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HISTOPATHOLOGICAL SPECTRUM OF PROSTATIC LESIONS: A TWO YEAR STUDY

Pathology

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ABSTRACT

Prostatic lesions have been on an increase over the past few decades due to higher life expectancy therefore prostatic lesions are an area of constant interest to clinicians as well as Pathologists. This is a retrospective study of prostate over a span of two-year duration which included TURP specimens, prostatectomy specimens and tru-cut biopsy. A total number of 176 cases of prostatic lesions were found. Benign lesions outnumbered malignant lesions. The most common lesion was BPH. Adenocarcinoma of prostate was seen in all clinically suspected cases which was graded according to Gleason grading system. Incidence of occult carcinoma was high in our study which emphasizes the need of histopathological evaluation which plays an important role in diagnosis, grading and management of prostatic cancer.

KEYWORDS

BPH, TURP, Adenocarcinoma prostate, Granulomatous prostatitis.

INTRODUCTION:

Diseases of prostate cause significant morbidity and mortality throughout the world [1,2]. Growth and survival of prostatic cells is maintained by testicular androgens. Benign prostatic hyperplasia (BPH), prostatitis, and prostatic cancer are the common pathologic processes. Hyperplasia arises in transitional zone of prostate whereas carcinoma originates in the peripheral zone [3]. The clinical incidence of BPH is on rise as the age advances. The risk is 8% during the 4th decade, 50% in the 5th decade and reaches upto 75% in the 8th decade of life [4]. Advanced age and an intact androgen supply are the undisputed risk factors for BPH. Prostatitis is other common urinary tract associated pathological lesion. Two premalignant lesions have been recognized: prostatic intraepithelial neoplasia (PIN) and atypical adenomatous hyperplasia (AAH). AAH represents an architectural alteration in cytologically unremarkable glands. These precursor lesions have recently been attributed to the concept of the multistep carcinogenesis of prostate cancer. The term prostatic intraepithelial neoplasia is defined as a cytological alteration in architecturally normal glands and is further categorized into low grade (LGPIN) and high grade (HGPIN) [4]-[6].

Transurethral resection of prostate (TURP) specimens form a significant mean of diagnosis [7]. The goal of tissue sampling is to maximize the opportunity to recognize the presence of carcinoma of prostate and to provide information regarding its histological grade. A confirmed diagnosis with an indication of tumor grade helps in rational management approach.

MATERIALS AND METHODS

This is a retrospective study over a span of two-year duration consisting of 176 cases of lesions of prostate. The gross specimens received were transurethral resections of prostate (TURP), prostatectomies and tru cut biopsies. The clinical data was collected from indoor cases. The tissue was fixed in 10% formalin. The relevant data inclusive of gross appearance of the specimen and the histopathological findings was recorded. Routine paraffin processing of the tissue and haematoxylin and eosin staining was done. Special stains (20% ZN staining, PAS) were performed wherever required. The various lesions of prostate were listed. All the cases were analyzed according to age, description of gross specimen and microscopic examination. The tumors of prostate were diagnosed and classified as per WHO classification (2016). The cases of adenocarcinomas were analyzed according to Gleason grading system.

RESULTS

One hundred seventy-six cases of lesions of prostate were studied from the hospital records of histopathology section of Government Medical College and Hospital - Miraj, Maharashtra. over a period of two years i.e. from July 2017 to Jun 2019.

Out of 176 cases, 152 (86.36%) were TURP specimens, 23(13.06 %) were prostatectomy specimens and only one was tru-cut biopsy.(Fig1) (Table 1)

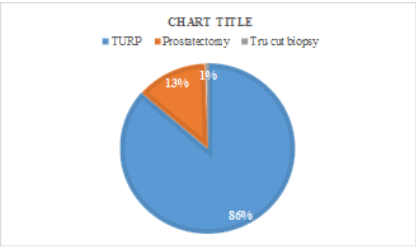

Fig 1: Nature Of Specimens

Table 1: Nature Of Specimen And Different Lesions

	BPH	Adenocarcinoma	Total
TURP	144	8	152
Prostatectomy	20	3	23
Tru Cut biopsy	0	1	1
total	164	12	176

The most common lesion was BPH seen in 164 (93.18 %) cases with peak incidence in eighth decade followed by seventh decade. The youngest patient of BPH in our study was 38-year-old and oldest was 88-year-old. Adenocarcinoma of prostate was seen in 12 (6.81 %) cases with peak incidence again in eighth decade. The youngest patient being 52-year-old and oldest being 86-year-old. (Fig2)

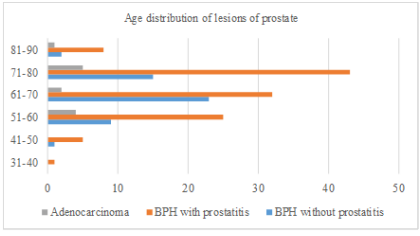

Fig 2: Age Distribution In Different Lesions Of Prostate

BPH was the most frequent morphologic finding. Grossly, these were well defined soft to firm nodules with variable solid and cystic composition. (Fig3).

Fig 3 BPH (a)External surface showing variable sized firm nodules. (b) Cut surface showing firm nodules with microcysts.

Microscopically showed glandular and stromal hyperplasia. The acini were lined by double layered cuboidal to columnar epithelium which at places showed papillary infoldings along with cystic dilatation of glands containing corpora amylacea. Metaplasia associated with inflammation were squamous metaplasia and transitional cell metaplasia.

Prostatitis was categorized into acute, chronic and granulomatous. (Table 2).

Table 2: Prostatitis Categories

Types Of Prostatitis	No. Of Cases	Percentages(%)
Chronic Prostatitis	83	72.8
Acute Prostatitis	29	25.44
Granulomatous Prostatitis	2	1.76
Total	114	100

Nodular hyperplasia with prostatitis was observed in 114 cases (64.77%) followed by Nodular hyperplasia alone which was seen in 50 cases (28.40%).

Chronic prostatitis was most commonly seen associated with nodular hyperplasia i.e., in 83 of 114 cases (72.80%). These cases showed diffuse infiltration of glands and stroma by mononuclear infiltrate of lymphocytes, plasma cells and histiocytes.

Acute prostatitis was observed in 29 cases (25.44%) of BPH with prostatitis which showed neutrophilic infiltrate involving the glands as well as stroma.

2 cases (1.76%) were associated with granulomatous prostatitis which showed few granulomas and multinucleated giant cells along with collections of histiocytes, polymorphs and lymphoid aggregates. (Fig4).

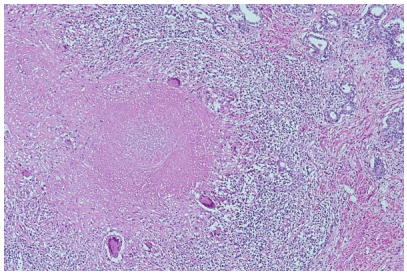

Fig 4: Granulomtous prostatitis. Low power view showing granulomas with multinucleated giant cells and collections of epitheliod cells and lymphocytes centered over central caseation. (H & E stain x40)

Prostatic carcinoma was diagnosed in 12 patients (6.81%). Nine cases out of twelve were occult. We followed the microscopic grading system developed by Gleason. It is based on the degree of glandular differentiation and the growth pattern of the tumor in relation to the stroma as evaluated on low power examination [8]. Most frequently observed predominant patterns were pattern 5 and 4 seen in 5 (41.67%) and 4 (33.33%) cases respectively. No cases showed pattern 1 or 2 in present study (Table 3). Gleason score 9, 10 and 7 were found in three cases each. (Table 4)(Fig5,6,7)

Table 3: Analysis Of Adenocarcinoma Of Prostate Cases According To Gleason Predominent Pattern

Prodominent Pattern	No .Of Cases	Percentage
1	0	0
2	0	0
3	3	25
4	4	33.33
5	5	41.67
Total	12	100

Table 4: Analysis Of Adenocarcinoma Of Prostate Cases According To Gleason Score

Glesone Score	No. of Score	Persentage(%)
6	1	8.33
7	3	25
8	2	16.67
9	3	25
10	3	25
Total	12	100

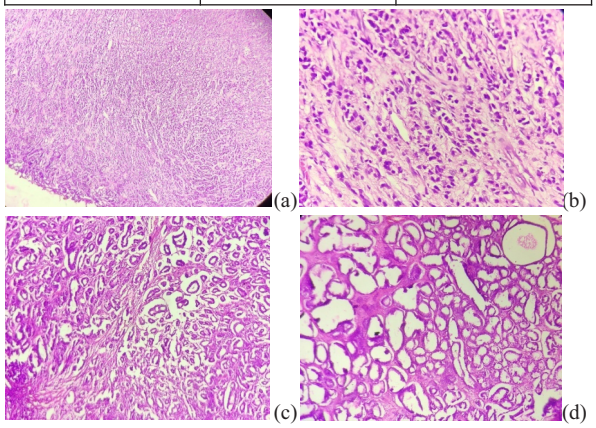

Fig 5: Adenocarcinoma prostate: a) Pattern 5 (x10), b) Pattern 5 (x40), c) Pattern 4 (x10), d) pattern 3(x10).

DISCUSSION:

In our study, maximum specimens accounted were TURP specimens 152 (94.69%). Bhatta S. et al [9] encountered 88.54% TURP specimens whereas Bal M.S.et al [10] had 69%. This variation may be due to the different protocols used treatment of patients with lesions of prostate.

BPH and adenocarcinoma are the two pathological processes which frequently affect the prostate gland. In the present study, we had 93.18 % cases of BPH. Deshmukh B.D. et al [2] had 91.6% cases of BPH and Sharma A. et al [11] reported 91.02% cases of BPH. Also, Thapa N. et al [12] and Begum Z. et al [13] reported 92.2% and 96% cases respectively. Our findings are in accordance with findings of these studies.

With the development of the BPH, the weight of the gland significantly increases and averages 33±16 gm. Grossly, there are well defined soft to firm nodules with variable solid and cystic composition [14]. The cut surface is gray to yellow. If there is prominent epithelial hyperplasia the abundant luminal spaces create soft and grossly spongy nodules from which oozes watery fluid. If the BPH is predominantly fibromuscular, there are numerous trabeculations without prominent nodularity. Focal haemorrhage, calcification and macrocystic change may be present [15]. We found similar morphologic findings in our cases. Comparing the incidence of BPH with nature of specimen, in the present study, maximum of our cases [144 (81.81%)] were obtained from TURP specimens. Our results are comparable with Shakya et al [16] and Sharma A. et al [11].

Maximum cases of BPH were in the 8thdecade which was similar to other studies like that of Kim K.B. et al [17] while Sharma A. et al [11], Deshmukh B.D. et al [2] and Bal M.S. et al [10] had more cases in 7th decade.

Chronic prostatitis is most commonly observed in nodular hyperplasia with 83 (72.8%) cases which was similar to findings of other studies like Bhatta S. et al [9] and Sharma A. et al [11].

Granulomatous prostatitis can be clinically confused with prostatic carcinoma. Granulomatous prostatitis is thought to represent an immune mediated process accompanied by reaction to the prostatic secretions released from the obstructed ducts regardless of it's etiology. Grossly the gland is firm to stony hard. The cut surface shows obliteration of the architecture with formation of yellow granular nodules. Microscopy is characterized by large nodular aggregates of pale staining histiocytes, epithelioid cells, lymphocytes and plasma cells centered in the lobules [15]. We reported 2 (1.76%) cases of BPH with granulomatous prostatitis. Deore K.S. et al [18] had 1.1% cases whereas, Deshmukh B.D. et al [2] and Sharma A. et al [11] reported incidence of 3.86% and 3.70% respectively.

WHO classification of adenocarcinoma prostate (2016) [19]is based primarily on the microscopic characteristics of tumours like morphologically identifiable cell type and histological pattern as seen

with conventional light microscopy. Gleason grading system described 5 different patterns; recognized as primary pattern (predominant) and the secondary (second most prevalent) architectural patterns and assigned a grade from 1 to 5. Grade 1 being most differentiated and Grade 5 the least differentiated [20]. The two grades are added together to obtain the Gleason score.

Grossly, the gland is hard or firm yellow gray. The size varies ranging from minute focus to massive growths. On cut surface the carcinomatous foci appear as ill defined, greyish white areas merging into surrounding tissue.

Microscopically there is only a single cell type without the basal layer. The pathological diagnosis of carcinoma is indicated by crowded glands growing in haphazard fashion, large acini without convolutions, fused glands, glands in glands, columns, cords and solid sheets. The glands oriented perpendicular to each other and glands irregularly separated by bundles of smooth muscle are indicative of an infiltrative process. Nuclear enlargement with prominent nucleoli is the frequent finding. Prostatic crystalloids are the dense eosinophilic rectangular, hexagonal, triangular and rod like crystal like structures seen in low grade prostatic carcinoma. Intraluminal pink acellular dense secretions or blue tinged mucinous secretions are additional findings seen in low grade prostatic carcinoma. In contrast, corpora amylacea is common in benign glands. Malignancy specific features are perineural invasion, mucinous fibroplasias (collagenous micronodules), and glomerulations [15].

Adenocarcinoma accounted for 12(6.82 %)cases in our study. Maximum numbers of our cases 5 (41.66%) were in the 8th decade. Deshmukh B.D. et al [2] and Bal M.S. et al [10] reported maximum cases of adenocarcinoma of prostate in 8th decade, whereas Bhatta S. et al [9] reported maximum cases in 7th decade.

We found maximum number of cases (41.67%) showing predominant pattern 5. Deshmukh B.D. et al [2] had predominant pattern 3 in 50% cases. Gleason score 7,9 and 10 found in 25% cases each. Deshmukh B.D. et al [2] and Bhatta S. et al [9] had Gleason score 9 most common. Puttaswamy K. et al [21] reported Gleason score 7 most common. This discrepancy may be due to the variable number of cases.

CONCLUSION:

TURP specimens is the commonest type of specimens received for prostatic lesions. Benign lesions outnumber malignant ones. Predominant benign lesion was nodular hyperplasia with or without prostatitis. Incidence of occult carcinoma was more in our study. Early diagnosis of premalignant lesions and occult carcinoma can improve the treatment outcome of patients. Hence; the liability of detection should be increased by thorough sampling of all prostatic specimens. Histopathological diagnosis and grading plays an important role in the management of prostatic cancer. For satisfactory management of patient, a high degree of the awareness along with team approach is imperative.

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