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Original research article

Histopathological spectrum of various prostatic lesions in TURP specimens: A retrospective study

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Abstract

Background: Benign prostatic hyperplasia (BPH) and prostatic cancer are a significant source of morbidity and mortality among adult males. The other prostatic lesions include inflammatory condition and in situ lesions. TURP is necessary to identify these lesions and specifically for prostatic cancer.

Objectives: To evaluate the histomorphological spectrum of various prostatic lesions in TURP specimens.

Materials and Methods: Total of 85 TURP specimens received during period of two years, April 2018 to March 2020 were studied. Cases were studied with regard to complete history, clinical examination and histopathological findings. Diagnostic criteria was adapted from guidelines laid down by World Health Organization (WHO).

Results: A total of 85 prostate TURP specimens were studied over a 2-year period which included 81 cases of benign lesions (95.2%) and 4 cases of malignant lesions (4.8%). Among the benign lesions Benign prostatic hyperplasia (BPH) 54, BPH with prostatitis 24 and granulomatous prostatitis 2, 4 cases of malignant lesions.

Conclusion: TURP plays a significant role in the diagnosis of prostatic lesions. The benign lesions are more common the malignant ones. The modified Gleason score is applied for prostatic cancer, which is simple and accurate to grade these malignancies.

Keywords: Benign prostatic hyperplasia, prostatic intraepithelial neoplasia, prostatic cancer, rural hospital

Introduction

Benign prostatic hyperplasia (BPH) followed by prostatic adenocarcinoma account for most of the cases of prostatic disease. With prostate carcinoma being the second most common diagnosed cancer in men, a systematic investigation of an adult male with prostatic hyperplasia becomes very important [1].

Various prostatic lesions present with same clinical features, diagnosis is essential as their management and prognosis is quite different [2]. Prostatic cancer constitutes about 5% of all malignancy in males [3, 4]. Transurethral resection of prostate (TURP) is most frequently performed surgical procedure in the clinical practice and it aids in early identification of premalignant lesions and incidental prostate cancer which can improve the treatment outcome of patients [5].

Histopathological evaluation plays a major role in the diagnosis and management of prostate lesions as both benign and malignant lesions present with similar clinical presentation. Thus, prostatic specimens have become a significant workload for a pathologist and trans urethral resection prostate (TURP) specimens and prostatic biopsies often pose a diagnostic challenge for the practicing pathologists. The present study was taken to evaluate various histopathological lesions of prostate and to classify the patients with prostatic adenocarcinoma into new prognostic grade group (PGG) and revised Gleason score.

Aims

1. To evaluate the histopathological spectrum of various prostatic lesions in TURP specimens.
2. To grade prostatic tumours according to microscopic grading system.

Materials and Methods

Cases of transurethral resection of prostate (TURP) with histological diagnosis received during period of

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one year April 2018 to March 2019 were studied in histopathology lab, Department of Pathology at private medical college in Bengaluru Rural. Hospital based, retrospective study was carried out. Ethical clearance was obtained from the institutional ethical review board to conduct the study.

The specimens were fixed immediately in 10% formalin for 24 hours. Gross features of specimens were noted. Transurethral resection specimens that weigh 12 g or less were submitted in their entirety, usually in 6 to 8 cassettes.

Specimens that weighed more than 12g, the initial 12g are submitted (6-8 cassettes) and 1 cassette submitted for every additional 5g of remaining tissue. In general, random chips were submitted; however, some chips which were firmer or have a yellow or orange-yellow appearance, were submitted preferentially as per College of American Pathologists (CAP) guidelines.

The blocks were sliced into 3-5micron thickness using standard microtome and the sections were further stained with hematoxylin and eosin stain. Sections were examined under light microscopy.

Diagnostic criteria followed for diagnosing benign prostatic hyperplasia (BPH) included glandular and stromal hyperplasia. glandular component is made up of nodules of small and large acini lined by basal and secretory cells, the stromal component often shows both fibrous and smooth muscle elements. prostatitis, prostatic intraepithelial neoplasia (PIN) and adenocarcinoma were adapted from guidelines laid down by World Health Organization (WHO).

For carcinoma of the prostate, considering the glandular differentiation and growth pattern of tumor cells in relation to stroma, a new grading system in conjunction with the Gleason system was applied. Gleason's score is obtained by the sum of predominant tumour pattern with next common pattern. This new grading system has been accepted by the World Health Organization (WHO) for the 2016 edition of Pathology and Genetics, Tumours of the Urinary System and Male Genital Organs.

Prostate adenocarcinoma was assigned one of the four grades: Grade Group 1 (Gleason score $\leq$6), only individual discrete well-formed glands. Grade Group 2 (Gleason score 3+4=7), predominantly well-formed glands with a lesser component of poorly-formed/fused/cribriform glands. Grade Group 3 (Gleason score 4+3=7), predominantly poorly formed/fused/ cribriform glands with a lesser component of well-formed glands. Grade Group 4 (Gleason score 8), only poorly-formed/ fused/cribriform glands or predominantly well-formed glands with a lesser component lacking glands or predominantly lacking glands with a lesser component of well-formed glands. Grade Group 5 (Gleason scores 9-10), lacks gland formation (or with necrosis) with or without poorly-formed/fused/cribriform glands.

Results

85 specimens of TURP were received for histopathological examination.

All prostatic specimens were broadly classified into Benign 81(95%) and Malignant 4(5%) lesions.

Most of the cases (87%) in the present study were in the range of 50-80 years of age with mean age of 68.3yrs. The youngest case studied was 39yr old while the oldest was 92yr old. Among 81 benign cases, majority belonged to the age group of 51-80years with a mean age of 67.8yrs and of the 4 malignant lesions most were in 61-100yrs with a mean age of 68.2yrs. (Table 1)

Table 1: Age wise distribution

Age	Benign	Malignant	Total
31-40	1		1
41-50	5	-	5
51-60	15	-	15
61-70	29	1	30
71-80	27	2	29
81-90	4	-	4
91-100	-	1	1
	81	4	85

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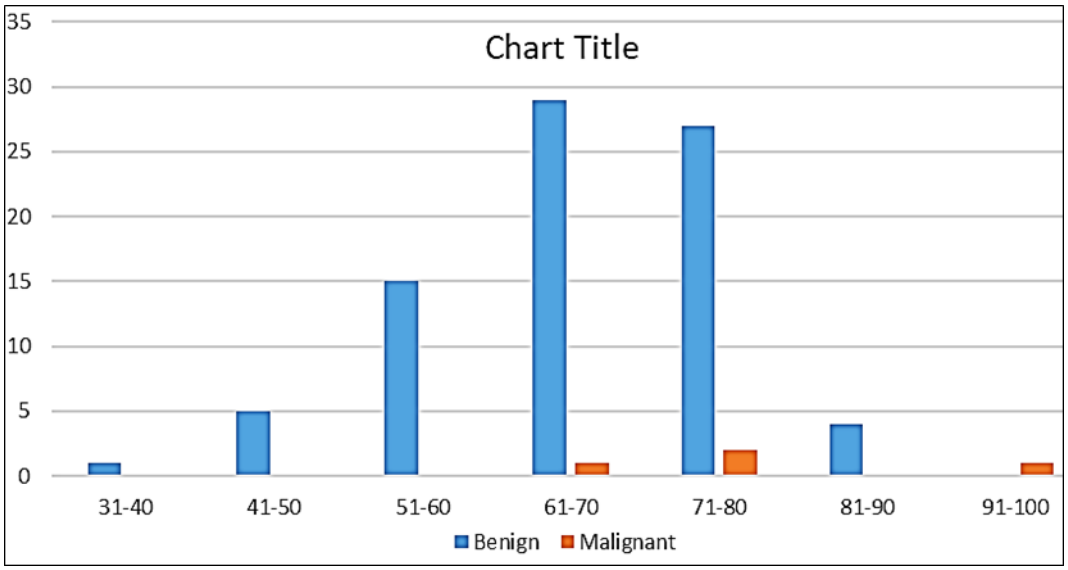
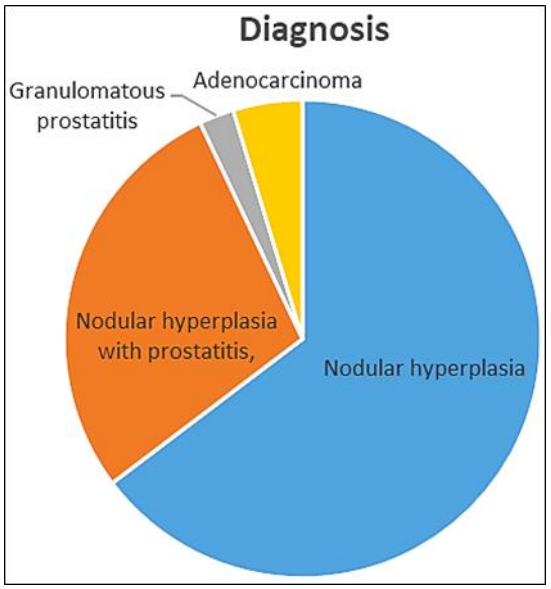


Among the benign lesion's nodular hyperplasia 55 (64.7%) nodular hyperplasia with prostatitis 24(28.2%), granulomatous prostatitis 2 (2.3%) were diagnosed. Prostatic adenocarcinoma was diagnosed in four cases 4(4.7%). (Table 2)

Table 2: Diagnosis

Diagnosis	Number
Nodular hyperplasia	55
Nodular hyperplasia with prostatitis	24
Granulomatous prostatitis	2
Adenocarcinoma	4



BPH was microscopically characterized by proliferation of glandular and fibromuscular component, these glands were lined by two layer of cells comprising of inner columnar and outer cuboidal to flattened epithelium. Corpora amylacea, basal cell hyperplasia, Von Brunn nests, metaplasia, cystically dilated glands and epithelial hyperplasia were also seen. One case of BPH with focal PIN-1 was encountered. The diagnosis of prostatic intraepithelial neoplasia (PIN) is made when microscopically benign prostatic acini or ducts are lined by cytologically atypical cells showing stratification and slight nuclear enlargement. (Table 3)

Table 3: Glandular findings

Glandular findings	31-40	41-50	51-60	61-70	71-80	81-90	Total
Corpora amylacea		1	2	8	7	2	20(23.5%)
Basal cell hyperplasia				3	1		4(4.7%)
Von Brunn nests		1		7	2		10(11.7%)

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Metaplasia-squamous				5	7		12(14.1%)
Cystically dilated glands		3	15	23	19	3	63(74%)
Epithelial hyperplasia	1						1(1.1%)
Foci of PIN				1			1(1.1%)

Table 4: Stromal findings

Stromal findings	31-40	41-50	51-60	61-70	71-80	81-90	90-100	Total
Hyperplasia	-	1	1	2	1	1	-	7(8.2%)
Granuloma	-	-	-	1	-	-	-	1(1.1%)
Chronic inflammation	-	-	-	24	-	-	-	24(28.2%)
Acute inflammation	-	-	1	-	-	-	-	1(1.1%)
Myxoid change	-	-	0	4	4	-	-	8(9.4%)
Tumor cells	-	-	-	-	1	-	-	1(1.1%)
Suppurative foci	-	-	-	-	1	-	-	1(1.1%)
Congested blood vessels	-	-	1	-	5	-	-	6(7%)

24 cases of nodular hyperplasia with prostatitis showed moderate to severe lymphocytic infiltrate which included formation of aggregates. (Table 4)

4 cases of prostatic adenocarcinoma were identified in the present study all of them exhibited different growth patterns and were classified according to predominant growth pattern and were graded using new prognostic grade group (PGG) and revised Gleason score. Out of 4 cases, 2 cases had gleason score of 9 (grade group V), one had gleason score of 4+3=7 (grade group III) and one of score 6(grade group I). (Table 5).

Table 5: Gleason score

Number of cases	Gleason score	Grade group
2	5+4=9	V
1	3+3-6	I
1	4+3=7	III

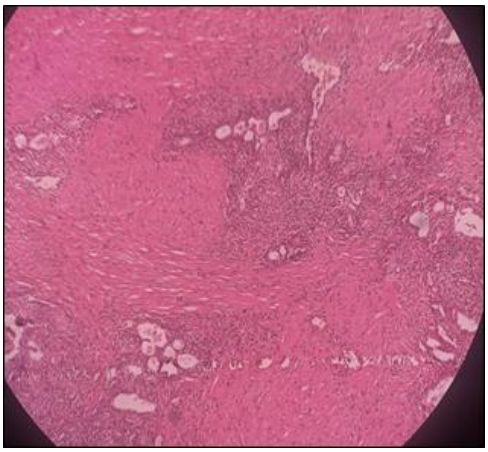

Fig 1: Photomicrograph showing densely inflamed prostatic tissue with lymphocytes. (100X H & E Stain). Chronic Prostatitis

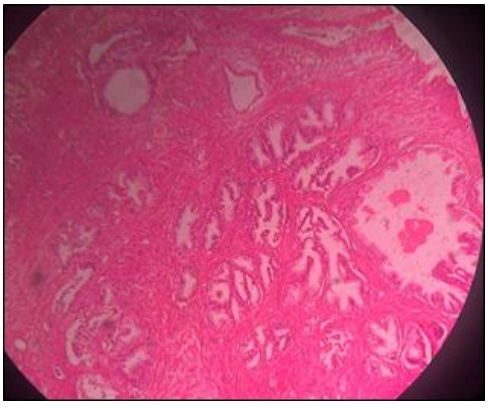

Fig 2: Photomicrograph showing proliferation of cystically dilated gland and stromal proliferation. (100X H & E) Benign Prostatic Hyperplasia

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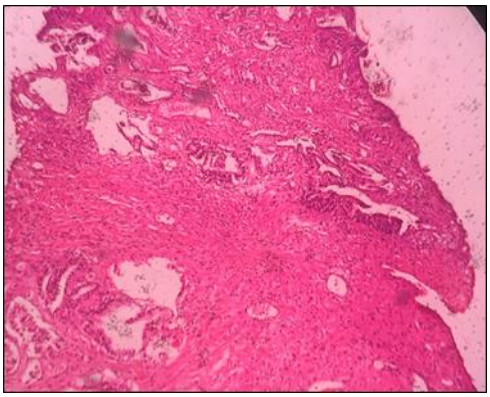

Fig 3: Photomicrograph of Low grade prostatic intraepithelial neoplasia., H &E(100x)

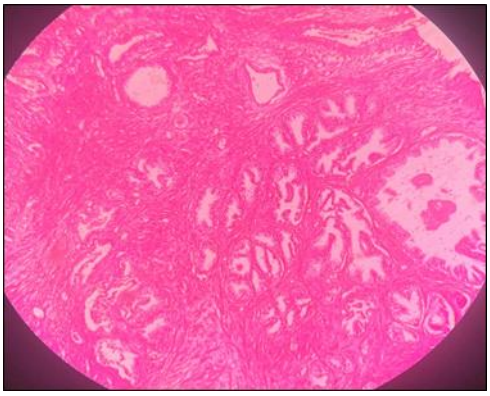

Fig 4: Benign prostatic hyperplasia showing hyperplastic glandular and stromal components H &E(100x)

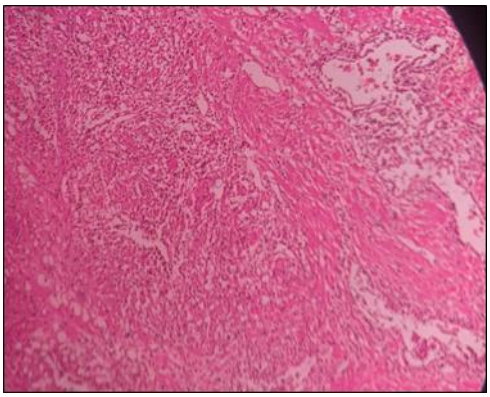

Fig 5: Photomicrograph of Granulomatous prostatitis, H&E, 100X

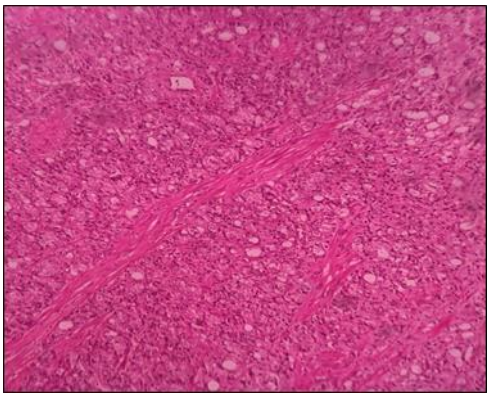

Fig 6: Photomicrograph of Prostatic adenocarcinoma, gleason score, 5+4=9, Grade V. H&E, 100X

Discussion

A retrospective study of 100 cases of prostate biopsy were done, results were noted and comparison with other studies were undertaken as follows:

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Age

In present study, age group affected with prostatic pathology was 39-92 years. Maximum cases of benign prostatic hyperplasia (BPH) (72) were seen in the 51-80 years age group similar to Yadav *et al.* [6]. Malignant lesions encountered predominantly in age group 61-92 years that are similar to Sharma *et al.* [5].

Benign and Malignant

In our study, the most common prostatic lesion was BPH accounting for 95% of the cases studied which is similar to various other studies [7, 8, 9].

Cystically dilated glands were seen in correlation with Hamper *et al.* [10].

In present study Benign prostatic hyperplasia (BPH) with co-existing chronic prostatitis in 24(28.2%) cases was observed. Chronic prostatitis is most commonly observed in benign prostatic hyperplasia (BPH)which was also observed by Joshee A *et al*. in their study [11].

In present study granulomatous prostatitis (1.1%) was observed. The incidence of non-specific granulomatous prostatitis of 0.5% was observed in other study [12].

In present study benign prostatic hyperplasia (BPH)with basal cell hyperplasia 4(4.7%) was observed.

Types of metaplasia

Squamous metaplasia can be seen at the periphery of infarcts, after TUR, as a result of hormonal manipulation, or sometimes with no obvious predisposing cause. In the present study benign prostatic hyperplasia (BPH) with squamous metaplasia in 12(14.1%) cases was observed which parallels with the incidence of prostatitis.

Mittal *et al.* [13] and Garg *et al.* [14] have reported a much lesser incidence of 3.24% and 0.82% of metaplasia with a corresponding lower incidence of prostatitis, suggesting a role of inflammation in the etiology of metaplasia.

In the 24 cases with BPH, a common finding identified in our study (28.2%) was the finding of isolated predominantly stromal fragments with chronic inflammation.

PIN

Foci of PIN being a precursor of invasive prostatic carcinoma was noted in one case.

Carcinoma prostate

Adenocarcinoma was seen most common in 7th decade individuals, this incidence is higher in the present study compared to other studies [5, 6, 11].

Prostatic adenocarcinoma is graded according to Modified Gleason's score (GS) and PGG, Grade Grouping V was most common in the present study.

Conclusion

Prostatic lesions like BPH and tumours constitute a significant source of morbidity and mortality among adult males. The incidence of prostatic diseases increases with age. BPH was commonest benign prostatic lesion and adenocarcinoma was the commonest histological subtype of prostatic cancer. Histopathological examination is mandatory to detect malignancy. Increased awareness of prostatic malignancy with advancing age and timely mass screening of prostatic lesion is recommended for early detection and to reduce mortality.

Diseases of prostate gland are important source of morbidity and mortality in male patients. The spectrum of diseases consists of inflammatory conditions, nodular hyperplasia, malignancy etc. The risk of disease increases with age.

Benign lesions are more common than malignant lesions. Among the histological patterns of prostatic lesions, BPH is predominant type. It is necessary to study all prostate biopsies (TURP and needle core) in order to identify pre-malignant lesions, proliferative activity and grade of inflammation. Histopathological diagnosis and grading plays a definitive role in the management of prostatic cancer.

Since various studies like ours are hospital based and not population-based study, it may not be an accurate indication of true incidence of prostatic carcinoma on the society at large.

In the present study, the non-neoplastic lesions of prostate were more common than neoplastic ones. Prognostic grade group should be applied for prostatic carcinoma which is simple and more accurate grade stratification than modified Gleason Score.

To conclude, TURP chips should be examined thoroughly to rule out premalignant lesion and incidental carcinoma.

References

1. Lalitha K, Suman G, Pruthvish S, Mathew A, Murthy NS. Estimation of time trends of incidence of prostate cancer-An Indian scenario. Asian Pac J Cancer Prev. 2012;13:6245-50.
2. Dr. Koteshwari M, Dr. Sudhakar G. Clinico-morphological Spectrum of Prostatic Lesions in a

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Tertiary Care Center, IOSR Journal of Dental and Medical Sciences. 2018;17(3):51-59.
3. Begum Z, Attar AH, Tengli MB, Ahmed MM. Study of Various Histopathological Patterns in Turp. Specimens and Incidental Detection of Carcinoma Prostate. Indian Journal of Pathology and Oncology. 2015;2(4):303-308.
4. Vani BR, Kumar D, Sharath BN, Murthy VS, Geethamala K. A comprehensive study of prostate pathology in correlation with prostate-specific antigen levels: An Indian study. Clin Cancer Investig J. 2015;4:617-20.
5. Sharma A, Sharma M, Gandhi S, Khajuria A, Goswami KC. Histomorphological spectrum of prostatic lesions: a retrospective analysis of transurethral resection of prostate specimens, International Journal of Research in Medical Sciences. 2017;5(6):2373-2378.
6. Yadav M, Desai H, Goswami H. Study of Various Histopathological Patterns in Prostate Biopsy, Int J Cur Res Rev. 2017;9(21):58-63.
7. Deshmukh BD, Ramteerthakar AN, Sulhyan KR. Histopathological study of lesions of prostate-A five year study. Int J Health Sci Res. 2014;4:1-9.
8. Aslam HM, Shahid N, Shaikh NA, Shaikh HA, Saleem S, Mughal A. Spectrum of prostatic lesions. Int Arch Med. 2013;6:36.
9. Talukder SI, Roy MK, Azam MS, Haq MH, Haque MA, Saleh AF. Histological patterns of prostate specimens in Mymensingh. Dinajpur Med Coll J. 2008;1:29-32.
10. Hamper UM, Epstein JI, Sheth S, Walsh PC, Sanders RC. Cystic lesions of the prostate gland. A sonographic-pathologic correlation. J Ultrasound Med. 1990 Jul;9(7):395-402.
11. Joshee A, Kaushal C.L. Sharma. The histomorphological study of prostate lesions. IOSR J Dent Med Sci. (IOSR-JDMS). 2015;14(11):85-9.
12. Stillwell TJ, Engen DE, Farrow GM. The clinical spectrum of granulomatous prostatitis: A report of 200 cases. J Urol. 1987;138:320-323.
13. Mittal BV, Amin MB, Kinare SG. Spectrum of histological lesions in 185 consecutive prostatic specimens. J Postgrad Med. 1989;35:157-61.
14. Garg M, Kaur G, Malhotra V, Garg R. Histopathological spectrum of 364 prostatic specimens including immunohistochemistry with special reference to grey zone lesions. Prostate Int. 2013;1:146-51.