority of cases were non-specific and that prostatitis was a feature in many of them. Prostatitis was often found in 11 to 98 percent of prostatic specimens, and the criteria utilized by the assessors to make the diagnosis can vary (13,23). The presence of inflammatory cells may not be highlighted by all pathologists except in extremely uncommon circumstances like schistosomiasis or tuberculosis (13). The low rate of prostatitis observed in this index research (13), may be caused by this.

In our study, 32.4 percent of prostatic lesions were caused by prostatic cancer. This is higher than the rate recorded before in Ilorin and other prior, earlier investigations conducted in Nigeria (10, 11, 13, 19, and 20) which ranged in percentage from 12.5-20%. This implies that prostate cancer is becoming more prevalent in Ilorin, which calls for further efforts in early identification and awareness. As illustrated in Table 3 of this study, the sixth decade saw the highest incidence of CaP, closely followed by the seventh. This agrees with early reports from an African population in Benin, Nigeria (14) and the highest incidence of the seventh decade reported in Lagos (13).

Despite having similar cultural and demographic features, a recent Indian study found a considerable variance in the prevalence of prostate cancers. The fourth and ninth decades of life saw the lowest incidence. Asians have a reduced incidence of prostate cancer (2). Although

aging may have had a part in the development of CaP, the exact contribution of nutrition, lifestyle, and genetic variables remains debatable (24). Before the age of fifty, there were four cases reported. In our analysis, we also found some examples from the eighth and ninth decades. This is consistent with research on Caucasians and African Americans, where age is a major risk factor for the disease (25). Our study's patterns point to an increase in the prevalence of prostatic cancer. Compared to their white counterparts, black men from Africa and the United States are 50% more likely to develop the disease, with a dismal 5-year survival rate (26, 27).

The Gleason grade of 7 was the highest incidence, and it was present in 36.84 percent of the CaP cases in this investigation. This number is higher than the scores from Jos, Lagos, and Benin (11, 13, and 14). It is also marginally higher than the Bengaluru, India (1) but lower than rates from other parts of India {28, 29}. According to studies, men with a Gleason score of 7 or above had a 29–43% increased risk of dying from prostate cancer, which has been attributed to Nigeria's high mortality rate (13). This study's high Gleason score is consistent with the pattern observed in earlier investigations {1, 13, 28, 29}. Early studies attribute this to the disease's underreporting in affected areas (13, 30).

Findings from this study showed that inadequate specimens accounted for 4.7%, a figure lower than what was reported in Lagos (13). Previous study from Ilorin (10) didn't report this category of prostatic specimens. Samples in this category are often sent for repeat which wastes time, resources and increases the risk to patients coupled with the disappointment experienced by both the requesting Physician and the patient thus ultrasound – guided sampling is encouraged to reduce this occurrence (13).

Secondary tumour (metastasis) found in this study is 0.1%. This rate is lower than the previous study (0.3%) from Ilorin {10}. Increased awareness and early screening could have been responsible for this (13).

Interestingly however, incomplete data accounted for 1.7% thus limiting the age assessment and other factors in this study. All the previous studies encountered had excluded this category of data. Some of the cases on the request forms from the laboratory records lacked certain demographic data such as age and sex. A recent study reported suboptimal level of completion of laboratory request forms and recommended the need to review and redesign laboratory request forms, improve on training and communication between laboratory and clinical staff and review specimen rejection practices (31).

The previous study in Ilorin didn't make any assessment based on Gleason score. This study has bridged such gap as majority (36.84%) of the prostate adenocarcinoma diagnosis has been shown to fall in the Gleason score 7 category.

Immuno-histochemical assessment of prostatic lesions was absent in this study as none of the specimens was tested for protein expression. In the developed clime, the loss of basal cells in prostate carcinomas has been considered as the most important hallmark of malignancy and the use of CK 5/6 and p63 has been sustained as negative markers for basal cells (32,33). In combination with basal cell markers, alpha-methylacyl CoA racemase (AMACR) staining as positive marker can significantly increase the diagnostic accuracy and thus help avoid unnecessary re-biopsies {34). Prostate-specific antigen (PSA, KLK3), has also been widely used to confirm the prostatic origin of metastatic carcinoma (35).

CONCLUSION

Benign prostatic hyperplasia (BPH) though the most common prostate lesion in Ilorin has reduced in incidence when compared with previous study while prostatic adenocarcinoma has witnessed increased incidence with a high gleason score of 7 and peak incidence between the sixth and seventh decade of life.

RECOMMENDATION

Increased awareness campaign is highly recommended so as to reduce mortality associated with prostatic cancer. Physicians and Surgeons are advised to use ultrasound-guided sampling in order to reduce the incidence of inadequate specimens, associated pain and wastage of resources. Improved training and communications among laboratory and clinical staff is encouraged to reduce or completely eliminate the incidence of missing data in laboratory request forms. The use of immunohistochemical (IHC) markers for protein expression in prostatic adenocarcinomas is advocated for characterization and better treatment options. Tissue based PCR testing is also advocated to overcome the dilemma of inadequate specimen.

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