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Original Research Article

Spectrum of prostate gland lesions: a clinico-pathologic study in south-western Bihar, India

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ABSTRACT

Background: Prostate gland is an endocrine dependent organ in males and age-related lesions involve it. Inflammation, benign nodular hyperplasia and tumours are the commonest to involve it worldwide. Occasionally some other pathological changes can also involve it. The study was carried out for the first time to know the spectrum and prevalence of prostate lesions which will be of help to the clinicians in this location.
Methods: Retrospective study was carried out for a period of four years and out of surgical cases of males which underwent operative procedure, prostate cases were retrieved and in the department of pathology, haematoxylin and eosin stained slides were evaluated and diagnosed.
Results: A total of 138 cases were included and five cases were excluded from this series. Benign nodular hyperplasia (73.9%) was the commonest finding followed by chronic prostatitis associated with hyperplasia (15.2%), atypical glandular hyperplasia (2.9%) and prostatic intraepithelial neoplasia (2.1%). Malignant tumours were 5.8% constituting adenocarcinoma prostate as the most common (62.5%). A case of hemangiopericytoma was also diagnosed.
Conclusions: Benign nodular hyperplasia of prostate is the most common affliction among males starting at age 45 years. Early consultation and screening will be of immense value. Adenocarcinoma prostate may involve at age around 58 years.

Keywords: Benign nodular hyperplasia, Hemangiopericytoma, Papillary carcinoma, Prostate adenocarcinoma, Sarcomatoid carcinoma

INTRODUCTION

Prostate gland is an important endocrine dependent organ in males next to testis, normally located around prostatic urethra intimated inferior to bladder. Lesions of prostate are more common than testicular lesions which give suffering to moderate no. of aged male population. Diseases primarily inflicting prostate are inflammation, benign nodular hyperplasia (BNH) and tumors. Among inflammatory conditions, chronic bacterial prostatitis is usually associated with urinary tract infection.

Two most prevalent diseases worldwide of aging males are BNH and prostate carcinoma arises from different zone. BNH affects males commonly above age 50 years and affliction rises as age advances.[1-3] Prevalence of non-neoplastic lesion is more common than carcinoma and fortunately prostatic hyperplasia is not a premalignant condition.[4,5] Prostatic intraepithelial neoplasia (PIN) is also prevalent and about 80% cancer cases harbor it as some of cases through intraepithelial course can transform into cancer.[2] High grade PIN is most likely precursor of invasive adenocarcinoma.[4,6] Cystic lesions of

prostate like Mullerian duct cyst, prostatic utricle cyst and retention cyst can involve sometimes.[7] Infrequent lesions like leiomyoma, basal cell hyperplasia and atypical glandular hyperplasia (AGH) also involve prostate.[8]

Prostate cancer involves men above 65 years is relatively less prevalent in Asia and is most common non-skin cancer in western males. It is the 2nd most common cancer as well as 2nd most common cause of mortality among them, whereas in India carcinoma prostate varies from 2nd to 10th rank in various metro cities.[3] Among prostate cancers, adenocarcinoma is most common. Some rare forms of papillary carcinoma, transitional cell carcinoma, mucinous adenocarcinoma, small cell carcinoma can also implicate prostate.[9,10] Diagnosis at early stage may prolong survival but mortality is undoubted in late presentation due to metastasis. Social ignorance especially among rural cases and lack of financial support adds fuel to the mortality.

Prostate specific antigen assessment released from this gland is helpful in screening and detection of lesion.[11] However, its variability may not be specific for cancer detection as it may be raised in various other disease of prostate. The clinic-pathologic parameters like Gleason grading, imaging finding and molecular markers are combined together to provide better and more accurate prognosis of tumor and ultimately to make proper treatment and management course.[3,12] The present study was undertaken for the first time in this location of south-western part of Bihar to know the prevalence of different lesions affecting prostate.

METHODS

The present retrospective study was conducted for a period of four years from January 2014 to December 2017 in the department of pathology of Narayan medical college and hospital, Jamuhar, Rohtas district of Bihar, India.

Inclusion criteria

- The entire prostate specimens of various lesions were undertaken into consideration. Histopathology slides related to male prostate lesions confirming the diagnosis was only considered in the study

Exclusion criteria

- All unconfirmed cases, degenerated tissue, improperly fixed tissues, inappropriately stained slides and doubtful cases of prostate with unsatisfactory history were excluded

From all the surgical specimens sent for biopsy examination to the pathology department of Narayan medical college and hospital Jamuhar, Rohtas, Bihar, India prostate cases were sorted out retrospectively. The case history of these was retrieved and data related to age, geographic area, clinical complaints, duration of clinical lesions and investigation findings like prostate specific antigen assessment, ultrasonography and CT findings were noted. These specimens were fixed in 10% formalin for a minimum period of 24 hours. Under standard protocol detailed grossing of tissues were done and features noted. Tissue bits were taken and after proper processing, these were embedded in paraffin blocks. Sections of 4 micron were taken with semi-automated microtome and were stained by conventional method of hematoxylin and eosin. Special stains were used as and when required. Microscopic study of all these slides were done and reviewed in consultation with other Pathologists. Finally, diagnosis of various lesions of prostate was made. Data on the basis of age, most common clinical presentation and histological diagnosis were analyzed and expressed in the form of tables/charts and photographic documentation. T-test of distribution of variables on the basis of origin 61 was done. Values of $p<0.05$ were considered significant.

RESULTS

In this retrospective study related to prostate lesions, a total of 143 specimens were received for biopsy and microscopic diagnosis. Five cases were excluded from the study due to lack of proper fixation and staining, improper section material and patient record details the youngest age of the patient was 45 year and highest age observed was 84 year in this study. Age group analysis enlightens 50-60 years as the most common age group involved for prostate lesions. It came out to be 36.2% in this group.

Table 1: Distribution of cases in different age groups.

Age group	No. of cases	% of cases
40-50 year	14	10.14
50-60 year	50	36.23
60-70 year	46	33.33
70 -80 year	24	17.39
>80 year	04	02.89
Total	138	100%

The second age group emerged was 60-70 consisting of 33.3% cases. Adequate no. of cases also came out in 70-80 (17.4%) whereas 40-50 age group consisted of 10% (Table 1).

All the malignant cases were in the age > 60 years, except one case. The prevalence of different lesions is demonstrated in (Figure 1). In this series highest no. of cases came out related to BNH (74% cases). This condition emerged extremely far from other lesions. The second affliction (15.2%) was related to chronic prostatitis associated with nodular hyperplasia.

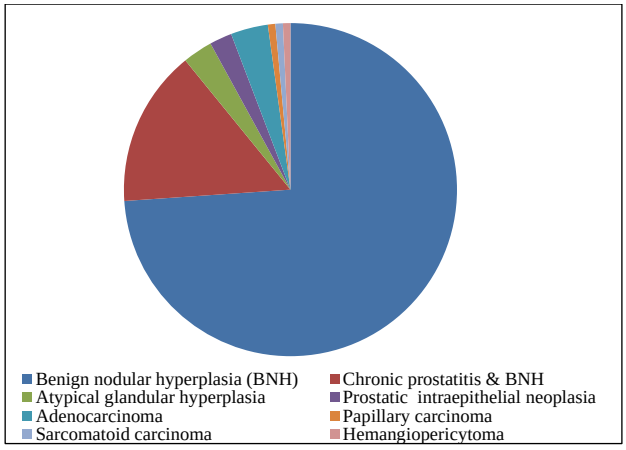

Figure 1: Prevalence of various disease of prostate gland in this study.

It was followed by 2.9% and 2.2% cases of atypical glandular hyperplasia and PIN respectively. Malignant tumors were diagnosed in 5.8% in this series. Among malignant tumors adenocarcinoma (5/8) emerged most common. Some rarer cases were detected each one of papillary carcinoma, sarcomatoid carcinoma and hemangiopericytoma.

Table 2: Average age of presentation of various lesions of prostate.

Lesions of prostate	Average age of presentation (yrs)
Benign nodular hyperplasia (BNH)	62.1
Chronic prostatitis with BNH	64.6
Atypical glandular hyperplasia	71.2
Prostatic intraepithelial neoplasia	69.6
Adenocarcinoma	70.6
Papillary carcinoma	70
Sarcomatoid carcinoma	83
Hemangiopericytoma	71

Table 2 depicts average age of presentation of different lesions. The average age for BNH came out to be 62.1 year and that related to chronic prostatitis 64.6 years. The highest average age of presentation noted was of sarcomatoid carcinoma (83 years) followed by atypical glandular hyperplasia (71.2 years). Hemangiopericytoma (71 years), adenocarcinoma (70.6 years) and papillary carcinoma (70 years) were in the descending order of average age presentation. It came out 69.6 years for prostatic intraepithelial neoplasia.

All the malignant patients were at or over 70 years of age except one case of adenocarcinoma below sixty years. Clinical complaints like dysuria and obstructive uropathy (88%), lower abdominal pain was noted and association of hematuria (64%) was assessed in malignant cases. A total of 130 non-neoplastic cases were diagnosed. The overall average age in this study was found to be 63.5 years.

Benign nodular hyperplasia emerged as the most common lesion in this study. It was detected in 102 cases in age range of 45-84 years. Most of them had hyperplasia of fibromuscular stroma (58 cases). Predominant glandular component hyperplasia was involved in 44 cases. It was observed in an elderly case of 84 year with history of urinary retention. Inflammatory condition in the form of chronic prostatitis emerged next to benign nodular hyperplasia in prevalence. It was associated with hyperplasia diagnosed in 21 cases. No case of acute prostatitis and granulomatous lesion was seen in this study. Four cases of atypical glandular hyperplasia were diagnosed. Focal crowded glands, metaplasia, stratification, cyst like change and normal looking nuclei having prominent nucleoli within a circumscribed nodule were the findings microscopically. Three cases of prostatic intraepithelial neoplasia were diagnosed which included one high grade intraepithelial neoplasia with moderate to severe dysplasia.

Malignant lesions were detected in eight cases in this study. The age range of 58-83 years with mean age of 72.1 year was ascertained. Most common of these were prostate adenocarcinoma 62.5% histologically confirmed. The youngest age of the adenocarcinoma patient was 58 years and eldest one of 83 years in the series. One case of poorly differentiated adenocarcinoma was diagnosed containing clear cells with foamy cytoplasm, nuclei with prominent nucleoli and perineural invasion. The Gleason score was 8 (5+3) grade 4. Some rarer cases like papillary carcinoma observed in a patient aged 70 years with papillary projections and fibroconnective tissue. One case of sarcomatoid carcinoma was evaluated in a patient of 83 year with history of urinary tract infection and bladder invasion. It was containing both components of epithelial and mesenchymal tissues.

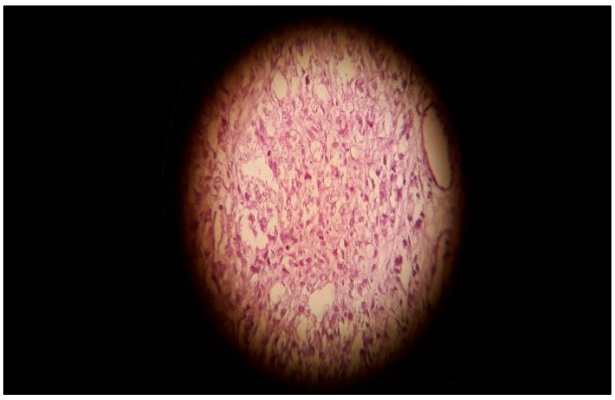

Figure 2: Proliferation of cellular spindle cells of the capillary walls in the stroma, with pleomorphism and anisonucleosis.

One case of hemangiopericytoma (Figure 2), showing proliferation of cellular spindle cells from the capillary walls in the stroma, with pleomorphism and anisonucleosis, was diagnosed involving a 71-year aged patient with complaints of hematuria and urinary

retention. In malignant cases hematuria was associated in three cases. No. case of metastasis to prostate was seen in this study. History of radiation exposure was also not seen.

The t-test was significant at the level of 0.05 for no. of cases across age group (t=3.09041, p = 0.03656), average age of presentation on no. of cases (t=4.22647,p= 0.000845) and average age of presentation for various lesions (t = 32.51397, p = 0.000000006).

DISCUSSION

The elderly male persons are usually the head of family and their impaired health causes extreme distress especially to the members of affected traditional Indian families. The agony of prostate carcinoma becomes unbearable. However, these are uncommon relative to prevalence of non-neoplastic conditions.

The common age group involved in this series was 50-60 and 60-70 years as was ascertained in other studies.[3,13] Many literatures are present of studies in India and abroad diagnosing BNH as the highest percentage of cases. Outcome of some studies are similar to our findings of 73.91%.[11,14] In older age group involvement of chronic prostatitis associated with nodular hyperplasia is a common finding. There were 15.21% cases of this type in this series. Mittal BV et al, Garg M et al, diagnosed 32.69%, 38.39% of cases in their studies.[8,15] The clinical symptoms are overcome by medical treatment, catheterization and thereby prostatectomy. Atypical glandular hyperplasia was detected in 2.9% cases including one of cyst like change. Cysts are detected in the form of retention cysts also due to obstruction of gland duct causing dilatation of acini and these cysts are usually small clinically causing obstructive symptoms occasionally.[7] Prostatic intraepithelial neoplasia was diagnosed in 2.17% in this study. It was assessed from 1% to 11% in other studies conducted in India and abroad.[4,5]

Malignant cases were diagnosed 5.79% in this series. It is similar to findings of Maru AM et al, (6.87%) and Mittal BV et al, (7.02%), however Anunobi CC et al, detected 28.9% in their study.[4,8,14] Among the malignant conditions, adenocarcinoma of prostate (62.5%) emerged as the most common in this study. In various studies it emerged from 10.67% to 99%.[14,16] Endometroid carcinoma associated with adenocarcinoma also involves sometime.[9] Almost 90% of the prostate cancers are acinar in morphology originating in peripheral or posterior regions.[10] In this series no case of metastasis to prostate seen but Chukwuemeka CN et al, in Lagos, Nigeria detected 0.3% in their studies.[5] In this study one case of papillary carcinoma was diagnosed. Losi L et al, diagnosed 3/650 cases of pure papillary carcinoma which usually arise in prostate duct consisting of papillary fronds, branching and fibrovascular tissue covered by single or stratified columnar cells.[10,17] One rare case of sarcomatoid carcinoma was confirmed in an elderly male above eighty years. Hansel DE et al, found tumors admixed with ductal adenocarcinoma and presence of mesenchymal elements of osteosarcoma, chondrosarcoma and rhabdomyosarcoma in their studies.[18] Onur A et al, discovered this tumor in a relatively younger patient of 54 year.[19] A single case of hemangiopericytoma, was diagnosed in an old aged patient. Very few cases have been reported so far throughout. Ronchi A et al, detected this tumor in a 62 years case whereas Ishiguro et al, diagnosed this tumor in a 67-year case with dysuria.[20,21]

CONCLUSION

The retrospective study of prostate gland lesions in this teaching hospital revealed BNH as the commonest disease which requires education to males to consult clinician and present for screening tests from 40 years of age covering rural males especially so that measures of treatment and management can be discharged judiciously and promptly, prostate specific antigen assessment and imaging findings and histological examination are helpful in suspected case of malignancy.

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REFERENCES

1. Lee CH, Akin-Olugbade O, Kirschenbaum A. Overview of prostate anatomy, histology and pathology. Endocrinol Metab Clin North Am. 2011;40(3):565-75.
2. Epstein JI. The lower urinary tract and male genital system- Prostate. In: Kumar V, Abbas AK, Nelson F, Aster JC, eds. Robbins and Cotran's Pathologic Basis of Disease. 8th Ed. Philadelphia: Elsevier; 2010:993-1002.
3. 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.
4. Maru AM, Makwana HH, Lakum NR, Chokshi T, Agnihotri A, Trivedi N, et al. Study on correlation between prostate specific antigen (PSA) and various prostatic pathology. Int J Med Sci Pub Heal. 2014;3:735.
5. Chukwuemeka CN, Olalekan SK, Emmanuel KA. A histopathological study of prostate lesions in Lagos,

Nigeria: a private practice experience. Niger Med J. 2015;56(5):338-43.
6. Pacelli A, Bostwick DG. Clinical significance of high-grade prostatic intraepithelial neoplasia in transurethral resection specimens. Urol. 1997;50(3):355-9.
7. Nghiem HT, Kellman GM, Sandberg SA, Craig BM. Cystic lesions of the prostate. Radiographic. 1990;10(4):635-50.
8. Mittal BV, Amin MB, Kinare SG. Spectrum of histological lesions in 185 consecutive prostatic specimens. J Postgrad Med. 1989;35:157.
9. Epstein JI, Woodruff JM. Adenocarcinoma of the prostate with endometroid features. A light microscopic and immunohistochemical study of ten cases. Cancer. 1986;57(1):111-9.
10. Losi L, Brausi M, Di Gregorio C. Rare prostatic carcinomas:histogenesis and morphologic pattern. Pathologica. 1994;86(4):366-70.
11. Khant VS, Goswami H, Shah PY. Correlation of serum prostate-specific antigen level in various prostate pathology in elderly men. Int J Med Sci Pub Heal. 2017;6.
12. Shah RB, Zhou M. Recent advances in prostate cancer pathology: Gleason grading and beyond. Pathol Int. 2016;66(5):260-72.
13. Aslam HM, Shahid N, Shaikh NA, Shaikh HA, Saleem S, Mughal A. Spectrum of prostate lesions. Int Arch Med. 2013;6:36.
14. Anunobi CC, Akinde OR, Elesha SO, Daramola AO, Tijani KH, Ojewola RW. Prostate diseases in Lagos, Nigeria: A histologic study with tPSA correlation. Nigerian Postgraduate Med J. 2011;18(2):98-104.
15. 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(4):146-51.
16. Kumar M, Khatri SL, Saxena V, Vijay S. Ind J Basic App Med Res. 2016;6(1):695-704.
17. Wernert N, Luchtrath H, Seeliger H, Schafer M, Goebbels R, Dhom G. Papillary carcinoma of the prostate, location, morphology, and immunohistochemistry: the histogenesis and entity of so-called endometriod carcinoma. Prostate. 1987;10(2):123-1.
18. Hansel DE, Epstein JI. Sarcomatoid carcinoma of the prostate: a study of 42 cases. Am J Surg Pathol. 2006;30(10):1316-21.
19. Onur A, Eymen G, Neslihan IZ, Yusuf K, Ahmet C, Ahmet HY. Sarcomatoid carcinoma of the prostate. Case Rep Urol. 2013;2013:631809.
20. Ronchi A, La Mantia E, Gigantino V, Perdona S, De Sio M, Facchini G, et al. A rare case of malignant solitary fibrous tumor in prostate with review of the literature. Diagn Pathol. 2017;12(1):50.
21. Ishiguro K, Yamakoshi T, Okishio N, Tamai H, Naide Y, Kasahara M. Hemangiopericytoma of the prostate: a case report. Hinyokika Kiyo. 1984;30(7):931-4.

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