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A Comprehensive study of prostate pathology in correlation with Prostate specific antigen- Hospital based retrospective study of one year.

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Abstract:
Objective: *To study the histomorphological spectrum of non-neoplastic & neoplastic lesions of the Prostate in TURP &tru-cut prostatic biopsies. and its correlation with Serum Prostatic Specific Antigen .* ***Material and Method:*** *A retrospective study of one year conducted on 140 cases , specimen from transurethral resection &tru-cut biopsies were fixed in buffered neutral formalin ,processed and slides prepared were stained with H& E stain.*
Result: *Maximum number of patients were in the age group of 60-69yrs. The most common benign lesion encountered was benign prostatic hyperplasia (BPH) with 89 {63.57%} cases followed by PIN seen in 27 cases and 21 cases of malignancy, all of which were adenocarcinoma.* ***Conclusion****: It is concluded that in diagnosing prostatic adenocarcinoma, evaluating a constellation of architectural, cytoplasmic and nuclear features along with ancillary features is essential.*
Keywords: *Neoplastic, TURP, buffered, adenocarcinoma*

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I. Introduction

The prostate gland is the largest pear shaped, retroperitoneal, accessory reproductive organ and weighs up to 20 grams in an adult male, depends on androgenic hormones.
Histologically, the prostate is composed of glands lined by two layers of cells, a basal layer of low cuboidal epithelium covered by a layer of columnar secretory cells

PSA is an important tumour marker for prostate cancer.[1]The spectrum of lesions encountered on histopathological examination of TURP chips &tru-cut biopsies include a variety of non-neoplastic & neoplastic conditions. Out of which, prostatitis, benign prostatic hyperplasia (BPH), and prostate cancer (PCa) are the most frequent pathologies of the prostate gland.[2] Prostate cancer is primarily a disease of the elderly and remains the most common cancer among men in the United States, accounting for more than 200,000 new cases annually.[4]

Prostatic intraepithelial neoplasia (PIN) is a condition "defined by neoplastic growth of epithelial cells within preexisting benign prostatic acini or ducts[6].Because PIN satisfies almost all the requirements for a premalignant condition, high-grade PIN (HGPIN) is widely accepted as a precursor to prostate cancer.[5,7]

II. Materials and Method:

A retrospective study of one year fromSeptember 2017 to August 2018 was carried out on the samples that were referred to the Pathology department of L.N. Medical College& Research Centre,Bhopal, Madhya Pradesh.

Inclusion criteria:

- All male patients attending urology OPD with LUTS in age group 30-90years.
- All Prostatic biopsies{TURP chips & Needle core Biopsies} obtained from urology department.

Exclusion criteria:

- Histopathologically proved metastatic carcinomas to prostate
- Inadequate biopsies for histopathological reporting
- Patients on hormonal therapy or chemotherapy for carcinoma prostate.

Sample size:

Total 140 cases were included.The tissue samples received included prostatic biopsies obtained from transurethral resection &tru-cut biopsies were processed, slides prepared and stained with H&E stain in the Department of Pathology, L.N. Medical College & Research Centre, Bhopal.

The serum samples of patients were obtained in plain vials for estimation of Serum PSA and the levels were estimated using Enzyme-linked ImmunosorbentAssay .

Procedure and Methodology.

Total 140 cases were included, done on male patients, attending urology OPD with lower urinary tract symptoms [LUTS] and diagnosed clinically as primary prostatic lesion.

Relevant clinical data regarding age, weight, clinical details of LUTS, per rectal examination findings, lab investigations, sonological findings were also recorded.

The tissue samples received included prostatic biopsies obtained from transurethral resection &tru-cut biopsies were fixed in buffered neutral formalin for a period of 12-24 hrs& then the entire specimen was submitted for processing. Slides prepared and stained with H& E stain in the Department of Pathology, L.N. Medical College & Research Centre, Bhopal.

The slides were reported by at least two pathologists. The PCa cases were graded according 2004 WHO Gleason's grading system.

The serum samples of patients were obtained in plain vials for estimation of Serum PSA

Serum Total Psa Estimation

Specimen: Serum, Collection container: serum gel/ red top, plastic vial, Specimen volume: 0.6 ml

Serum gel tubes were centrifuged within 2 hrs of collection.. Samples were stored frozen. Levels were estimated using Enzyme-linked Immunosorbent Assay kit in Central Pathology Laboratory, L.N. Medical College & J.K. Hospital, Bhopal.

Kit name: PSA (Human) ELISA Kit {Abnova}, No. KA0208

Statistical analysis:

Statistical analysis was done using SPSS 22 version software system. Results were expressed in numbers and percentages.

The comparisons in three different groups were analyzed using ANOVA test {Analysis of variance}. A difference was considered statistically significant if $P<0.05$ and highly significant if $P<0.01$.

Unpaired t test was applied for the comparisons done on Serum PSA levels between LPIN & HPIN cases.

III. Results

A total number of 140 cases were studied. The maximum number of patients were in the age group of 60-69yrs.

Table 1: Distribution of cases according to Age Group

AGE GROUP {in Yrs.}	NUMBER	PERCENTAGE
<40y	03	2.14%
40-49y	03	2.14%
50-59y	27	19.29%
60-69y	56	40%
70-79y	35	25.%
80-89y	16	11.43%
TOTAL	140	100%

Chart 1 : Distribution of cases according to age group {N=140}

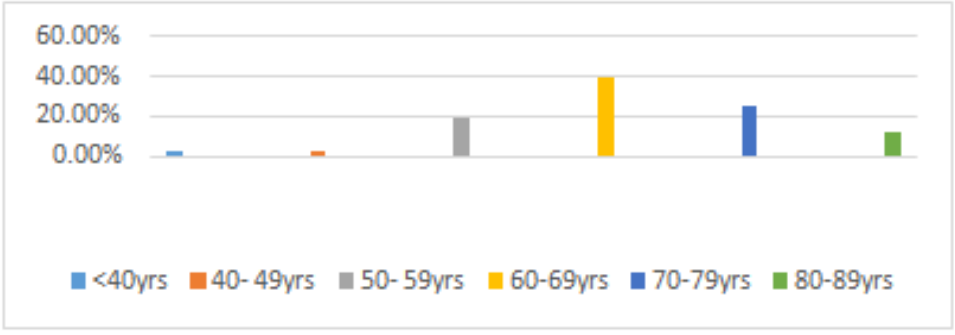

Table 2: Distribution of cases according to Histopathological Diagnosis

H.P. Diagnosis	Frequency	Percentage
BPH	89	63.57%
Prostatitis	03	2.14%
PIN	27	19.29%
Adenocarcinoma	21	15%
TOTAL	140	100.0%

Table 3: Age wise distribution of cases according to Histopathological Diagnosis

Histopathological diagnosis	Age						TOTAL
	<40y	40-49	50-59	60-69	70-79	80-89	
PROSTATITIS	1			1	1		03
BPH	1	3	20	33	21	11	89
PIN	1		4	13	6	3	27
ADENOCARCINOMA			2	9	8	2	21

Table 4: Distribution of PIN cases to LPIN & HPIN**.**

DIAGNOSIS	NO.OF CASES	PERCENTAGE
LPIN	18	66.667%
HPIN	09	33.333%

Chart 2 : Distribution of PIN cases N= 27.

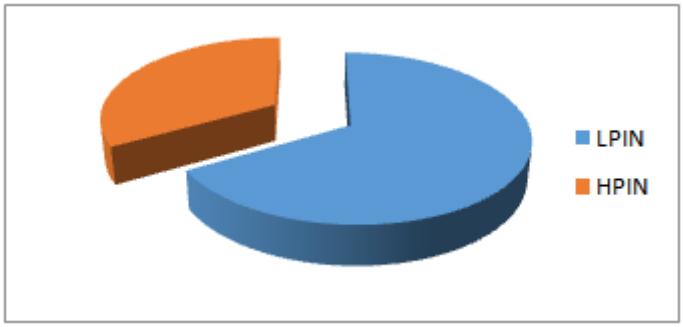

TABLE 5: Distribution of Different Lesions according to total PSA levels

TPSA in ng/ml	BPH	PIN	CARCINOMA
0-4	86	03	00
>4.0-10	03	03	02
>10	00	18	19

Comparison of serum total PSA levels in 3 different lesions of prostate cases was done, shown in the table above, using ANOVA test, which found out a 'P' value among them. In our study, F statistical value was 87.409 & P value of <0.001, which was highly significant**.**

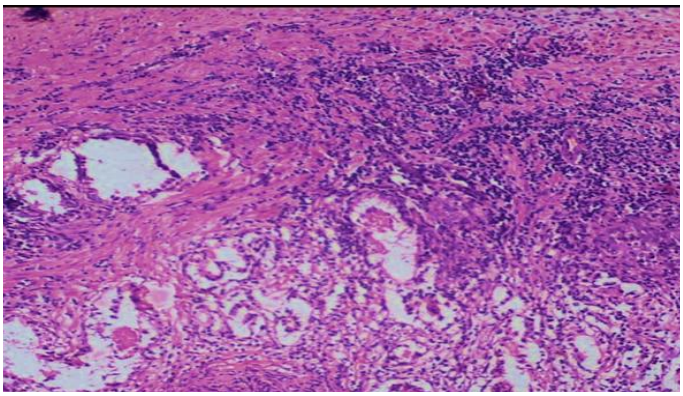

Figure 1 : Chronic Prostatitis- Showing Glands Lined By Inner Tall Columnar And Outer Flattened Epithelium And Stroma Infiltrated By Chronic Inflammatory Cells

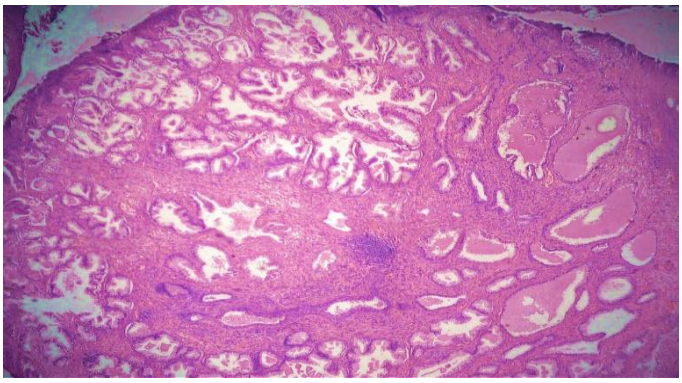

Figure 2: Bph With Glandular Hyprplasia. The glands are lined by inner tall columnar and outer flattened epithelium and lumen filled with corpora amylacea.

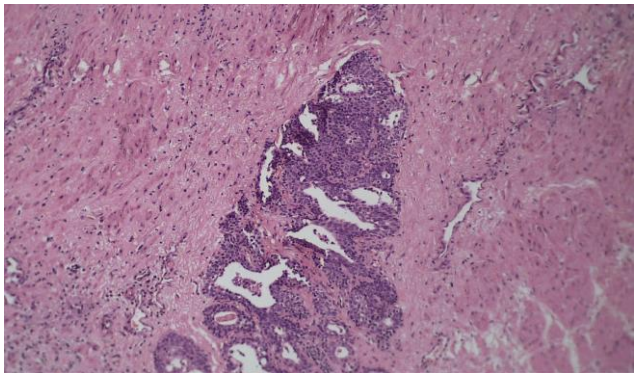

Figure 3: High Grade Pin- Cribriform Pattern

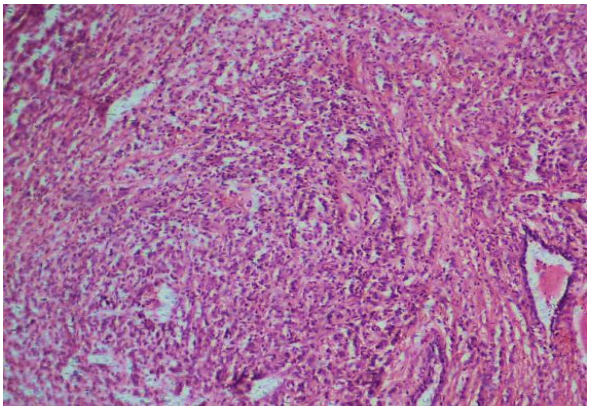

Figure4: Adenocarcinoma Gleason's Pattern 5- Anaplastic Tumor Cells In Masses & Sheets

IV. Discussion

The present study was carried out on 140 cases sent from urology department. The specimens were examined for analyzing the various histomorphological lesions of the prostate. Serum PSA levels were also estimated to find out any correlation if present with the lesions.

- In our study, the most common benign lesion encountered was benign prostatic hyperplasia (BPH) with 89 {63.57%} cases followed by PIN seen in 27 cases with LPIN in 18 & HPIN in 09 cases & 21 cases of malignancy, all of which were adenocarcinoma.Comparison of the incidence of BPH in prostate specimens with other studies is shown in the following table.

Table No.6: Comparison of incidence of BPH in various studies

Authors	Percentage
Kshitij et al[14]	85.8%
Haroun et al[13]	64.48%
Djavan et al[12]	83%
Jasani et al[15]	56%

Pacelli and Bostwick[16]	81.7%
Present study	**63.57%**

The findings in our study are comparable with those of Haroun et al[13]

- The peak incidence was observed in the age group of 60-69 years. Jasani[(15)] et al showed in their study the age wise distribution as, 3.92% below 50 years, 96.08% at 51-70 years and no cases found above 70 years. While, in our study, the age incidence was 4.28% below 50 years, 59.29% at 51-70 years and 36.43% above 70 years.

Adenocarcinoma and BPH most commonly presented in the age group 60-69 years. The mean age of presentation for BPH and adenocarcinoma was 69.87 years and 65.14 years respectively. According to study done by Brawn et al[11], the average age of presentation for BPH and adenocarcinoma were 69 and 67 yearsrespectively. In study by Quian et al[17], mean age for carcinoma was 64.4 years. Our findings were in concordance with above studies.

V. Conclusion

Outcome of all the clinical, Histopathological & Biochemical findings were as follows:

Patients in varying categories of age group were included. The maximum number of cases were noted in the age group of 60-69 yrs.BPH was the most common lesion encountered with incidence of 63.57 % .PIN was identified in 19.29% cases of the prostatic biopsies. Conventional adenocarcinoma was the commonest type of prostatic carcinoma noted in the seventh decade.In our study, Serum PSA was raisedin maximum number of PIN & carcinoma cases with S. tPSA>10 ng/ml.

We concluded that in diagnosing prostatic adenocarcinoma, evaluating a constellation of architectural, cytoplasmic and nuclear features along with ancillary features is essential.

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