

To Study the Histopathological Spectrum of Benign, Premalignant and Malignant Lesions of Prostatic Specimen Received in a Tertiary Care Center

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Abstract

Background: Worldwide Prostate gland diseases were responsible for significant morbidity and mortality among adult males. Data available on prostate cancer showed significant difference in incidence, precipitating factors and disease characteristics of prostate cancer in India.¹⁰ Thus, present study was conducted as an effort to assess histopathological spectrum of benign, premalignant and malignant lesions of prostatic specimen received in the Department of Pathology in Gwalior region through a hospital-based study.

Materials and Methods: This study was conducted in Department of Pathology, Gajra Raja Medical College and J.A. Group of hospitals, Gwalior (M.P.) from 1st January 2016 to 31st August 2017. Histopathological examination of all prostate samples received during this period was done after H & E staining.

Results: Total BPH cases were 89, 80.2% of all cases. 56 cases (50.4%) were associated with prostatitis while 33 cases (29.7%) were without prostatitis. Chronic prostatitis associated with BPH in 55 cases (49.5%) while in 1 case of BPH (0.9%) is associated with Granulomatous Prostatitis. There were 2 cases of Chronic prostatitis, comprising 1.8% of all prostatic cases. Premalignant lesions were 3 cases of Prostatic Intraepithelial Neoplasia, 2.7% of all cases. All malignant lesions were Adenocarcinoma of prostate, total 17 cases were found, comprising 15.3% of all prostatic lesions.

Conclusion: Histopathology is an important tool to diagnose prostate lesions. Though predominant lesion is benign, sometimes carcinoma of prostate is incidental and in lower

histological grade should be combined with immunohistochemistry for more definitive diagnosis.

Keywords: Prostate, Neoplasm, BPH, Prostatitis, Histopathology

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Introduction

Worldwide Prostate gland diseases were responsible for significant morbidity and mortality among adult males". "The most frequently encountered prostatic diseases in clinical practice were Benign Prostatic Hyperplasia, prostate cancer and prostatitis [1,2].

Benign prostatic hypertrophy is the usual name for common benign disorder of the prostate, that when extensive, results in varying degrees of urinary obstruction, is the most common urological problem of ageing men. "The term nodular hyperplasia, as proposed by Moore is a more exact designation [3].

"Prostatitis is of lesser clinical significance than BPH and prostate cancer" "Chronic prostatitis is more common than acute prostatitis. It is difficult to completely treat chronic prostatitis [5].

Data from national cancer registries shows that incidence of certain cancers were on rise in India. "The cancers which were showing significant increase in incidence rates include prostate, mouth and kidney among male population [6]. Prostate cancer is the second most common cause of cancer and the sixth leading cause of cancer death among men worldwide. "In India, it constitutes about 5% of all male cancers [8]. "Histologically most lesions of prostate cancer were adenocarcinomas [4]. In approximately 80% of cases, "prostatic tissue removed for carcinoma also harbours presumptive precursor lesions, referred to as high-grade prostatic intraepithelial neoplasia (PIN)" [8].

"Combination of digital rectal examination, transrectal ultrasonogram and needle biopsy can prove to be powerful tool in the routine diagnosis of benign and malignant lesions of prostate." [9] "Grading is of particular importance in prostatic cancer, because grade and stage were the best prognostic predictors. Prostatic cancer is graded using the Gleason system on basis of glandular pattern of differentiation" [8].

"Data available on prostate cancer showed significant difference in incidence, precipitating factors and disease characteristics of prostate cancer in India." Thus, present study was conducted as an effort to assess histopathological spectrum of benign, premalignant and malignant lesions of prostatic specimen received in the Department of Pathology in Gwalior region through a hospital-based study.

Material and Methods

Prostatic specimens that received over a period from (January 2016 – August 2017) in the Department of Pathology, Gajra Raja Medical College and J.A. Group of Hospitals, Gwalior (M.P.) were included in the study. The prostatic specimens include transurethral resection of prostate chips, prostatectomy specimen and needle biopsy samples. Purpose of removal of the specimen and type of specimen had been mentioned. Patient's particulars were noted including name, father's name, age, address and contact number (if any). Thorough examination of case sheet and requisition form were done to get information. Specimen identification, Gross Examination, Manual tissue processing,

Sectioning, H & E Regressive Staining and Reporting was done according to standard protocol.

All the cases of prostate specimen received in Department of Pathology, Gajra Raja Medical College and J.A. Group of Hospitals, Gwalior (M.P.) during the study period, well preserved with proper labeling and documentation were included.

All Prostate specimens which were without proper documentation., Autolyzed specimen, Cases which cannot be categorized in benign and malignant lesions and with inadequate sample and Known cases of Carcinoma Prostate, but sample submitted for histopathological examination was not prostate were excluded from the study.

For Statistical analysis, Data were compared by odds ratio using Epi info software version 7. Control group includes patients of different diseases whose samples were submitted for histopathological examination in our Department of Pathology and were of age \geq 40 years of age.

Results

It was found in this study that total number of cases of prostate lesions were 111. Benign lesions were the commonest.

91 specimens were benign comprising 82% of all prostatic lesions. Malignant lesions were 15.3% (17 specimens) of all prostatic cases while 3 specimens were pre-malignant, 2.7% of all prostatic lesions. Incidental carcinoma is seen in 7 specimens.

Benign lesions were Benign Prostatic Hyperplasia (BPH) with or without prostatitis, and Chronic prostatitis. As shown in Table 1, Total BPH cases were 89, 80.2% of all cases. 56 cases (50.4%) were associated with prostatitis while 33 cases (29.7%) were without prostatitis. Chronic prostatitis associated with BPH in 55 cases (49.5%) while in 1 case of BPH (0.9%) is associated with Granulomatous Prostatitis. There were 2 cases of Chronic prostatitis, comprising 1.8% of all prostatic cases. Pre-malignant lesions were 3 cases of Prostatic Intraepithelial Neoplasia, 2.7% of all cases. All malignant lesions were Adenocarcinoma of prostate. Total 17 cases were found, comprising 15.3% of all prostatic lesions.

Table 1: Distribution of various prostatic lesions on the basis of histopathology

S. No.	Lesion	No. of Cases	% of Cases
1	BPH	33	29.7
2	BPH with Chronic Prostatitis	55	49.5
3	BPH with Granulomatous Prostatitis	01	0.9
4	Chronic Prostatitis	02	1.8
5	Prostatic Intraepithelial Neoplasia	03	2.7
6	Prostate Adenocarcinoma	17	15.3
	Total Cases	111	100

Table 02 shows nature of prostatic specimen received, which includes prostatectomy specimen, transurethral resection of prostate and needle biopsy specimen. Out of total 111 prostatic samples, 55 (49.5%) were prostatectomy samples, 48 samples (43.2%) were chips of transurethral resection of prostate while 08 (7.2%) prostatic samples were transrectal ultrasound guided biopsy. 94.5% of prostatectomy samples (52) show BPH on histopathology (Fig 1), of which 30 cases (54.5% of prostatectomy samples) were associated with prostatitis. 1.8% (1) and 3.6% (2) samples were PIN and Adenocarcinoma of prostate respectively.

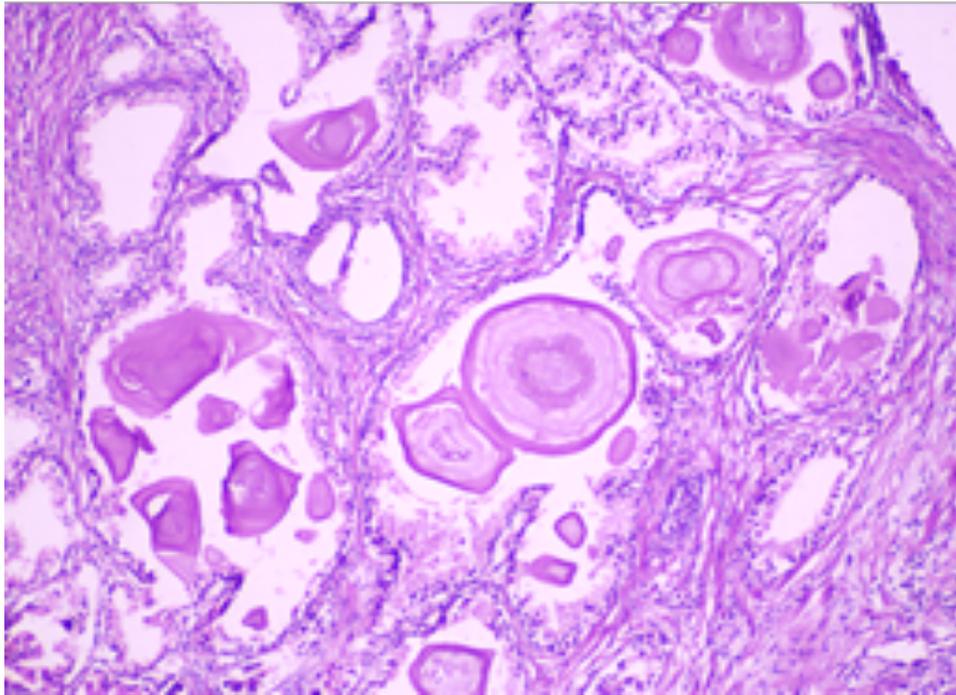


Figure 1: Benign Prostatic Hyperplasia (H & E stain, 100x)

52.1% of TURP specimens (22 cases) show BPH with prostatitis. 22.9% (11), 4.2% (2), 4.2% (2) and 16.7% (8) of TURP samples were BPH, Chronic prostatitis, PIN and Adenocarcinoma prostate (Fig 2) respectively. 87.5% (7 cases) of TRUS prostatic biopsy samples show adenocarcinoma of prostate while 12.5% (1 case) shows BPH with prostatitis.

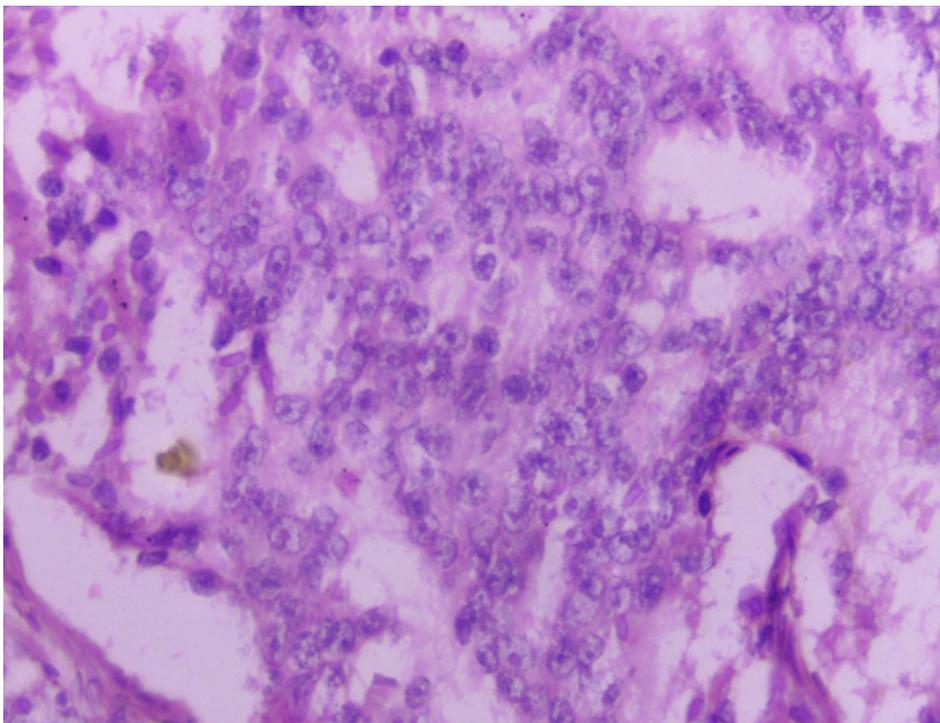


Figure 2: Adenocarcinoma of Prostate, (H & E stain, 400x)

Table 2: Distribution of Prostatic lesions on the basis of nature of specimen

S. No.	Lesions	Prostatectomy No. (%)	TURP No. (%)	Biopsy No. (%)
1	BPH	22 (40.0%)	11 (22.9%)	00
2	BPH with Prostatitis	30 (54.5%)	25 (52.1%)	01(12.5%)
3	Chronic Prostatitis	00	02 (4.2%)	00
4	PIN	01 (1.8%)	02(4.2%)	00
5	Adenocarcinoma of Prostate	02 (3.6%)	08 (16.7%)	07 (87.5%)
	Total Cases	55 (49.5%)	48 (43.2%)	08 (7.2%)

Discussion

Lesions of prostate significantly affects the quality of life. Estimation of problem statement is necessary to improve health care facilities. Present prospective hospital-based study conducted in Department of Pathology, Gajra Raja Medical College, Gwalior (M.P.) is an effort to define the spectrum of benign and malignant lesions of prostate in the Gwalior region.

The analysis of our observations revealed features which were mostly in keeping with the accepted ideas. The realms of accepted features were discussed, and our findings were compared with them, with possible explanation offered for those not following the trends.

Histopathological Spectrum

Total 111 cases were included in the study. Samples comprising 55 (49.5%) prostatectomy specimens, 48 (43.2%) transurethral resection of prostate specimens and 8 (7.2%) transrectal ultrasound guided biopsy specimens. Prostate lesions were diagnosed on the basis of histopathology into benign hyperplasia of prostate associated with or without prostatitis, chronic prostatitis,

prostatic intraepithelial neoplasia (PIN) and adenocarcinoma of prostate.

Benign lesions were the most common comprising 82% (91 samples) of all prostatic lesions. Benign Prostatic Hyperplasia (80.2% of all prostatic lesions- 89 samples) with or without prostatitis is the most common benign lesion while chronic prostatitis is seen in 1.8% (2) specimens. 56 cases (50.4%) of BPH were associated with prostatitis while 33 cases (29.7%) were without prostatitis. Chronic prostatitis associated with BPH in 55 cases (49.5%) while in 1 case of BPH (0.9%) is associated with granulomatous prostatitis.

Malignant lesions were 15.3% (17 samples) and pre-malignant lesions were 2.7% (3 samples) of all prostatic lesions. It was difficult to give definitive diagnosis in 2 cases of PIN (66.7% of all PIN lesions).

Histopathological spectrum of prostatic lesions in our study were comparable with study conducted by Mohammed AZ *et al.*[4], Akhter R *et al.*, Joshee A *et al.*[12], Kumar M *et al.*[13], Sharma A *et al.*[2], as mentioned in table no. 03.

Table 3: Comparison of Histopathological spectrum of prostatic lesions of various studies

Study	BPH	PIN	Carcinoma
Mohammed AZ <i>et al.</i> [4]	75.4%	-	24.6%
Akhter R <i>et al.</i> [11]	64.9%	6.6%	15%
Joshee A <i>et al.</i> [12]	61%	7%	25%
Kumar M <i>et al.</i> [13]	87.3%	2.1%	10.6%
Sharma A <i>et al.</i> [2]	91.02%	5.71%	3.26%
Present study	80.2%	2.7%	15.3%

Granulomatous prostatitis associated with BPH is seen in 0.9% of samples (1 case) in our study while Sharma A *et al.* [2] (2017) found it in 3.7% (3 cases) of samples.

Samples of BPH associated with prostatitis is more than BPH without prostatitis in our study as compared to other studies. Joshee A *et al* [12] (2015) states that chronic prostatitis is most commonly observed in nodular hyperplasia, it is important to distinguish the true infectious processes of prostate from inconsequential mononuclear infiltrates often seen accompanying nodular hyperplasia.

Incidental carcinoma is seen in 7 cases (6.3% of all samples) in our study while it was found in 2 cases (4% of all samples) in study conducted by Begum Z *et al.* [7] (2015) and 5.5% in study conducted by Silverio FD *et al.*[14] (2003). Good health care facilities, clinical judgement and increase public awareness can lead to early detection and decrease incidental detection. All malignant lesions in our study were adenocarcinoma of prostate on histopathological basis similar to study conducted by Begum Z *et al.*[7] (2015).

Puttaswamy K *et al.*[15] (2016) in their study with 62 samples, found 90.9% benign lesions and 9.1% pre-malignant and malignant lesions in TURP specimens (55 samples) while 100% of needle biopsy cases (7 samples) were malignant or pre-malignant which is comparable to our study, showing 79.1% benign lesions and 20.9% pre-malignant and malignant lesions in TURP specimens (48 samples) while 87.2% samples as malignant or pre-malignant while 12.5% samples as benign lesion in needle biopsy specimens (8 samples). Small sample size can be the reason for the minor variation.

Conclusion

Histopathology is an important tool to diagnose prostate lesions. Most common prostate lesion is benign prostatic hyperplasia and Adenocarcinoma is most common malignant prostate lesion. It is difficult to

definitively diagnose prostatic intraepithelial neoplasia solely on the histopathological basis. Though predominant lesion is benign, sometimes carcinoma of prostate is incidental and in lower histological grade should be combined with immunohistochemistry for more definitive diagnosis.

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