A DESCRIPTIVE STUDY OF PROSTATE LESIONS IN LARGEST HOSPITAL IN ONDO STATE OF NIGERIA

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A DESCRIPTIVE STUDY OF PROSTATE LESIONS IN LARGEST HOSPITAL IN ONDO STATE OF NIGERIA

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Abstract

Purpose: The study aims to retrospectively examine the association between benign prostatic hyperplasia and cancer of the prostate in the largest hospital in Ondo State of Nigeria.

Methodology: A descriptive, cross sectional design was used. A total of 286 prostate biopsies were received, processed and analyzed between 2014 and 2018. Necessary information and data generated were retrieved from histopathology request forms, patients' registers and result cards. The concerned section slides were retrieved and reviewed. The research instrument used was the Hematoxylin and Eosin [H&E] staining technique. The photomicrograph of the slides was done in the histopathology laboratory, federal medical centre, Owo using a digital microscope camera attached to an Olympus binocular microscope by placing each slide on the microscope stage well focused for a good capturing and better contrast.

Findings: All cases of benign prostatic hyperplasia accounted for 32.2%, nodular hyperplasia was 29.7%, prostate cancers encountered was 30.7% while other lesions accounted for 7.4%. It was found out that prostate cancer affects most men as they get older which leads to urinary problems like those with BPH and prostatitis. They explained that prostate cancer rarely causes symptoms before age 40, but more than half of men in their 60s and most men in their 70s and 80s will have signs of prostate cancer. It was also found out that the occurrence of prostate cancer tended to elevate with increasing age and there was a tendency for the proportion of moderate or severe cases to increase with aging in men.

Unique contribution to theory, practice and policy: The study has contributed to knowledge on the high incidence of prostate lesions in Owo, Ondo State. The awareness created by the study should be used to form policy on yearly prostate screening and annual rectal examination of males between 35 to 65 years of age should be carried out since surgical cure could be done before the cells growth leads to a chronic stage.

Keywords: *Annual Rectal Examination, Benign Prostatic Hyperplasia, Nodular Hyperplasia, Prostate Cancer, Prostatits, Hematoxylin and Eosin*

1.0 INTRODUCTION

Cancer of the Prostate can be a serious disease, but most men diagnosed with cancer of the prostate do not die from it. In fact, more than 2.5 million men in the United States who have been diagnosed with cancer of the prostate at some point are still alive today. In Pakistan, prostatic cancer was fifth commonest tumor occurring in 7.3% of all men (Nair-Shalliker, Yap, Nunez, Egger, Rodger & Patel, 2017).

Prostate gland of male reproductive system is about the size of walnut and surrounds the urethra. It produces and stores a milky white fluid which becomes the part of semen and consists of sugars, proteins and other chemicals which help the sperm to survive in female genital tract. It is a retroperitoneal organ encircling the neck of bladder and urethra and is devoid of distinct capsule. In adults, Prostatic parenchyma can be divided into four biological and anatomical zones: peripheral, central, transitional and anterior fibromuscular stroma (Rebbeck, 2017).

Benign prostatic hyperplasia (BPH) is a nonmalignant enlargement of the prostate caused by cellular hyperplasia. It is a common age-associated disease affecting 70 per cent of men aged 70 years or over. BPH can be a bothersome and potentially severe condition. Not only can it lead to lower urinary tract symptoms (LUTS) and diminish patients' quality of life, but it may also be associated with certain male urologic cancers such as prostate cancer (Dai, Fang, Ma, & Xianyu, 2016)

Benign prostatic hyperplasia (BPH) and cancer of the prostate are among serious health problems emerging with old age in the increasing male population worldwide. BPH and PCa are both epidemiologically and histopathologically hormone dependent diseases and prostatic inflammation associated chronic diseases requires long time both for development and progression. In both malign and benign prostate diseases, there is an imbalance between prostate cell growth and apoptosis because of intrinsic and extrinsic factors having a direct or indirect impact on prostate tissue growth and differentiation (St. Sauver, Jacobson, McGree, Girman, Lieber, & Jacobsen, 2008).

Benign prostatic hyperplasia (BPH) is one of the most common conditions affecting the elderly males, as the elderly constitute the major proportion of the population. This results in a major impact on the medical practice nowadays. The enlargement of the prostate can produce voiding symptoms, which can lead to pathological changes in urinary bladder and the kidney (Nickel, 2008). Worldwide, diseases of Prostate gland are responsible for significant morbidity and mortality among adult males. It is estimated that number of males in the U.S who will experience prostatitis during their lifetimes range up to 50%.

Prostatitis (Inflammation)

The role of inflammation in prostatic diseases is currently yet to be fully elucidated, although there is emerging evidence that prostatic inflammation may contribute to prostate growth in terms of hyperplastic or neoplastic changes. It was demonstrated that among a managed care population, 1 in 10 men ages 70 and above were diagnosed with prostatitis (Pages, Lin, Mostaghel, Hess, & True, 2006). Prostatitis is a condition that involves inflammation of the prostate and sometimes the area around it. There are several types of prostatitis, each with a range of symptoms. Some men with the disease will experience severe pain and others will not be bothered; and the rest fall in between the two. However, the symptoms of the disease do have

a significant impact on a man's quality of life. Prostatitis can affect men at any age and it is thought that one in every six men have this condition at some stage during their lives (Kim, Ha, Yoon, Kim, Sohn, & Kim, 2014).

Prostatitis is considered to be the third most common urinary tract disease in men of all age and is known to be challenging and difficult to properly treat. Recent reports estimate that up to half of males will suffer from prostatitis at least once during their lifetime. They also estimate that up to 25% of urology consults over the world can be due to symptoms of prostatitis. Generally, prostate diseases (like benign prostatic hyperplasia and prostate cancer) affect men of older ages. However, prostatitis is different and has been reported in men of different age groups, with being common in middle-aged men (Kryvenko. Jankowski, Chitale, Tang, Rundle, & Trudeau, 2012). For example, a previous study was conducted in Canada over a whole year, and found that during the study period, over 9% of study participants suffered from symptoms of prostatitis. Prevalence in other regions, including Asia, North America, and Europe were found to be similar, and can range up to 16%. Therefore, prostatitis constitutes a major health problem in men all over the world, and proper management and treatment is essential to decrease burden associated with it (Clemens, Meenan, Keeffe, Rosetti, Kimes, & Calhoun 2007).

Prostate Cancer

Prostate cancer is marked by an uncontrolled (malignant) growth of cells in the prostate gland. The prostate is the walnut-sized gland in men, located just below the bladder and in front of the rectum, surrounding the urethra – the tube that carries urine out of the bladder. The prostate produces and stores fluid that helps to make semen, and is involved in regulating bladder control. Prostate cancer can be slow-growing, such that many men die of other diseases before the prostate cancer causes significant problems (Bechis, Carroll & Cooperberg, 2011).

However, according to Brookman-May, Campi, Henriquez, Klatte, Langenhuijsen and Brausi (2018) many prostate cancers are more aggressive and can spread outside the confines of the prostate gland, which can be deadly. The prostate cancer survival rate is greatly improved with early detection and personalized treatment. Certain men are at higher risk than others for prostate cancer, which may affect when they should start being screened. The risk increases with age, particularly after age 50. Some risk factors include:

1. African-American men are twice as likely as white men to develop the disease.
2. Having a family history – a father or a brother diagnosed with prostate cancer, particularly if it is at a relatively early age – increases the risk.
3. Having a family history of breast and ovarian cancer may also be associated with an inherited risk of developing prostate cancer
4. High-fat diet and/or obesity
5. Smoking
6. A sedentary lifestyle

However, there may be measures to aid in the prevention of prostate cancer and that can reduce risk, including regular exercise and diets low in fat and high in fruits, vegetables and whole fibers. Foods with high amounts of the antioxidant lycopene – such as tomatoes, grapefruit, and watermelon – may help to lower the risk of prostate cancer (Hampton, 2006).

Research Questions

1. What is the association between ages of respondents and occurrence of prostate lesions?

2. What is the frequency rate of the selected prostate lesions within the study periods?

3. What are the histomorphological features of the selected prostate lesion

2.0 LITERATURE REVIEW

Prostate Lesions

The prostate gland (the prostate) is an organ of the male reproductive system. It is about the size of a walnut and is found at the base of the bladder. The thin tube that allows urine and semen to pass out of the penis (the urethra) runs through the prostate gland. Alkaline fluid produced by the prostate gland helps to nourish sperm and leaves the urethra as semen. The prostate undergoes two main growth spurts. The first is fuelled by the sex hormones made by the testes during puberty which prompts the prostate to reach an average weight of 20 grams. The second growth spurt begins when men are in their thirties (Lei, Yi, Zhiqiang, Xian, Qianwei, Ran, Wei, Ninghong, & Wei, 2020).

Around 25 per cent of men aged 55 years and over have a prostate condition. This increases to 50 per cent by the age of 70 years. Early stages of prostate disease may have no symptoms. The three most common forms of prostate disease are non-cancerous enlargement of the prostate (benign prostatic hyperplasia), inflammation (prostatitis), and prostate cancer.

Non-Cancerous Enlargement of the Prostate (Benign Prostatic Hyperplasia, BPH)

Benign means "not cancer" and hyperplasia means "abnormal cell growth". The result is that the prostate becomes enlarged. BPH is not linked to cancer and does not increase the risk of getting prostate cancer; however, the symptoms for BPH and prostate cancer can be similar (Andersson, Groat, McVary, Lue, Maggi, & Roehrborn, 2011). Benign prostatic hyperplasia (BPH) also known as Nodular Hyperplasia is a common condition in older men. It is not life threatening, but can significantly affect the quality of human lives. The enlargement of the prostate gland (which surrounds the top of the urethra) causes the urethra to narrow, and puts pressure on the base of the bladder. This can lead to obstruction in the flow of urine. Histologically, it is characterized by the presence of discrete nodules in the periurethral zone of the prostate gland. Clinical manifestations of BPH are caused by extrinsic compression of the prostatic urethra leading to impaired voiding (Taoka, & Kakehi, 2017).

Chronic inability to completely empty the bladder may cause bladder distension with hypertrophy and instability of the detrusor muscle. Some patients with BPH present with hematuria. Because the severity of symptoms does not correlate with the degree of hyperplasia, and other conditions can cause similar symptoms, the clinical syndrome that often accompanies BPH has been described as lower urinary tract symptoms (Adorini, Penna, Fibbi & Maggi, 2010). Perdana, Mochtar, Umbas, & Hamid, (2016) carried out a community-based study including 289 subjects to investigate trends in the international prostate symptom score (I-PSS), bother score, and QOL score according to age groups over a follow-up period of 3 years. They reported that the above three dysuria-related scores tended to elevate with increasing age both at the initial evaluation and in 3 years. When the relationship between age and the distribution of I-

PSS was examined for subjects of prostate cancer screening in Gunma Prefecture, there was a tendency for the proportion of moderate or severe cases to increase with aging for each item of the I-PSS. In particular, higher proportions of moderate or severe cases were noted for items concerning the frequency of urination during the night, difficulty urinating, and urgency of urination. In regard to urination during the night, about 14% of subjects in their 70s and about 33% of those in their 80s reported that they got out of bed 3 times or more for urination.
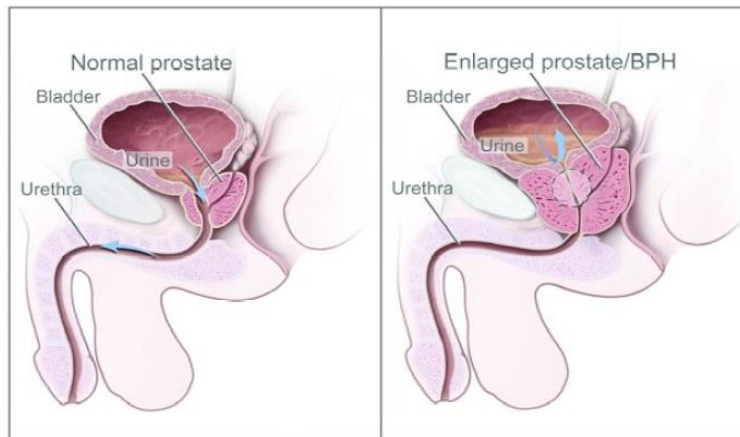
Urine flow in a normal (left) and enlarged (right) prostate. In diagram on the left, urine flows freely. On the right, urine flow is affected because the enlarged prostate is pressing on the bladder and urethra.

Fig 2.1 Normal Prostate and Enlarged Prostate/BPH

Source: Kryvenko, *et al* (2012).

BPH affects most men as they get older. It can lead to urinary problems like those with prostatitis. BPH rarely causes symptoms before age 40, but more than half of men in their 60s and most men in their 70s and 80s will have signs of BPH. The prostate gland is about the size of a walnut when a man is in his 20s. By the time he is 40, it may have grown slightly larger, to the size of an apricot. By age 60, it may be the size of a lemon. The enlarged prostate can press against the bladder and the urethra. This can slow down or block urine flow. Some men might find it hard to start a urine stream, even though they feel the need to go. Once the urine stream has started, it may be hard to stop. Other men may feel like they need to pass urine all the time or they are awakened during sleep with the sudden need to pass urine (Kryvenko, *et al* 2012).

Prostatitis (Inflammation)

The role of inflammation in prostatic diseases is currently yet to be fully elucidated, although there is emerging evidence that prostatic inflammation may contribute to prostate growth in terms of hyperplastic or neoplastic changes. It was demonstrated that among a managed care population, 1 in 10 men ages 70 and above were diagnosed with prostatitis (Pages *et al* 2006). Prostatitis is a condition that involves inflammation of the prostate and sometimes the area around it. There are several types of prostatitis, each with a range of symptoms. Some men with the disease will experience severe pain and others will not be bothered; and the rest fall in between the two. However, the symptoms of the disease do have a significant impact on a man's

quality of life. Prostatitis can affect men at any age and it is thought that one in every six men have this condition at some stage during their lives (Kim, *et al* 2014).

Prostatitis is considered to be the third most common urinary tract disease in men of all age and is known to be challenging and difficult to properly treat. Recent reports estimate that up to half of males will suffer from prostatitis at least once during their lifetime. They also estimate that up to 25% of urology consults over the world can be due to symptoms of prostatitis. Generally, prostate diseases (like benign prostatic hyperplasia and prostate cancer) affect men of older ages. However, prostatitis is different and has been reported in men of different age groups, with being common in middle-aged men (Kryvenko, *et al* 2012). For example, a previous study was conducted in Canada over a whole year, and found that during the study period, over 9% of study participants suffered from symptoms of prostatitis. Prevalence in other regions, including Asia, North America, and Europe were found to be similar, and can range up to 16%. Therefore, prostatitis constitutes a major health problem in men all over the world, and proper management and treatment is essential to decrease burden associated with it (Clemens *et al* 2007). The main types of prostatitis are bacterial and non-bacterial prostatitis:

Bacterial prostatitis

Acute bacterial prostatitis is caused by bacteria and is the easiest form of prostatitis to diagnose and treat, although serious complications may develop if it is not treated quickly. Acute bacterial prostatitis is the least common form of prostatitis and it can be life-threatening if the infection is not treated (Etienne, Etienne, Chavanet, Sibert, Michel, Levesque, & Lorcerie, 2008). Acute bacterial prostatitis is the least common type of prostatitis but the most easily recognized. It is usually caused by a sudden bacterial infection and is easy to diagnose because of the typical symptoms and signs. It is a severe urinary tract infection associated often with fevers and chills, and a visit to a doctor or hospital is required. Acute bacterial prostatitis can affect any age group. The symptoms include painful urination; inability to empty the bladder, pain in the lower back, abdomen or pelvic area; and fever and chills (Kim *et al* 2014).

On the other hand, chronic bacterial prostatitis is similar to acute bacterial prostatitis but the symptoms develop gradually and are less severe. Characterized by recurrent urinary tract infections in men; this condition can affect any age group but is most common in young and middle-aged men. Chronic bacterial prostatitis is caused by an underlying problem in the prostate, such as prostate stones or BPH (enlarged prostate), which becomes the focus for bacteria in the urinary tract. Chronic bacterial prostatitis is a common cause of frequent urinary tract infections in men (Campeggi, Ouzaid, Xylinas, Lesprit, Hoznek, & Vordos, 2014).

Non-bacterial prostatitis

Chronic non-bacterial prostatitis (chronic prostate pain syndrome) is an inflamed prostate without bacteria and is the form of prostatitis that is not well understood. Urinary tract infections do not happen with this form of prostatitis. Symptoms may disappear and come back later. Stress often makes symptoms of chronic non-bacterial prostatitis worse (Schaeffer, 2006).

Conversely, there is asymptomatic inflammatory prostatitis, that is, men with prostatitis but with no symptoms, despite an inflammation of the prostate. Diagnosis is made when the patient is being evaluated for symptoms unrelated to prostatitis. In cases such as these is, evidence of

inflammation is found in biopsied tissue or specimens of urine, semen or prostatic fluid (Clemens *et al* 2007).

Chronic Prostatitis (Chronic Pelvic Pain Syndrome)

Chronic prostatitis (CP) is a condition of chronic pelvic pain in men. It has been estimated that between 2% and 14% of men worldwide may have symptoms of CP. The diagnosis is made on the basis of symptoms of pain with or without voiding symptoms in the absence of other identifiable causes. This type of prostatitis is usually found in males who present with vague genital discomfort, with sexual problems and voiding symptoms (Schaeffer, 2006).

The pathophysiology underlying the disease is not well understood until now. It constitutes up to 95% of non-bacterial prostatitis cases and is estimated to occur in up to 14% of males. Chronic pelvic pain syndrome is associated with significant decrease in quality of life of patients and will negatively affect daily activities of patients. The exact etiology underlying chronic prostatitis is controversial and not well understood. Urine cultures are almost always negative (Nickel, 2006).

The etiology of symptoms in a given patient can be from many causes. Whether there are identifiable, repeatable patterns of causes of symptoms, or just individual patients with distinct individual phenotypes are unknown. Because CP is a common condition associated with significant physical, mental, and social burden, the medical community has made tremendous efforts to understand the condition and improve management strategies (Alexander, Mann, Borkowski, Fernandez-Vina, Klyushnenhova, & Kodak, 2014).

Several studies on a molecular basis have been conducted in attempts to detect the etiology of chronic pelvic pain syndrome, with no concrete answer yet. Possible suggested etiologies of the disease include the presence of an occult infection, raised levels of uric acid, inflammatory processes, autoimmune disease, and neuromuscular mechanisms. Psychological factors have been addressed in several studies to be important predisposing factors to chronic pelvic pain syndrome. Patients who are generally predisposed, can have the symptoms after they are exposed to a trigger like trauma, psychological distress, inflammation, or any other stressor (Andrews & Humphrey, 2014).

Due to its unclear etiology, the diagnosis of chronic pelvic pain syndrome is considered very difficult and challenging, with the absence of a gold standard test. Generally, the diagnosis is made after exclusion of other causes in a male who has had pelvic pain for longer than here months, with the absence of symptoms related to infections, and the absence of other possible diagnoses. Evaluation of patients depends mainly on thorough and detailed medical history that extends to other systems (especially the nervous system). Careful physical examination is essential (Arista-Nasr, Martinez-Benitez, Aguilar-Ayala, Aleman-Sanchez, Bornstein-Quevedo & Albores-Saavedra, 2015).

The use of nonsteroidal anti-inflammatory drugs has been shown to decrease the inflammatory process in the prostate leading to improvement of symptoms. Therefore, their use is recommended in all cases to decrease the pain and improve quality of life. Hormonal treatment with Finasteride was also suggested to be beneficial in cases of chronic pelvic pain syndrome. However, the use of it solely has not been proven to achieve efficacy. Further larger studies are needed to assess the efficacy of the use of Finasteride along with other hormonal therapy in the treatment of chronic pelvic pain syndrome (Wallner, Clemens, & Sarma, 2009).

Other pharmacological therapies that have been used to improve symptoms of chronic pelvic pain syndrome include benzodiazepines, antidepressants, neuro-modulators (like pregabalin), and anti-anxiolytics. However, no solid evidence is currently available to confirm the efficacy of their use. Some studies suggested the use of opioids to relieve symptoms associated with chronic pelvic pain syndrome. However, this is a largely controversial area, and disadvantages associated with opioids are considered to be a great limitation (Rebbeck, 2017).

Association of Benign Prostatic Hyperplasia and Prostatitis

BPH is a disease of ageing men. An estimated 42% of men 51 to 60 years of age have histological BPH. The incidence increases to over 70% in men 61 to 70 years of age and to almost 90% in those 81 to 90 years of age. The prevalence of lower urinary tract symptoms (LUTS) associated with BPH parallels that of pathological BPH; > 50% of men over 50 are believed to experience LUTS secondary to an enlarged prostate gland (Nickel, Elhilali, & Vallancien 2005).

Prostatitis has traditionally been considered a condition which inflicts younger men, but it is apparent that it is as common in older men. Compared to men aged 51 and higher the odds of a documented prostatitis diagnosis is only 2-fold greater in younger men. Approximately 8% of men over 50 years of age report at least some mild prostatitis-like symptom in the past week compared to 11% of younger men. Little attention has been given to the association between BPH and prostatitis, despite the high prevalence of both conditions in ageing men (St. Sauver, Jacobson, McGree, Girman, Lieber, & Jacobsen, 2008).

Kramer and Marberger (2006) have outlined the current state of knowledge in regard to the influence of inflammation on the pathogenesis of BPH. Chronic inflammatory infiltrates, mainly composed of chronically activated T cells and macrophages frequently are associated with BPH nodules. These infiltrating cells are responsible for the production of cytokines (IL-2 and IFNγ) which may support fibromuscular growth in BPH. Immigration of T cells into the area is attracted by increased production of proinflammatory cytokines such as IL-6, IL-8 and IL-15. Surrounding cells become targets and are killed (unknown mechanisms), leaving behind vacant spaces that are replaced by fibromuscular nodules with a specific pattern of a Th0/Th3 type of immune response (Konig, Senge, Allhoff, & Konig, 2004).

3.0 MATERIALS AND METHODS

This is a five years retrospective study of prostate biopsies investigated at the department of Histopathology, at the largest hospital in Ondo State of Nigeria. The hospital was founded 1993 and served as a reference centre to patients from all general and specialist hospitals in Ondo state and neighbouring states such as Ekiti and Kogi. For the purpose of the research, a descriptive, cross sectional design was adopted. The retrospective study covered investigations conducted during the period of 16th January 2014 to 18th December 2018. A total of 286 prostate biopsies were received, processed and analyzed within the period of 2014 to 2018. Necessary information and data were retrieved from Histopathology request cards and registers.

Tissues samples that were surgically removed were sent down to the laboratory for diagnosis in a containing which accommodated the tissue sample and fixative which was 50 times greater than the tissue in volume. Accompanied with the tissue sample is a request form which contains the

information of the patient. After attaining the necessary requirements, the sample is registered and given a laboratory number. The tissue samples were examined microscopically which includes the measurement, the size, the nature of the sample and the site where it's gotten from. A particular area is selected for processing, placed in a tissue cassette, covered and labeled with the laboratory number and placed in a container which contains fixatives.

All the reported H&E slides were retrieved and reviewed. The bio-data and specific diagnoses were utilized and analyzed statistically. The photomicrograph of the slides was done in the histopathology laboratory, federal medical centre, Owo using a digital microscope camera attached to an Olympus binocular microscope by placing each Slide on the microscope stage well focused for a good capturing and better constrast. Data obtained were analyzed using statistical package for social Science (SPSS) version 20. The frequency of each case was analyzed and presented in percentages. The data were also presented using tables and chart.

4.0 RESULTS

A total number of 286 prostate biopsies were thoroughly investigated and utilized in the study

Table 1: Incidence of various categories of Prostate Lesions within study period

LESIONS	Frequency	Percent
Adenocarcinoma	38	13.3
Adenocarcinoma-Moderately Differentiated	17	5.9
Adenocarcinoma-Poorly Differentiated	25	8.7
Adenocarcinoma-Well Differentiated	8	2.8
Benign Prostatic Hyperplasia	92	32.2
Benign Prostatic Hyperplasia with Prostatitis	9	3.1
Chronic Prostatitis	1	0.3
Nodular Hyperplasia	7	2.4
Reactive Follicular Hyperplasia	3	1.0
Nodular Hyperplasia with Protatitis	7	2.4
Tuberculous prostatitis	1	0.3
Total	286	100.0

Source: Researcher's Field Study (2020)

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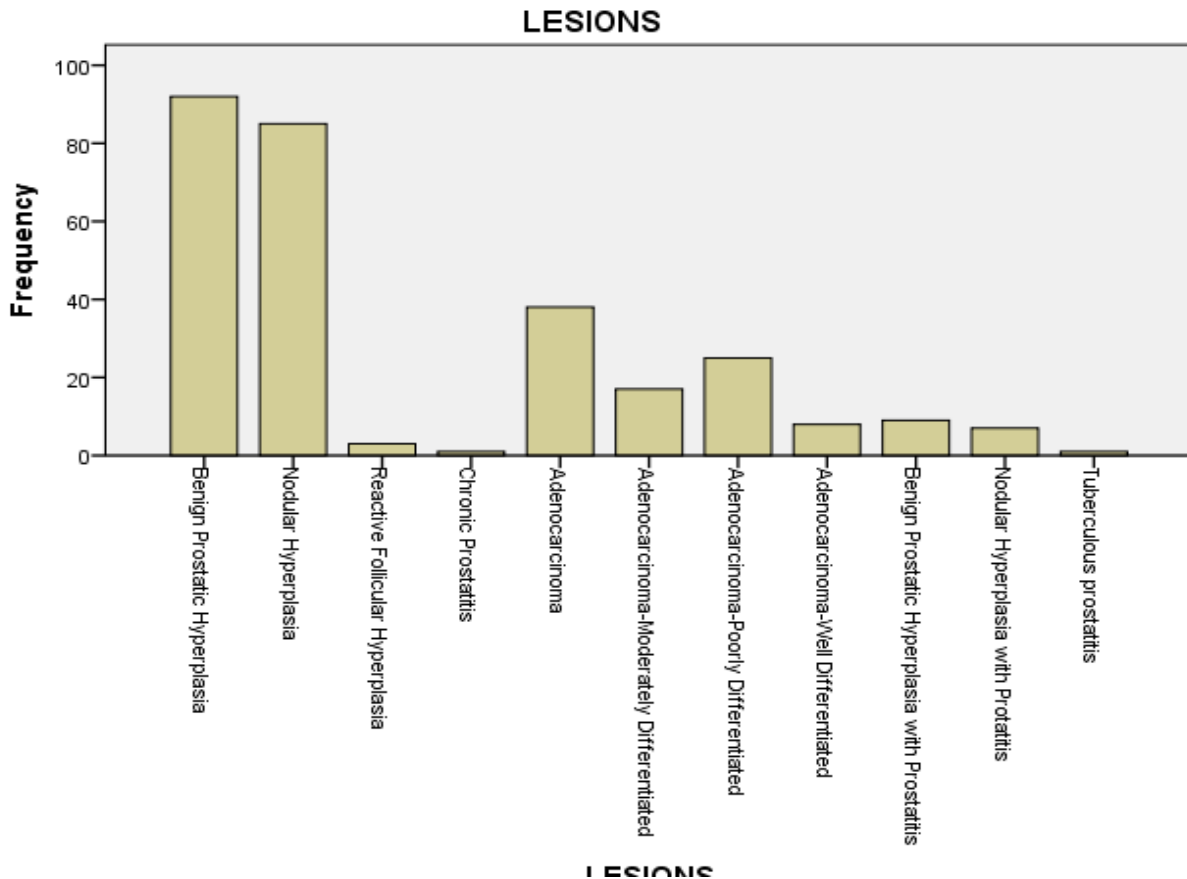
Fig 1: Bar Chart showing the incidence of various categories of Prostate Lesions within study period

The table and chart above shows the incidence of the various categories of lesion during the periods 2014-2018(5 years). The table reveals that, 38(13.3%), were diagnosed with Adenocarcinoma, 17(5.9%) were diagnosed with moderately differentiated adenocarcinoma 25(8.7%), were diagnosed with poorly differentiated adenocarcinoma, 8(2.8%), were diagnosed with well differentiated adenocarcinoma, 92 (32.2%) were the highest number of respondents diagnosed with Benign Prostatic Hyperplasia while 9 (3.1%), 1(0.3%), 7(2.4%), 3(1.0%), 7(2.4%), 1(0.3 %) respondents were diagnosed with Benign Prostatic Hyperplasia with Prostatitis, Chronic Prostatitis, Nodular Hyperplasia, Reactive Follicular Hyperplasia, Nodular Hyperplasia with Protatitis and Tuberculous prostatitis

Table 2: Age Distributions and Incidence of Adenocarcinoma for years 2014-2018

Age (years)	2014	2015	2016	2017	2018	Total
31-40	0	0	0	0	0	
41-50	0	0	0	0	0	
51-60	1	1	0	1	0	
61-70	1	3	2	3	2	
71-80	2	5	8	3	0	
81-90	0	2	1	1	1	
91-100	0	0	0	1	0	
Total	4	11	11	9	3	38

Source: Researcher's Field Study (2020)

The table shows an increased rate in the incidence of adenocarcinoma between 2014 and 2016 and a fall between 2017 and 2018 amongst respondents of ages 51 years and above.
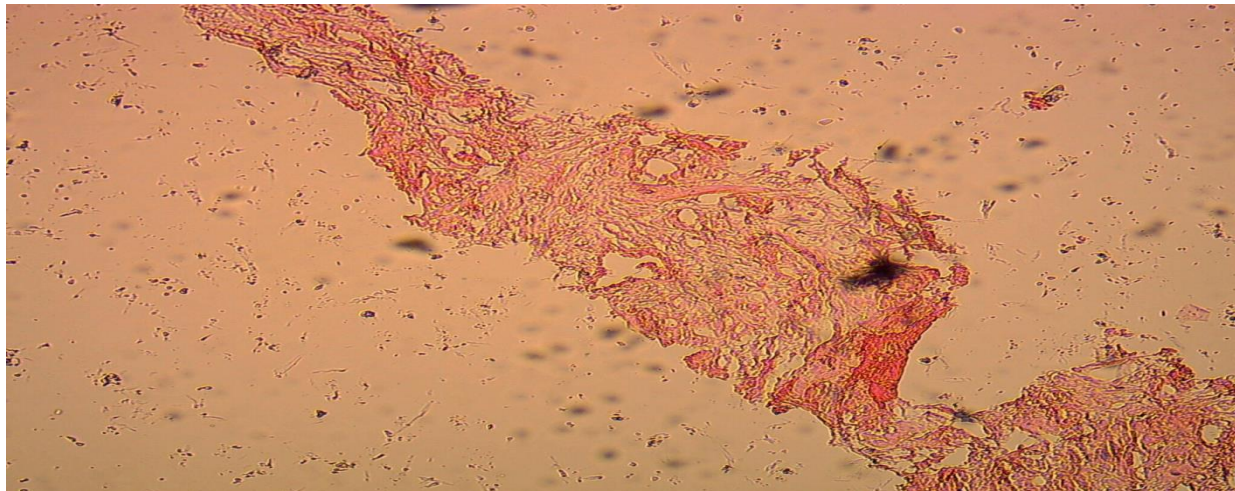

Plate1 reveals the Photomicrograph of Adenocarcinoma showing enlarged ucino filled with stratified squamous epithelium in which small tool of keratin formation are present (thin arrows). Then stroma is abundant with increase in fibrous tissue. Adenocarcinomatosis cells with pyknotic nuclei without detectable cytoplasm are identified.

Table 3: Age distributions and Incidence of Adenocarcinoma-Moderately Differentiated for years 2014-2018

Age (years)	2014	2015	2016	2017	2018	Total
31-40	0	0	0	0	0	
41-50	0	0	0	0	0	
51-60	1	0	0	0	1	
61-70	0	0	0	0	3	
71-80	3	0	0	2	3	
81-90	0	1	0	0	3	
91-100	0	0	0	0	0	
Total	4	1	0	2	10	17

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Source: Researcher's Field Study (2020)

The table 3 also shows an increased rate in the incidence of moderately differentiated adenocarcinoma between 2014 and 2018 amongst respondents of ages 51 years and above.
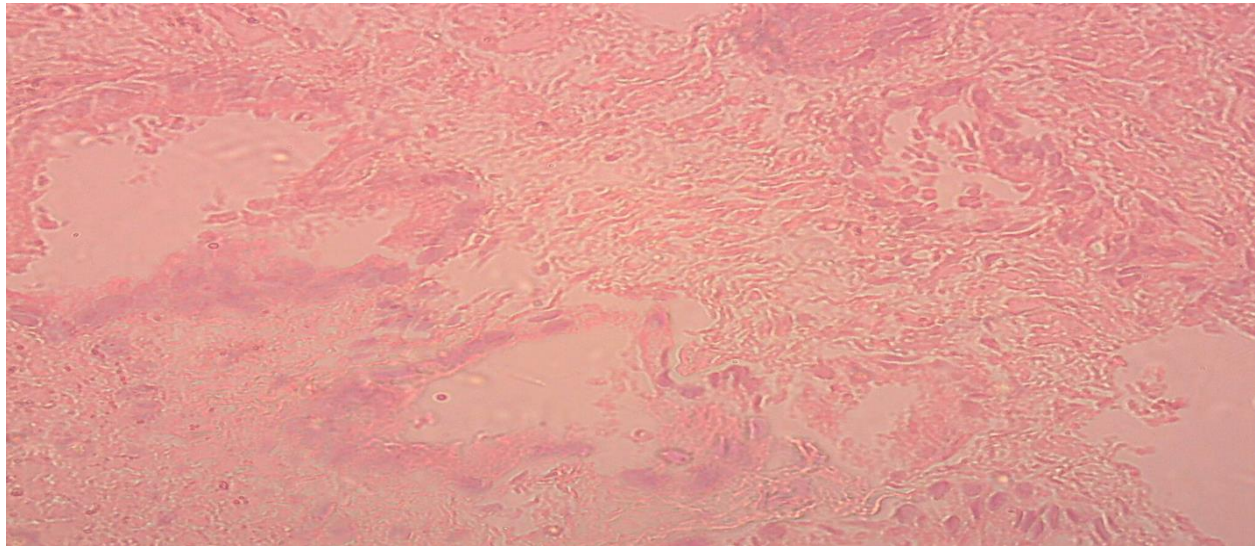

Plate 2: Photomicrograph of moderately differentiated adenocarcinoma – Showing solid cords of large cells with abundant pale foamy cytoplasm and small nuclei invading the eosmophilic muscular tissue. The nuclei of the tumour cells are round and regular in size and shape.

Table 4: Age Distributions and Incidence of Adenocarcinoma- Poorly Differentiated for years 2014-2018

Age (years)	2014	2015	2016	2017	2018	Total
31-40	0	0	0	0	0	
41-50	0	0	0	1	0	
51-60	0	0	0	0	0	
61-70	0	1	0	3	2	
71-80	2	2	1	6	5	
81-90	0	0	0	0	2	
91-100	0	0	0	0	0	
Total	2	3	1	10	9	25

Source: Researcher's Field Study (2020)

Table 4 reveals that, 6 respondents in the ages of 41 years and 80 years were diagnosed with poorly differentiated adenocarcinoma between 2014 and 2016 while 19 respondents were diagnosed with the lesion in 2017-2018. This also reflects an increase in the incidence of the lesion amongst men of 41 years and above.
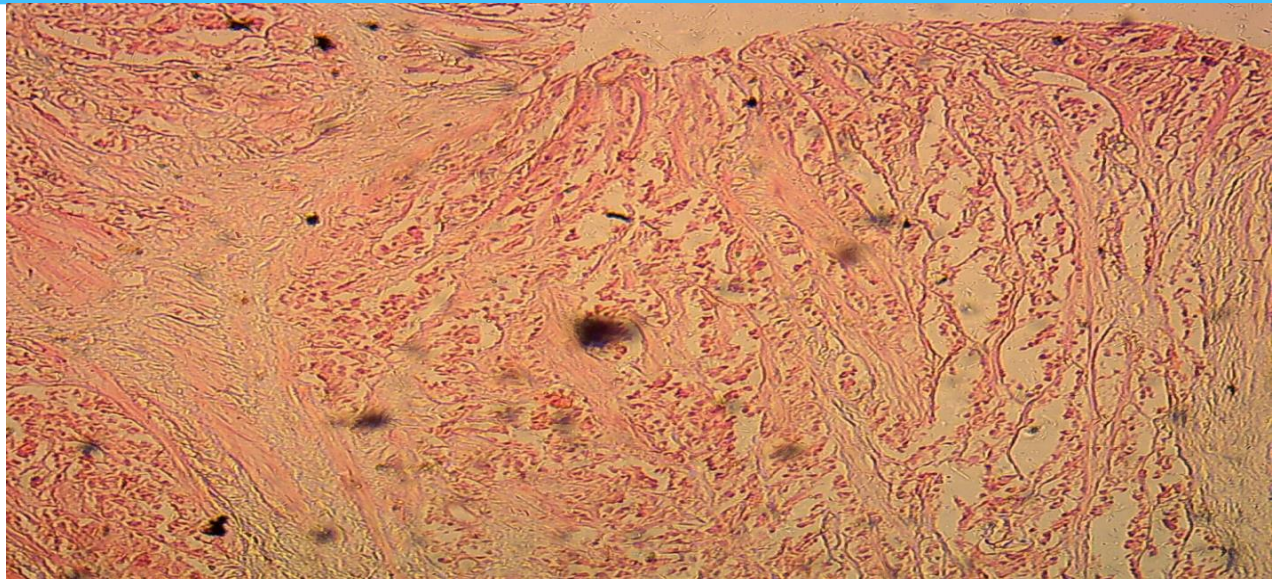
Plate 3: Photomicrograph of poorly differentiated adenocarcinoma – Showing complex, branching architecture with irregular cabriform glands corresponding to a poorly differentiated prostate adenocarcinoma

Table 5: Age Distributions and Incidence of Adenocarcinoma- Well Differentiated for years 2014-2018

Age (years)	2014	2015	2016	2017	2018	Total
31-40	0	0	0	0	0	
41-50	0	0	0	0	0	
51-60	0	0	0	0	0	
61-70	2	0	0	0	0	
71-80	1	1	1	0	0	
81-90	1	0	1	0	1	
91-100	0	0	0	0	0	
Total	4	1	2	0	1	8

Source: Researcher's Field Study (2020)

Table 5 shows that 8 respondents in the ages of 61 years and 90 years were diagnosed of well-differentiated adenocarcinoma between 2014 and 2018.
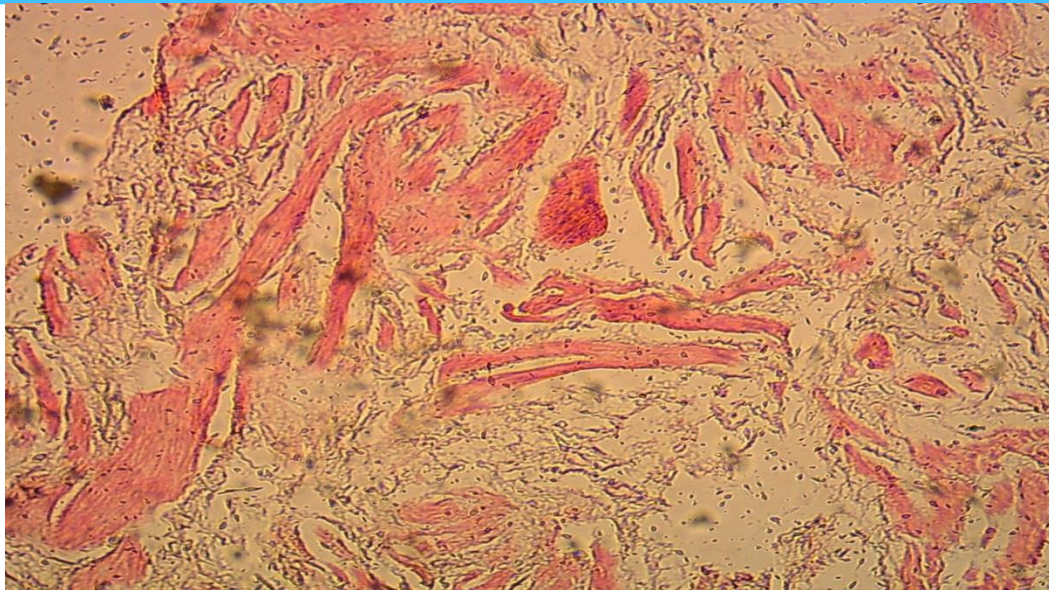
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Plate 4: Photomicrograph of well differentiated adenocarcinoma showing infiltrating nodes of varying size and with varying distance between them. They usually infiltrate between normal nodes.

Table 6: Age Distributions and Incidence of Benign Prostatic Hyperplasia for years 2014-2018

Age (years)	2014	2015	2016	2017	2018	Total
31-40	0	0	1	0	0	1
41-50	0	1	0	0	0	1
51-60	3	0	8	2	5	18
61-70	2	4	16	9	3	34
71-80	4	6	10	9	3	32
81-90	1	2	0	0	3	6
91-100	0	0	0	0	0	0
Total	10	13	35	20	14	92

Source: Researcher's Field Study (2020)

Table 6 shows the age distributions and incidence of Benign Prostatic Hyperplasia and the highest number of sampled respondents which were diagnosed of Benign Prostatic Hyperplasia for the years 2014 to 2018. The result further revealed that the respondents found with this lesion were of ages 31 years to 90 years indicating that, men at early age are vulnerable to this lesion.
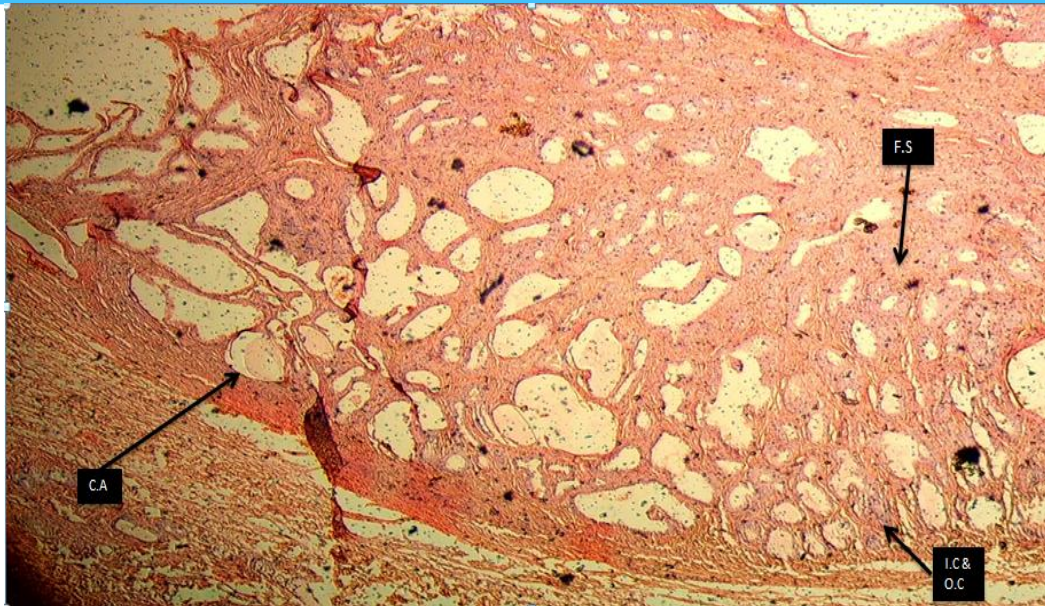
Plate 5 shows Photomicrograph of BPH showing varying proliferations of glands and fibromuscular stroma(FS). The glands have bilayered epithelium with inner tall columnar and outer cuboidal (IC & OC) to flattered epithelium. The lumen of the glands shows corpora amylacea (CA).
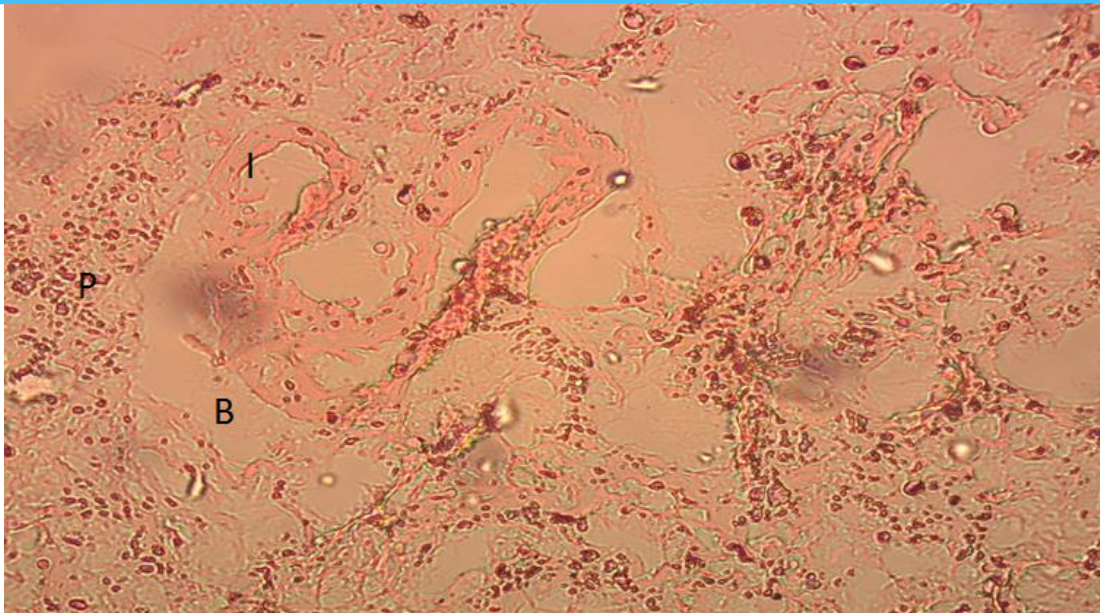
Table 7: Age Distributions and Incidence of Benign Prostatic Hyperplasia with Prostatitis for years 2014-2018

Age (years)	2014	2015	2016	2017	2018	Total
31-40	0	1	0	0	0	
41-50	0	0	0	0	0	
51-60	0	0	3	1	0	
61-70	0	0	1	0	1	
71-80	0	1	0	0	0	
81-90	0	1	0	0	0	
91-100	0	0	0	0	0	
Total	0	3	4	1	1	9

Source: Researcher's Field Study (2020)

Table 7 reveals that, no respondent was found benign prostatic hyperplasia with prostatitis in 2014. A total 9 respondents in the ages of 31 years and 90 years were diagnosed of benign prostatic hyperplasia with prostatitis. 7 of the sampled respondents were found with this lesion during 2014 and 2016 while only 2 respondents were diagnosed with the lesion in 2017 and 2018.
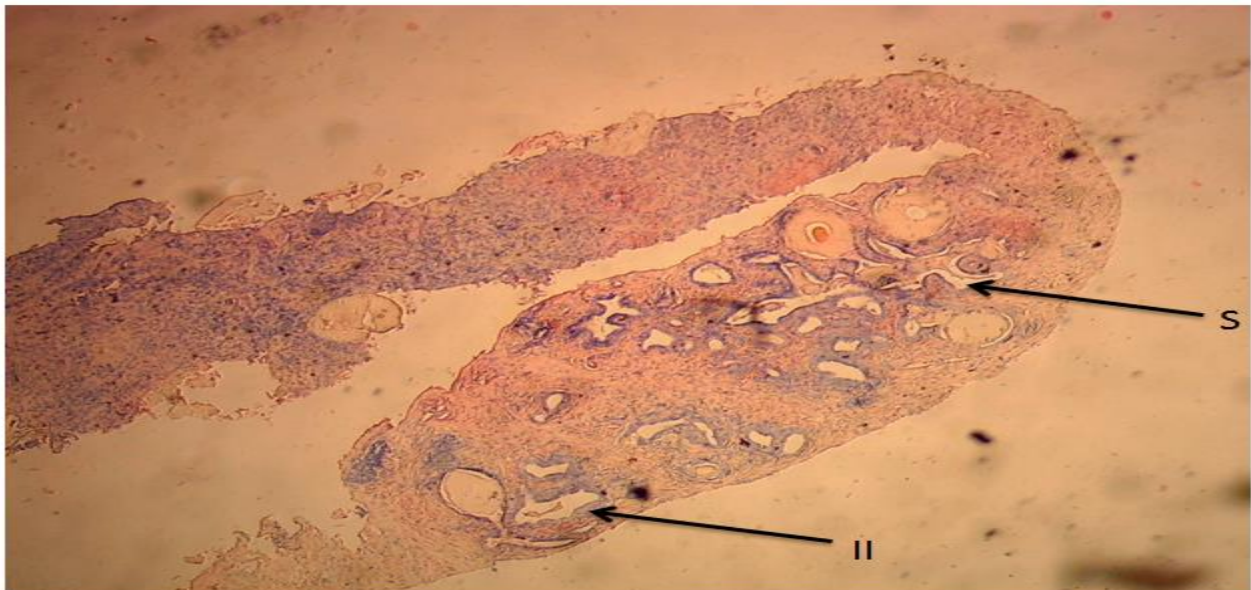
Plate 6 shows Photomicrograph of Benign Prostatic Hyperplasia with Prostatitis showing increased fibromuscular region. Prostatic acini, actively during hyperplastic cyst and numerous inflammatory cells / lymphocytes

Table 8: Age Distributions and Incidence of Chronic Prostatitis for years 2014-2018

Age (years)	2014	2015	2016	2017	2018	Total
31-40	1	0	0	0	0	
41-50	0	0	0	0	0	
51-60	0	0	0	0	0	
61-70	0	0	0	0	0	
71-80	0	0	0	0	0	
81-90	0	0	0	0	0	
91-100	0	0	0	0	0	
Total	1	0	0	0	0	1

Source: Researcher's Field Study (2020)

Table 8 shows the age distributions and incidence of chronic prostatitis for the years 2014 to 2018. The result further revealed that only 1 respondent in the ages of 31 and 40years was found with this lesion during 2014 to 2018 indicating that, this disease is no commonly found amongst men.

Plate 7 shows Photomicrograph of Chronic Prostatitis showing machrophages in stroma with neutrophils in lumen spaces. There are many lymphocytes and lymphoid aggregates.

Table 9: Age Distributions and Incidence of Nodular Hyperplasia for years 2014-2018

Age (years)	2014	2015	2016	2017	2018	Total
31-40	1	0	0	0	0	
41-50	1	0	1	0	0	
51-60	0	4	1	4	2	
61-70	7	3	5	12	12	
71-80	8	3	1	6	7	
81-90	3	0	1	0	2	
91-100	0	0	0	1	0	
Total	20	10	9	23	23	85

Source: Researcher's Field Study (2020)

Table 9 shows the age distributions and incidence of Nodular and the next highest number of sampled respondents which were diagnosed of this lesion for the years 2014 to 2018. In 2014, 20 respondents in the ages of 31 and 90 years were found with this lesion; in 2015, 10 respondent in the ages of 51 and 80 years were found with this lesion; in 2016, 9 respondents in the ages of 41 and 90 years were diagnosed of the disease while in 2017 and 2018, 46 respondents were cumulatively found with this lesion. The result revealed that the respondents found with this lesion were of ages 31 years to 90 years indicating that, men at early age are also vulnerable to this lesion.

Plate 8 shows Photomicrograph of Nodular hyperplasia showing stronel and glandular hyperplasia. The nodular contain glandular and fibrous materials. Cells with pale cytoplasm with nuclei that lacks nucleoli

Discussion

Table 1 showed the total of 286 samples which were used for the investigation of prostate lesions for the periods 2014 to 2018 (5 years).

Tables 2, 3, 4 and 5 showed that 38 (13.3%), 17 (5.9%), 25(8.7%), and 8 (2.8%) were found with adenocarcinoma, moderately differentiated adenocarcinoma, poorly differentiated adenocarcinoma, and well differentiated adenocarcinoma respectively. Prostate adenocarcinoma is reported as a result of absence of the basal cell layer in prostate biopsy specimens along with the presence of abnormal mitosis (Briganti, Salonia, Gallina, Chun, Karakiewicz, & Graefen, 2007). Moderately differentiated adenocarcinomas are classified as Grade 2 because the cells and tissues are somewhat abnormal and are also referred to as intermediate grade tumors. Poorly differentiated adenocarcinomas are classified as Grade 5 and carry a poor prognosis. These individuals require extensive treatment, with an appropriate treatment goal being tumor control. Grade 1 tissue is well-differentiated and provides the best prognosis. Treatment for individuals with a Grade 1 tumor may result in a cure (Starnes, & Sims, 2006).

From table six, information was gathered that 92 (32.2%) of the respondents were found with benign prostatic hyperplasia, majority (68) of the respondents found with BPH were between the ages of 61 and 80 years, 6 of the respondents were between ages 81 and 90years while the remaining 20 respondents were below the ages of 61 years. This conforms to the findings made by Kryvenko et al (2012). They also found out that BPH affects most men as they get older which leads to urinary problems like those with prostatitis. They explained that BPH rarely causes symptoms before age 40, but more than half of men in their 60s and most men in their 70s and 80s will have signs of BPH. In addition, the findings showed that the prostate gland is about the size of a walnut when a man is in his 20s. By the time he is 40, it may have grown slightly larger, to the size of an apricot. By age 60, it may be the size of a lemon. The enlarged prostate

can press against the bladder and the urethra which resultantly slows down or blocks urine flow. Perdana, Mochtar, Umbas, and Hamid, (2016) also carried out a community-based study including 289 subjects to investigate trends in the BPH prostate symptoms. They also reported that the occurrence of BPH tended to elevate with increasing age and there was a tendency for the proportion of moderate or severe cases to increase with aging in men. In particular, higher proportions of moderate or severe cases were noted for items concerning the frequency of urination during the night, difficulty urinating, and urgency of urination. Thus, symptomatic men should have a digital rectal examination to assess the size and contour of the prostate.

Table 8 shows the result of the chronic prostatitis of the respondents. The respondent found with chronic prostatitis is between the ages 31-40 years. This lesion is a condition of chronic pelvic pain and it is said to be associated with significant decrease in quality of life of patients and will negatively affect daily activities of patients. Schaeffer, (2006) also revealed in his work that, this type of prostatitis is usually found in males who present with vague genital discomfort, with sexual problems and voiding symptoms.

Table 7 reveals that 9 (3.1%) of the respondents were found with benign prostatic hyperplasia with prostatitis, while table 9 indicates that 7(2.4%) were of nodular hyperplasia with prostatitis. The occurrence of BPH and prostatitis mostly depends on the age of individual as it was observed that the incidence rate of BPH increases mostly between the ages of 51-70 years which agrees with that of Clemens et al. (2007) which noted that the incident rate of BPH and prostatitis increased from 51 years till death. Furthermore, the diagnosis can be confirmed by prostate biopsy (Hampton, 2006). However, TRUS is one the useful tools for the diagnosis of BPH with prostatitis and allows for excellent visualization of the prostatic anatomy. Thus, patients diagnosed with this lesion should be given anti-tubercular therapy for at least six weeks before surgical intervention in order to prevent reactivation of a latent focus in the dense scar tissue (Alexander, Mann, Borkowski, Fernandez-Vina, Klyushnenhova, & Kodak, 2004). In the same vein, Table 9 revealed that 85(29.7%) of the respondents were found with nodular hyperplasia. It was also revealed that the respondents found with this lesion were of ages 31 to 80 years. This result is in tandem with the proposition of Weiss, Loera, and Bacchi, (2010) that the lesion may be encountered in all ages including the very elderly and particularly in children and young adults.

5.0 CONCLUSION AND RECOMMENDATION

Conclusion

The study has shown a very high prevalence rate of cancer of the prostate (30.8%) in Owo, Ondo State. This incidence is much higher than previous study in Nigeria. If the community screening is conducted, more cases of prostate cancer would be recorded.

Recommendation

The study recommended that more awareness be created among menfolk of the seriousness of prostate diseases and the importance of early diagnosis to avoid spread of the cancer and deaths. Guidelines on prostate cancer screening should be developed in the study community urologists and scientists.

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