

A Hospital Based Histopathological Assessment of Prostatic Lesions: An Observational Study

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Received: 10-4-2023 Revised: 20-05-2023 / Accepted: 25-06-2023

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Conflict of interest: Nil

Abstract

Aim: The aim of the present study was to assess the incidence, age distribution, gross and histopathological features of lesions of prostate and to classify tumours of prostate as per recommendations of WHO and to analyse cases of Adenocarcinoma of prostate according to Modified Gleason grading system.

Methods: An observational study conducted in the Department of Pathology, Nalanda Medical College and Hospital, Patna, Bihar, India for the period of one year and 100 patients were included in the study.

Results: All prostatic specimens were broadly classified into benign 85 (85%) and malignant 14 (14%). We reported 1 (1%) case of Prostatic Intra-epithelial Neoplasia (PIN). Maximum cases of BPH 35 (41.7%) were seen in the 61-70 years age group. Cases of BPH with co-existing chronic prostatitis were 7 (7%) and that with acute prostatitis were 3 (3%). Less frequent findings were BPH with basal cell hyperplasia 2 (2%) and BPH with squamous metaplasia 1 (1%). We reported 14 cases of adenocarcinoma prostate with modified Gleason Grading system. The most common score obtained was 7 in 6 cases out of the total 14 adenocarcinoma cases. The most common predominant grades observed in this study were grade 3 and grade 4.

Conclusion: Maximum number of cases of adenocarcinoma was seen in 61-70 years age group. It is necessary to study all prostate biopsies in order to identify premalignant lesions, proliferative activity and grade of inflammation. Histopathological diagnosis and grading plays a definitive role in the management of prostatic carcinoma.

Keywords: Needle core biopsy, TURP, benign prostatic hyperplasia, prostate carcinoma.

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Introduction

The prostate is a glandular and fibromuscular structure that surrounds the urinary bladder's neck in the retroperitoneum. [1] It is an exocrine gland

that contributes greatly to seminal fluid. Prostate cancer is more prevalent in India than in other Asian nations. [2] It ranks as the fourth most common cause of cancer

death in India and the fifth most common cause of cancer in males. One in every 22 Indian men will develop prostate cancer at some time in their lives, and the incidence rate is increasing by 3.5% year. [3] Age-related atrophy affects most other organs, but the prostate is particularly affected and has clinical significance. [4] In contrast to malignant lesions, which are strongly related with haematuria and intermittent stream, benign lesions often appear with frequency and nocturia. [5] The four physiologically and physically unique zones or areas of adult prostatic parenchyma are the peripheral, central, transitional, and periurethral zones.

Histologically, it comprises of double-layered secretory columnar cells and basal cuboidal cells lining glands. [6] Incontinence and micturition-related complaints are the most frequent ones made by patients. Benign prostatic hyperplasia, prostate cancer, and prostatitis are the three conditions that affect the prostate that are encountered in clinical practice the most commonly. [7] The most prevalent benign prostatic condition in males over 50, benign prostatic hyperplasia exhibits notable racial and regional differences in incidence and death. [8] In the fourth decade, the clinical incidence of this illness is only 8%, but by the fifth decade, it is 50%, and by the eighth decade, it is 75%. BPH may be linked to prostate cancer that develops in the transition zone, even if it is not a premalignant lesion for prostatic cancer (Difenbach et al., 2002). [9]

Digital rectal examination, transrectal ultrasonography, and measurement of serum prostate specific antigen (S.PSA) are all used to screen for prostatic lesions, but a biopsy is still the best method for making a definitive diagnosis. Up to 27% of prostate tumours were unintentionally discovered during TURP procedures before the PSA era. [10] To avoid a similar spike in mortality, early identification of prostate cancer is crucial. This study

includes the prevalence and occurrence of several prostatic lesions such BPH, prostatitis, and prostate cancer, as well as morphological alterations, and the grading and scoring of prostatic carcinomas using the modified Gleason scoring method.

Hence, the aim of study was to study the incidence, age distribution, gross and histopathological features of lesions of prostate and to classify tumours of prostate as per recommendations of WHO and to analyse cases of Adenocarcinoma of prostate according to Modified Gleason grading system.

Material & Methods

An observational study conducted in the Department of Pathology, Nalanda Medical College and Hospital, Patna, Bihar, India for the period of one year and 100 patients were included in the study.

Inclusion criteria

All Prostate Specimens received during study period were included in the study.

Exclusion criteria

Patients not giving consent were excluded from the study.

105 specimens were received over the course of the investigation. 5 specimens were excluded based on the above-mentioned exclusion criteria due to insufficient biopsies and poor preservation. As a result, the current investigation comprised a total of 100 prostatic specimens.

Age of patients, presenting symptoms, Digital Rectal Examination (DRE) findings, and pertinent tests such as serum PSA levels, USG, and clinical diagnosis were all taken down from the case records. The gross specimens received were of needle core biopsies and transurethral resection of prostate (TURP) chips. The received specimens were fixed in 10% neutral buffered formalin solution and routine paraffin processing followed by hematoxylin and eosin staining was done.

All the specimens were analysed according to age, medical history, histopathological pattern and final diagnosis. Thorough examination of slides was done under light microscope. Various lesions of prostate were listed, diagnosed according to various histopathological patterns and were

classified with reference to age. Following histopathologic assessment, the tumors were classified according to WHO recommendation, and histologic grading was done using modified Gleason's system.

Results

Table 1: Age wise distribution of cases

Age (years)	Benign	Malignant	PIN
41-50	10 (11.76%)	01 (7.14%)	-
51-60	25 (29.41%)	02 (14.28%)	-
61-70	35 (41.17%)	06 (42.85%)	01
71-80	10 (11.76%)	05 (35.71%)	-
81-90	05 (5.88%)	01 (7.14%)	-
Total	85 (100%)	14 (100%)	01

All prostatic specimens were broadly classified into benign 85 (85%) and malignant 14 (14%). We reported 1 (1%) case of Prostatic Intra-epithelial Neoplasia (PIN). Maximum cases of BPH 35 (41.7%) were seen in the 61-70 years age group.

Table 2: Distribution of Histopathological lesions

Histopathological pattern	Number of cases	Percentage(%)
BPH alone	65	65
BPH with acute prostatitis	3	3
BPH with chronic prostatitis	7	7
Stromal hyperplasia only	2	2
BPH with squamous metaplasia	1	1
BPH with basal cell hyperplasia	2	2
Benign prostatic tissue	5	5
Prostatic intraepithelial Neoplasia (PIN)	1	1
Adenocarcinoma of Prostate	14	14

Cases of BPH with co-existing chronic prostatitis were 7 (7%) and that with acute prostatitis were 3 (3%). Less frequent findings were BPH with basal cell hyperplasia 2 (2%) and BPH with squamous metaplasia 1 (1%). We reported 14 cases of adenocarcinoma prostate with modified Gleason Grading system.

Table 3: Distribution of cases according to Gleason's score

Gleason's score	Number of cases	Percentage (%)
6	1	7.14
7	6	42.85
8	4	28.57
9	2	14.28
10	1	7.14
Total	14	100

The most common score obtained was 7 in 6 cases out of the total 14 adenocarcinoma cases. The most common predominant grades observed in this study were grade 3 and grade 4.

Discussion

Prostate cancer is more prevalent in India than in other Asian nations. [11] Prostatic cancer's aetiology is mostly unknown,

making disease prevention difficult. This is affected by inherited traits. [12,13] Given the large variability in the incidence of clinically apparent carcinoma, it is possible that dietary and environmental variables contribute to the onset and course of the illness. [14] The term "Nodular Hyperplasia" used by Moore is more exact than the term "BPH." A nodular enlargement of the gland is caused by hyperplasia of both the glandular and stromal components. In NH, the periurethral area and transition zone epithelium and fibromuscular stroma enlarge. [15] Among the elderly, nodular hyperplasia is a relatively common disorder. The frequency of NH starts to increase significantly in the fourth decade of life and reaches a peak of almost 100% by the ninth decade. The age-specific frequency is very similar in communities all throughout the world. [16] Similar to Matapurkar et al., the age range of 61–70 years saw the highest percentage of BPH 35 cases (41.7%). [17] Similar to Sharma et al., malignant lesions were more frequently found in people between the ages of 61 and 70. [18] The majority of prostatic specimens, 85 (85%), were categorised as benign, and 14 (14%), as cancerous. One (1%) case of prostatic intraepithelial neoplasia (PIN) was reported by us. The sections displayed more stromal elements than glands or were virtually totally comprised of stromal elements while in stromal pattern. The prostatic enlargement in older men has been variably understood to indicate neoplastic development, compensatory hypertrophy, a reaction to inflammation, or arteriosclerosis before the identification of the hyperplastic character of BPH. [19] Reischauer described pure stromal hyperplasia with nodule development for the first time in 1925. [20] This discovery was supported by Deming et al. [21], who also considered the glandular component of the prostatic nodule to be a stromal stimulus for epithelial growth in nearby ducts. There were 7 (7%) cases of BPH

with concurrent chronic prostatitis and 3 (3%), cases with concurrent acute prostatitis. BPH with basal cell hyperplasia 2 (2%), and BPH with squamous metaplasia 1 (1%), were less common results.

In our analysis, 14% of the patients were adenocarcinomas. According to research by Sharma et al. [18] and Matapurkar et al., the greatest number of benign cases were recorded in the sixth decade and the greatest number of malignant cases in the seventh. 14 instances of prostate cancer with modified Gleason grading were reported. Out of the 14 adenocarcinoma cases, the most frequent score was 7, which was recorded in 6 instances. Grades 3 and 4 were the most often observed grades in this study, and grade 4 was comparable to Vollmer. [22] Ductal-acinar dysplasia has also been used to describe the condition affecting prostatic ducts and acini, which is now more commonly referred to as PIN. Even though there were originally several grades, only high-grade PIN is diagnosed.

Conclusion

We came to the conclusion that men aged 61 to 70 are more likely to have prostatic lesions. Malignant conditions are less frequent than benign ones. Adenocarcinoma of the prostate and BPH are the two most common histological forms of prostatic lesions. All prostate biopsies must be thoroughly reevaluated on a regular basis in order to spot premalignant lesions, proliferative activity, and degree of inflammation. To enhance management, efforts should be made to implement the modified Gleason's system in cases with prostate cancer. Prostatic cancer treatment heavily relies on histopathological diagnosis and grading. A high level of advancement knowledge and a team approach are now essential for effective patient treatment.

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