A HISTOPATHOLOGICAL STUDY OF PROSTATE LESIONS IN JAMSHEDPUR, JHARKHAND, INDIA

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ABSTRACT

BACKGROUND
Cancer of the prostate is typically a disease of men older than age 50 years. It is the most common cancer in west and the 2nd leading cause of cancer death among men. The objective of this study is to evaluate the pattern of histopathological types of prostatic lesions seen in the pathology department of MGM Medical College, Jamshedpur, Jharkhand.

MATERIALS AND METHODS
All prostate specimens were received and processed in pathology department of MGM Medical College, Jamshedpur over a period of two years from September 2013 to August 2015. Their diagnosis was confirmed by histopathological examination (HPE) and reports of all specimens were prepared.

RESULTS
Prostatic biopsy (prostatectomy & Trucut biopsy) was done in all 152 cases in the O.T. of MGM Medical College, Jamshedpur. These prostatic tissue specimens were received and processed in the histopathology section of pathology department and prepared reports. The preponderance of the cases was benign prostatic hyperplasia (63.2%), followed by prostatic carcinoma (28.9%), prostatic intraepithelial neoplasia (PIN) (1.3%), and inadequate samples (6.6%).

CONCLUSION
In the present study, BPH is the most common prostate lesion. Prostatic carcinoma is relatively high and most of the cases have a high GS (Gleason Score) that indicates high mortality in our population. Attempts should be made to increase the consciousness so as to decrease the mortality.

KEYWORDS
Benign Prostatic Hyperplasia (BPH), Prostatic Carcinoma, Gleason Score.

BACKGROUND
Prostate disease is the most common disease in males. Worldwide benign nodular hyperplasia affects 210 million males and is common over the age of 50 years.[1,2,3] Three pathological conditions are mainly found in prostate gland: (a) Prostatitis, (b) Benign prostatic hyperplasia (BPH), and (c) Tumours (premalignant & malignant). Among the three BPH is the most common disease in men.[4] On histopathological report BPH can be seen in 20% of men by 40 years of age and this figure increases to 70% by age of 60 to 80 years.[4] The pathogenesis of BPH depends on the bioavailability of testosterone and its metabolites, Dihydrotestosterone.[5] Other risk factors includes obesity, diabetes, excess alcohol consumption, & less physical activity.[6] Studies have shown that the rate of BPH to be in the range of 67.5-87.5% of prostatic lesions and occurs in the age group of 60-70 years with a mean of 62.6 years.[2,7,8,9,10,11,12,13,14]

Prostatic carcinoma is the disease of elderly men occurring at age 65 years and above and in India, prostatic carcinoma occupies 2nd to 10th rank among cancers in men.[4,5] Globally it is the 6th leading cause of death in males.[15] In United States, it is postulated that 1in 6 American men will develop prostatic carcinoma over his lifespan.[16] The rate of incidence of cancer prostate is low in China and some parts of Asia but is very high in Nigeria; approximately 11% of all males cancers.[17,18] In various studies, the rates of carcinoma prostate were in the range of 12.5-30.9% of prostatic lesions.[2,7,8,9,10,11,12,13,14]

Among the prostatic carcinoma, the majority are adenocarcinoma. A possible precursor lesion of prostatic malignancy is Prostatic Intraepithelial Neoplasia (PIN). Studies have shown that the appearance of prostatic intraepithelial neoplasia may precede carcinoma by ten or more years. A transrectal biopsy is essential to confirm the diagnosis. Most popular is Gleason's microscopic grading system developed by Donald F Gleason in 1966. Gleason grading system is superior and the best predictor of disease progression and outcome.

MATERIALS AND METHODS

This clinicopathological study of prostatic biopsies were received and processed by histopathological section of MGM Medical College, Jamshedpur over a period of two years from September 2013 to August 2015. These prostatic specimens were received in 10% formalin and processed. Haematoxylin and Eosin stained were studied for prostatic pathology and categorised as neoplastic and non-neoplastic. For prostatic carcinoma, considering the glandular differentiation, Gleason numeric microscopic grading system was applied.

RESULTS

Total prostatic specimens received by the pathology department during the study period was 152. The youngest patient was 32 years while the oldest patient was 99 years. Most common prostatic lesion was nodular hyperplasia (63.2%). (Figure 1). Occurring commonly in the age group of 60-69 years. Other lesions were prostatic carcinoma 28.9%, (Figure 2). PIN 1.3% and inadequate specimens 6.6% as shown in (table 1). 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).
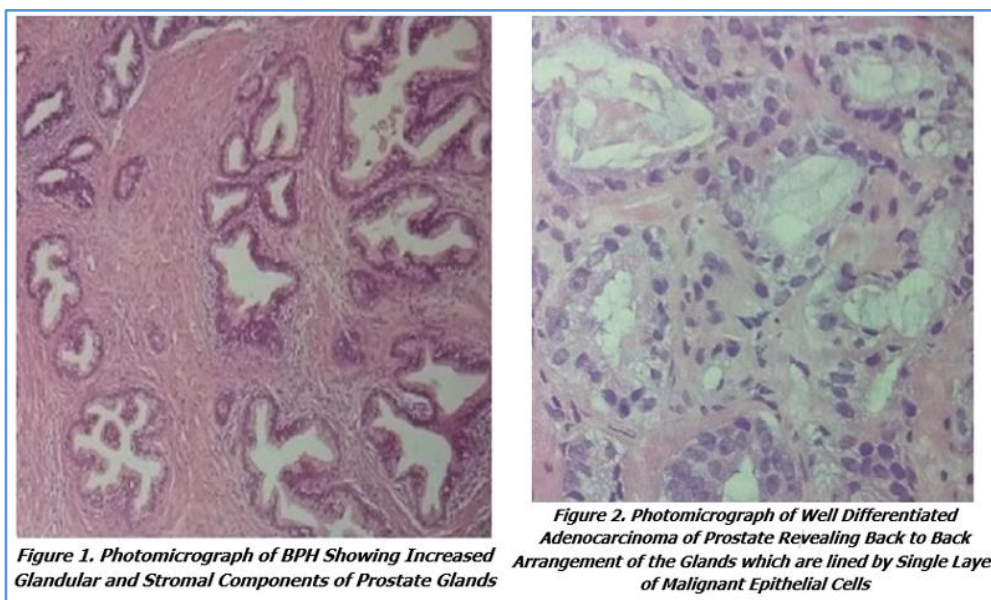
Gleason Score (GS) 7 was the most common score and was seen in 31.3% of prostatic carcinoma cases while 18.8% of prostatic carcinoma cases had GS 8 and 15.6% had GS 6. The least score recorded was GS 3 as shown in (table 2). Well differentiated cases (GS 2-4) were 9.4%, Moderately differentiated cases (GS 5-7) were 56.3% while poorly differentiated cases (GS 8-10) were 34.3%.

Age Group	BPH	PIN	Carcinoma Prostate	Inadequate	Total
30-39	2	0	0	0	2 (1.3%)
40-49	3	0	1	0	4 (2.6%)
50-59	14	0	4	2	20 (13.2%)
60-69	35	2	18	4	59 (38.8%)
70-79	34	0	17	3	54 (35.6%)
80-89	6	0	4	1	11 (7.2%)
>= 90	2	0	0	0	2 (1.3%)
Total	96 (63.2%)	2 (1.3%)	44 (28.9%)	10 (6.6%)	152 (100%)
Table 1. Histopathological Types of Prostatic Lesions in Relation to Age					

Gleason Score	40-49	50-59	60-69	70-79	80-90	Total
3	0	0	1	0	0	1 (3.1%)
4	0	0	1	1	0	2 (6.3%)
5	0	1	1	1	0	3 (9.4%)
6	1	0	1	2	1	5 (15.6%)
7	0	1	3	4	2	10 (31.3%)
8	0	1	3	1	1	6 (18.8%)
9	0	0	2	2	1	5 (15.5%)
Table 2. Frequency of Gleason Score in Relation to Age Groups						

Figure 1. Photomicrograph of BPH Showing Increased Glandular and Stromal Components of Prostate Glands

Figure 2. Photomicrograph of Well Differentiated Adenocarcinoma of Prostate Revealing Back to Back Arrangement of the Glands which are lined by Single Layer of Malignant Epithelial Cells

DISCUSSION

The risk of prostatic cancer is increased in men over 50 years of age. Therefore, the screening of prostate cancer is put forward to begin at the age of 40 years.

The ratio of benign prostatic hyperplasia to carcinoma of prostate is 2.1:1 in this study. This is slightly less than the ratio from Nigeria and much lower than 4.6:1 reported in Saudi Arabia.[2,7,10,12,13,14]

The prevalence of BPH and prostatic carcinoma in this study rises abruptly through the age groups, peaking at age group 60-69 and 70-79 years in almost an equal proportion. No other study reported this almost equal distribution of BPH and Prostatic Carcinoma cases between these two age groups and the reason for this cannot be described.

BPH estimated for 63.2% of all prostatic lesions and most cases were in the 6th and 7th decades. BPH is caused by a cellular proliferation of epithelial and stromal elements in the prostate glands. These changes start microscopically in the 3rd decade of life and clinically in the 5th decade of life, resulting in increased resistance to urinary flow during micturition.[8] Clearly, the most important demographic factor in the incidence and severity of BPH is aging.

High grade PIN (HGPIN) reported for 1.3% of cases. Similar low rates also reported in JOS.[8,12] PIN is the most established precursor of carcinoma prostate. Clinical studies suggest that PIN predates carcinoma by 10 years or more, with low grade PIN first appearing in men in their thirties.[18] The findings of PIN indicates the need for repeated biopsy and follow-up, especially in patients with elevated serum PSA concentration.[18] The clinical significance of HGPIN is that it indicates patients at risk for malignancy.[19]

In the present study the prostatic carcinoma was reported 28.9%. This rate is within the range of 12.5- 30% reported by previous studies. But still the carcinoma prostate is high in our environment, and efforts at early detection and awareness should be increased.

Carcinoma prostate has been known as a disease of elderly men. The exact role of age in the pathogenesis of carcinoma prostate is controversial.[17] Black race is said to be affected more than other races.

31.3% of the carcinoma prostate cases had a GS 7, which was the most common score. The Gleason grading system, based on morphological features of prostate cancer cells, is the most widely used histological grading method for prostatic carcinoma. The Gleason Score closely correlates with clinical behaviour and provides an important index of prognosis.[20] It is the only grading system that recognizes the histologic heterogeneity of tumour present within a single prostate specimen by assigning grades to the primary & secondary patterns and combining this grade into the score (scored as 2-10).[21]

Since Gleason Score is an index of prognosis, we can appreciate why carcinoma prostate has a high mortality in India because our men present mainly with GS 7 and above. Lack of awareness of the disease has been implicated as the cause of the high scores.[22]

Inadequate specimens reported for 6.6% of all prostatic specimens seen. This number is quite high because most prostatic biopsies in our institutions are not ultrasound-guided.

CONCLUSION

Benign Prostatic Hyperplasia is the most frequent lesion of the prostate. Carcinoma prostate is relatively high in India, and most of the cases have a high GS that indicates high mortality in our population hence, the efforts should be made to increase awareness so as to reduce the mortality associated with carcinoma prostate. Surgeons should attempt to do ultrasound-guided biopsies so as to reduce time lost and not to discourage the few patients who accepted to do a biopsy.

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