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Histopathological study of prostatic lesions in a medical college hospital

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Abstract
Background: Benign prostatic hyperplasia is a common condition in geriatric age group. Prostate cancer is the second most common cancer seen in men. The present study was aimed at assessing histopathological pattern of prostatic lesion.
Methods: The present study was cross sectional in nature involving 43 subjects. Clinical profile and findings of histopathological examination were noted.
Results: Majority of the cases belonged to the age group of 61-70 years. 25.6% showed malignant change. Gleason's score of 7 was seen in 45.5% of the cases with malignancy.
Conclusion: Benign prostatic hyperplasia was the most common lesion. Adenocarcinoma was the most common malignancy seen.

Keywords: Cross-sectional study, histopathology, prostatic lesions

Introduction
Location of the prostate encircling the neck of bladder and urethra leads to problems related to urinary obstruction if it is enlarged. Incidence of prostatic diseases increases with increasing age [1].

Three main pathological conditions of prostate gland are prostatitis, benign prostatic hyperplasia (BPH) and premalignant & malignant neoplasms. BPH is the most common condition among these three. It is age-related condition and it has been seen that up to 20% of men suffer from BPH by 40 years of age which increases to 70% by age of 60 to 80 years. BPH is related to bioavailability of testosterone and its metabolite, Dihydrotestosterone. Risk factors include less physical activity, obesity, diabetes and excess alcohol consumption [2].

Chronic prostatitis is often misdiagnosed as adenocarcinoma as the inflammatory infiltrate leads to distortion and atypia of the acini. The resultant glandular abnormality mimics malignant changes. On the other hand, granulomatous prostatitis needs to be distinguished from tuberculosis. The histiocytic response causes destruction of the glandular epithelium and consequent release of secretary products in the stroma [3].

Prostate cancer is still the leading cause of cancer in men. It is second only to lung cancer as a leading cause of cancer-related mortality in men. Risk factors including age, race, family history, hormone levels and environmental factors [4]. Diagnosis of adenocarcinoma depends upon architectural features, particularly when it is well differentiated. Among the grading systems, Gleason's score is currently most popular. It is based upon the architectural pattern irrespective of nuclear anaplasia. The Gleason's Score includes summation of predominant and second most prevalent grades [3]. Spectrum of prostatic lesions have been studied by many researchers [5–10]. Majority of the cases show changes consistent with features of BPH. The proportion of specimens showing malignant changes range from 12.5% to 24.3% [11]. Study of profile of histopathological changes in prostatic lesions help clinicians in anticipating the pattern of disease in a particular area. As studies regarding this are very limited in this area, the present study was conducted.

Aims & objectives: The present study was done to assess the histopathological spectrum of resected prostatic specimen at a medical college hospital.

Material and methods
- **Study design:** The present study was cross sectional in nature.

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- **Study place:** The present study was conducted at the department of Pathology, Mata Gujari Memorial Medical College and Lions Seva Kendra Hospital, Kishanganj.

- **Period of study:** The present study was conducted between March 2018 to October 2019.

- **Study population:** The study population included adult patients who underwent TURP or prostatic biopsy whose specimen was sent to the department of Pathology of the institute.
  - **Inclusion criteria:** The patients above 40 years of age who underwent TURP or prostatic biopsy and were referred for histopathological examination were included in the present study.
  - **Exclusion criteria:** Inability to get consent or inadequate specimen.

- **Sampling technique:** All the prostatic specimen received in the department of Pathology for histopathological examination were included. A total of 43 specimen were studied.

- **Study tools:** Predesigned proforma was used for data collection. Information regarding details of patients, their clinical findings and report of histopathological examination were noted.

- **Data collection procedure:** The study subjects were recruited from the pathology department of the institute. Details of the patients including demographic and clinical history and other factors were noted. All the received specimens were examined macroscopically. In case of TURP specimen, entire tissue was processed if the quantity received was <12 cc. Additional blocks were prepared for every additional 5 cc of tissue received if the volume exceeded 12 cc. In the case of needle biopsies, the entire tissue was processed. The tissue was fixed using 10% formalin and processed by paraffin embedding. It was stained with haematoxylin and eosin. Tissue sections were cut and histopathological examination was done. The grading system for prostatic adenocarcinoma devised by Gleason was used. The primary and secondary patterns were combined to give a Gleason score.

- **Data analysis:** Data was entered in Microsoft Excel 2010 and analysed using Statistical Package for Social Sciences (SPSS) v 22.0. Data were summarized in terms of mean & SD or frequency & percentage as appropriate. For hypothesis testing, p-value <0.05 was considered to be statistically significant.

- **Ethical consideration & permission:** Permission was obtained from Institutional Ethics Committee and informed consent was taken from all the study subjects.

Results
A total of 43 cases were included in the present study. Majority of the cases belonged to the age group of 61-70 years (Table-1).

Table 1: showing age distribution

Age group (in years)	Benign	Malignant
41-50	2	0
51-60	8	1
61-70	14	5
71-80	8	4
>80	0	1
Total	32	11

Table-2 shows the histopathological spectrum. 74.4% of the cases showed benign changes while 25.6% had malignant change. BPH with chronic inflammation was the most common finding in 72.1% cases. 2.3% cases showed granulomatous change in BPH. Acinar adenocarcinoma was the most common malignant change seen in 23.3% of the cases while ductal carcinoma was not seen.

Table 2: showing findings of histopathological examination

Histopathological diagnosis	Frequency	%
BPH with chronic inflammation (includes cases with basal cell hyperplasia and squamous metaplasia)	31	72.1
BPH with granulomatous prostatitis	1	2.3
BPH with high grade PIN	1	2.3
Acinar adenocarcinoma	10	23.3
Ductal adenocarcinoma	0	0
Total	43	100

Table-3 shows Gleason score in 11 cases of prostatic carcinoma. A score of 7 was seen in 45.5% cases.

Table 3: showing Gleason score in cases with malignant changes

Gleason's score	Frequency	%
<6	0	0
6	2	18.2
7	5	45.5
8	2	18.2
9	2	18.2
10	0	0
Total	11	100

Discussion
Prostatic diseases are associated with geriatric age group and leads to significant morbidity [12]. Benign prostatic hyperplasia (BPH) account for most of the cases followed by prostatic adenocarcinoma. Prostatic carcinoma is the second most common cancer in men, next to lung cancer.[13]
A total of 43 patients were selected for the present study to assess the histopathological spectrum. Majority of the cases belonged to the age group of 61-70 years. 74.4% of the cases showed benign changes while 25.6% had malignant change (Figure-2). BPH with chronic inflammation was seen in 72.1% cases while granulomatous change was seen in 2.3% cases of BPH. Acinar adenocarcinoma was seen in 23.3% of the cases while ductal carcinoma was not seen. Gleason's score of 7 was seen in 45.5% cases.
Sabalpara *et al*. in their study conducted in Ahmedabad found that 71.79% of prostatic lesions were benign and 28.21% were malignant. Peak incidence was noted in 7th decade for both benign and malignant lesions. 82% patients were presented with obstructive urinary tract symptoms. All

benign lesions were benign prostatic hyperplasia (BPH). Out of cases of prostatic adenocarcinomas, 97.7% were of acinar type; whereas one case was of prostatic ductal adenocarcinoma. Majority of cases with malignant lesions had S.PSA level >10 ng/ml. Gleason score 7 was observed in 45.45% of all malignant lesions [1].

Sinha *et al*. conducted study in Hyderabad and observed that the mean age was 67.6 years. Inflammatory pathology was common at all PSA levels. In men with negative DRE and PSA > 10 ng/ml, inflammatory pathology was more likely (p = 0.039). Cancer was found in 24.4% biopsies. Patients with PSA > 20 ng/ml were more likely to show cancer. Precursor lesions were noted in (8.4%). On multiple logistic regression analysis, only PSA (OR 1.03, P = 0.0021) and DRE (OR 8.07, P = 0.0007) were predictive of cancer [14].

Puttaswamy *et al*. in their study done in Bengaluru reported that most of the cases (87%) were in the range of 50-80 years of age at the time of biopsy for symptomatic obstructive uropathy. Among benign cases, majority belonged to the age group of 51-80 years with a mean of 66.1 years and of the premalignant/malignant cases, most were in the 71-80 years age group range with a mean age of 76.8 years. The majority of the biopsies (88.7%) were TURP specimens while needle core biopsies constituted only 11.3%. biopsies. The most common pathology encountered was benign lesions constituting 80.6%. Premalignant and malignant lesions constituted 19.4%

cases. In the TURP specimens, majority were benign lesions, while 9.1% biopsies displayed high -grade prostatic intraepithelial neoplasia (HGPIN) or prostatic malignancy. In the needle biopsies, all cases showed a premalignant or malignant lesion. All the malignant cases were found to be high-grade on histology. One case of adenocarcinoma showed neuroendocrine differentiation [11].

Paul *et al*. found in Jharkhand that the youngest patient was 32 years while the oldest patient was 99 years. Most prostatic lesions occur in the age group 60-69 years and 70-79 years (38.8% & 35.6% respectively) whereas least lesion occurs in the age group 30-39 years and >/= 90 years (1.3% each). Most common prostatic lesion was nodular hyperplasia (63.2%). Other lesions were prostatic carcinoma 28.9%, PIN 1.3% and inadequate specimens 6.6%. Gleason Score (GS) 7 was the most common score and was seen in 31.3% of prostatic carcinoma cases while 18.8% of prostatic carcinoma cases had GS 8 and 15.6% had GS 6. The least score recorded was GS 3. Well differentiated cases (GS 2-4) were 9.4%, Moderately differentiated cases (GS 5-7) were 56.3% while poorly differentiated cases (GS 8-10) were 34.3% [2].

It is seen that the histopathological findings in the present study are similar to observations of other researchers. The age group involved was above 50 years. BPH was the most common lesion seen. Malignancy was seen in 28.8 % cases, the most common type being acinar type.
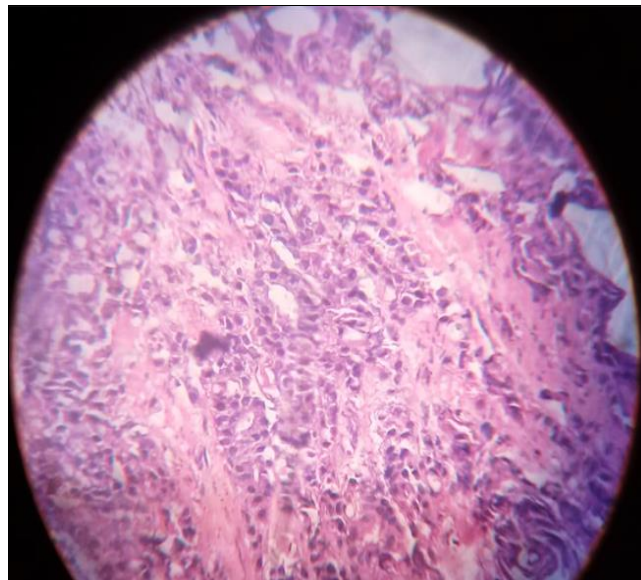

Fig 1: showing adenocarcinoma of prostate gland

Conclusion

In the present study, benign prostatic hyperplasia was found to be the commonest lesion. Most of the cases were associated with chronic inflammation. Adenocarcinoma of acinar type was the most common malignancy seen. Histopathological examination helps in the diagnosis of prostatic lesions as well as in detection of various morphological parameters like Gleason score, perineural invasion, periprostatic invasion and association with high grade PIN.

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