

To Evaluate the Incidence of Prostatic Disorders and Correlate the Relationship of Presenting Complaints with Prostatic Disorders

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ABSTRACT

Background: The diseases of prostate gland are responsible for significant morbidity and mortality among adult males worldwide. The most frequently encountered diseases affecting prostate are prostatitis, benign prostatic hyperplasia and prostatic cancer. Limited studies have been done regarding prostatic disorders and its increasing frequency hence this study attempts to evaluate the incidence of prostatic disorders, especially in elderly people and to correlate presenting complaints with prostatic disorders.

Methodology: This prospective, observational study was conducted for a period of two months from May to June, 2015. Patients visiting to urology OPD with prostatic disorders were recruited in the study. A performa was prepared and relevant data collected. Clinical diagnosis was made on the basis of history and examination followed by confirmation on histopathological examination of prostate tissue.

Results: A total of 51 patients were included in the study in the age range of 49-80years. The most common diagnosis among patients was benign prostatic hyperplasia. The mean age of patients in our study was 69.85 ± 4.63 years and mean serum prostate specific antigen (PSA) levels were 17.38 ± 66.50 ng/ml. The patients with prostatic carcinoma had a significantly ($p < 0.05$) higher serum PSA level. Among all patients there was a significant correlation of symptoms of increased frequency of

urination, urgency, burning during micturition, intermittent stream formation and urinary retention with BPH.

Conclusion: Benign prostatic hyperplasia was the most common prostatic lesion occurring commonly after sixties and with increased frequency of micturition as the most common complaint. After BPH, prostatic adenocarcinoma was found to be the second commonest lesion occurring mostly in the same age group and with similar presenting complaints as in BPH.


Key words: Prostate, Adenocarcinoma, Prostatitis, Benign Prostatic Hyperplasia.

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Article History:

Received: 17-08-2017, Revised: 03-09-2017, Accepted: 19-09-2017

Access this article online	
Website: www.ijmrp.com	Quick Response code 
DOI: 10.21276/ijmrp.2017.3.5.014	

INTRODUCTION

The diseases of prostate gland are responsible for significant morbidity and mortality among adult males worldwide, the most frequently encountered diseases of prostate are prostatitis, benign prostatic hyperplasia (BPH) and prostate cancer¹ with BPH and carcinoma prostate being encountered frequently with advancing age.²

Prostate inflammation is especially common in men under 50 years of age and could be acute bacterial prostatitis, chronic bacterial prostatitis, chronic inflammatory and non-inflammatory prostatitis, chronic pelvic pain syndrome, and asymptomatic inflammatory prostatitis.³ About 10% of all men suffer from the

symptoms of prostatitis syndrome⁴, however, the frequency of bacterial prostatitis is only 7%.⁵ BPH or nodular hyperplasia is the non-malignant adenomatous overgrowth of prostate⁶, beginning around age of 40 years and the prevalence escalates in a growth incidence pattern that nearly mirrors age.⁷ Prostate cancer is the most common malignant tumor in men all over the world and is estimated that about 1 man in 6 is diagnosed with prostate cancer during his lifetime.⁸

BPH and carcinoma of prostate both display a parallel increase in prevalence with patients' age. The worldwide incidence of prostate cancer has been rising rapidly, likely due to intensified effort in

early detection and screening. The combination of Digital rectal examination [DRE], Trans Rectal Ultra sonogram⁹, and serum prostate specific antigen (PSA) estimation, supplemented with biopsy procedures is powerful diagnostic tool in the diagnosis of both benign and malignant prostatic lesions. This study attempts to evaluate the incidence of prostatic disorders, especially in elderly people that are afflicted by several prevalent urological diseases and to correlate presenting complaints with prostatic disorders in Indian setup.

METHODOLOGY

This prospective, observational study was conducted in Department of Urology in a tertiary care hospital in North India for a period of two months from May to June, 2015.

Patients visiting with prostatic disorders were recruited in the study. The study was approved by the Institutional Ethics Committee and only those patients who gave written informed consent were included in the study. All male patients over of the age of 40 years and suffering from prostatic disorder were included in the study. Any patient on hormone therapy and with associated co morbid medical or surgical illness was excluded from the study.

Procedure

A performa was prepared and data collected which included information like name, age, symptoms, signs, findings on general physical examination and digital rectal examination, serum PSA levels, findings on ultrasonography etc. A clinical diagnosis was made on the basis of history and examination and in cases suspicious of carcinoma, sampling of prostate was done through needle biopsies (trucut and core needle biopsy), transurethral resection of prostate (TURP), simple prostatectomy and radical prostatectomy. Tissue was sent for histopathological examination. Specimens thus obtained were kept in 10% neutral buffered formalin. They were grossly examined and size/quantity and weight of all specimens were recorded. Abnormalities such as increase in weight or size and gross characteristics such as nodular and cystic changes were noted. Biopsies were processed followed by embedding in paraffin wax out of which 4-6 micrometer thick sections were cut and stained with Hematoxylin & Eosin. On microscopic examination, histopathological diagnosis was made.

DIAGNOSTIC CRITERIA

a) Diagnostic Criteria for Prostatic Cancer

Nuclear Changes

Presence of prominent nucleoli is advocated as diagnostic criterion of prostate cancer. Most of these prominent nucleoli are in areas of inflammation, basal cell hyperplasia, atrophy, or Paneth cell-like change. In addition to nucleolar prominence, multiple nucleoli and nucleolar margination have also been suggested as diagnostic criteria for prostate cancer. Multiple nucleoli are never found in benign gland.

Perineural Invasion

Presence of glands in a perineural location used to be considered as a diagnostic hallmark of malignancy. Circumferential growth or intraneural invasion should be regarded as pathognomonic of cancer.

Cytoplasmic Features

Cytoplasmic features in malignancy vary from clear amphophilic to eosinophilic. They are very useful features in differentiation between benign and atypical/cancerous glands.

Collagenous Micronodules

Collagenous micronodules are another recently described histological observation in Prostate cancer. These microscopic nodular aggregates of paucicellular eosinophilic fibrillar stroma are a specific, but infrequent, diagnostic clue in prostatic adenocarcinoma.

Intraluminal Contents

Prostatic crystalloids are intraluminal, eosinophilic and refractile structures of varying size and shape, which are closely associated with prostate cancer. Presence of intraluminal acidic mucin also has been advocated as useful supportive evidence in the diagnosis of prostate adenocarcinoma.¹⁰

b) Diagnostic Criteria for Benign Prostatic Hyperplasia (BPH)

Nodularity is the hallmark of Benign Prostatic Hyperplasia. In the usual case prostate enlarges up to 100gm and nodular hyperplasia of the prostate originates almost exclusively in the inner aspect of Prostate gland. On cross section, the nodules vary in color and consistency. In nodules that contain mostly glands, tissue is yellow pink with soft consistency and a milky white prostatic fluid oozes out of these areas. In nodules which are composed primarily of fibro muscular area, each nodule is pale gray, tough and does not exclude fluids.¹⁰

Statistical Analysis

All data was entered and analyzed through appropriate software. Mean and standard deviation was evaluated for continuous data. Frequency and percentage were calculated for categorical data.

RESULTS

A total of 51 patients were included in the study after signing the informed consent. The age of patients presenting with prostate disorders ranged from 49-80years. Based on clinical findings and confirmation by histopathological examination, the most common diagnosis among patients was benign prostatic hyperplasia, which was seen in 43 (84.3%) patients and 14 patients had both prostatitis and benign prostatic hyperplasia. Carcinoma of prostate was seen in 06(11.7%) patients and only two (3.92%) patients were diagnosed with prostatitis alone. Among patients diagnosed with benign prostatic hyperplasia, most common age group affected was 7th decade of life in 22(51.1%) patients followed 14 (32.5%) patients in 8th decade of life. A similar age incidence was seen in patients diagnosed with adenocarcinoma prostate, maximum number 6 (50%) of patients were in 7th decade, followed by 02(25%) patients in 8th decade [Table 1].

The mean age of patients in our study was 69.85±4.63 years, with mean age of patients affected with benign prostatic hyperplasia being 69.49±4.55 years and those affected with adenocarcinoma prostate was 73±4.76 years. There was no statistically significant (p>0.05) correlation between age at presentation and diagnosis. The serum prostate specific antigen (PSA) levels were in the range of 0.33-390 ng/ml with mean serum PSA level being 17.38±66.50 ng/ml. Table 2 depicts different mean serum PSA levels for benign prostatic hyperplasia, adenocarcinoma prostate and prostatitis, the patients with carcinoma had a statistically

significant correlation ($p < 0.05$) with serum PSA levels as compared to other groups. [Table 2]

The most common presenting complaints among all patients was increased frequency of micturition in 33(64.7%) patients followed by symptoms of urinary retention in 23(45%) patients, burning during micturition in 23(45%) patients and urgency in 19(37.2%) patients. Some other complaints reported by patients were nocturia, intermittent urine stream, straining during micturition, dribbling of urine, weak stream of urine, inguinal swelling and abdominal pain. The most common complaint in BPH was increased frequency of micturition in 21(48.8%), followed by urinary retention in 17(39.5%) patients, burning micturition in 13 (30.23%) and urgency in 11(25.6%) patients. There was a significant correlation of symptoms of increased frequency of urination, urgency, burning during micturition, intermittent stream formation and urinary retention with BPH. The most common complaint of patients with adenocarcinoma prostate was increased frequency of micturition in 04(66.6%), followed by

dribbling of urine in 03(50%), burning micturition in 03(50%) and urgency was reported in 02(33.3%) patients, though these symptoms had no significant correlation with adenocarcinoma of prostate. There was also no correlation between complaining symptoms with prostatitis. [Table 3]

Digital rectal examination of prostate and its consistency varied in different patients and grades of prostate enlargement also varied in all patients [Table 4].

In patients with BPH, prostate was found to be smooth and firm in 41(95.3%) patients whereas only 02(0.04%) patients had a hard and nodular gland on examination. Prostate gland enlargement of Grade I and II was seen in patients with BPH. On the contrary, all patients 06(100%) with adenocarcinoma prostate had a hard and nodular prostate on examination and a grade III enlargement was reported in all patients. It was found that a firm, smooth and non-tender prostate on digital examination showed significant correlation with BPH & Prostatitis. Hard, Nodular and non-tender prostate correlated significantly with carcinoma prostate.

Table 1: Incidence of prostatic disorders and its correlation between age groups

Age	BPH	Prostatitis	Carcinoma	P value
41-50		1		0.95 not significant
51-60	7	3	1	(Chi-Square)
61-70	22	8	3	
71-80	14	4	2	

Table 2: Mean age and serum PSA levels of different prostatic disorders

	BPH	Prostatitis	Carcinoma	P value
Mean Age	69.49±4.55	69.73±4.82	73±4.76	0.49 not significant (ANOVA)
Serum PSA	5.54±9.27	8.5±15.25	131.77±216.87	<0.05 highly significant (ANOVA)

Table 3: Correlation between different presenting complaints in various prostatic disorders

Symptoms	BPH	Prostatitis	Carcinoma	P Value
Increase in Frequency of micturition	21	8	4	Significant correlation with BPH
Urgency	11	6	2	Significant correlation with BPH
Urinary retention	17	6	0	Significant correlation with BPH
Dribbling of urine	4	1	3	
Burning micturition	13	7	3	Significant correlation with BPH
Abdominal Pain	4	1	0	
Inguinal Swelling	4	2	0	
Weak Stream of urine	4	3	0	
Intermittent urine Stream	8	3	0	Significant correlation with BPH
Straining during micturition	5	4	0	
Nocturia	8	5	1	

Table 4: Findings of Digital Rectal Examination (DRE) of prostate

	BPH	Prostatitis	Carcinoma	P value
Firm & Smooth	41	14	0	Significant correlation with BPH
Hard & Nodular	2	2	6	Significant correlation with Carcinoma
Tender	1	2	0	
Non tender	42	14	6	
Grade (I:II:III)	13:29:1	7:9:0	0:3:3	<0.05 highly significant (Chi Square)

DISCUSSION

Two important histopathological prostatic lesions are benign prostatic hyperplasia and prostatic carcinoma causing enlargement of prostate gland, constricting the urethra and thus causing various urinary symptoms. In our study, mean age of all patients was 69.85 ± 4.63 years and majority of patients were in the age group of 61-70 years. The most common prostatic lesion found in our study was benign prostatic hyperplasia, with maximum number of patients in the age group of 61-70 years. A study done in Nigeria and Saudi Arabia showed somewhat same frequency (82%) with same age group being affected as in present study.^{11,12} In addition, in our study, it was found that frequency of hyperplasia increases with age from sixth decade to seventh decade, this reflects that hyperplasia may be a normal aging process. Study in Nigeria stated that incidence of BPH declines after 70 years of age.¹²

Commonest complaints among patients of benign prostatic hyperplasia were increased frequency of micturition followed by urinary retention. Chute et al in their study of benign prostatic hyperplasia patients reported obstructive voiding as the chief complaint followed by frequent urination.¹³ It may be due to inability to empty the bladder completely that creates a reservoir of residual urine, which is a common source of infection, due to which urine frequency, nocturia, difficulty in starting and stopping of stream of urine, overflow dribbling and dysuria occurs whereas urinary retention occurs due to the fact that increase size of gland and smooth muscle mediated obstruction of prostate cause urethral obstruction. Increased resistance to urinary flow leads to bladder hypertrophy and distention, accompanied by urine retention.^{10,14} Bladder outflow obstruction may lead to Urinary Tract Infections, hydronephrosis and pyonephrosis.

After benign prostatic hyperplasia, prostatic adenocarcinoma was found to be the second commonest lesion, occurring mostly in the same age group as BPH i.e. 60-70 years. Same findings were also reported in studies conducted in Oman, India and Saudi Arabia (10%).^{11,15,16} However, as compared to our study, a study done in Pakistan showed a slightly higher incidence of prostatic carcinoma.¹⁷ Further, in contrast to our study, another study showed peak age of incidence of carcinoma prostate in the eight decade of life.¹⁵ In our study, most of the patients with prostatic adenocarcinoma presented with complaint of increased frequency of micturition. Josephine et al also reported difficulty in micturition as the most common complaint among patients with carcinoma prostate.¹⁸

In our study, the number of patients with clinical diagnosis of only prostatitis is low, however, histopathology report showed higher number of patients with findings of both prostatitis and BPH. Dennis et al in his study stated that the causal relationship among BPH, prostatitis, and prostate cancer has been a point of controversy because they are strongly associated with similar risk factors, in addition to age and patients previously having prostatitis are at risk of developing prostate cancer.¹⁹

There are certain limitations in our study. Firstly, the sample size of study is small as it was a short duration study of two months and included only those patients who fulfilled the eligibility criteria. Secondly, role of family history, environmental factors, individual social class and ethnicity as possible contributory factors in prostatic disorders has not been studied. Thus, further prospective studies are highly recommended for the better understanding of

relationship prostatic lesions with molecular pathogenesis and levels of androgens.

To conclude our study showed that benign prostatic hyperplasia was the most common prostatic lesion occurring commonly after sixty years of age and majority of these patients presented with increased frequency of micturition as the most common complaint. Adenocarcinoma of prostate was the second common diagnosis with peak incidence in seventh decade of life and presented with similar presenting complaint. Prostatitis was seen as an additional finding to BPH in few patients.

SOURCE OF FUNDING

This projects is a part of ICMR-STs (Indian Council of Medical Research – Short term Studentship Program) 2015. The project has been supported by ICMR-STs 2015 program.

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Conflict of Interest: None Declared.

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Cite this article as: Anureet Kaur, Deepak Jindal, Amarjit S Grover, Prithpal S Matreja. To Evaluate the Incidence of Prostatic Disorders and Correlate the Relationship of Presenting Complaints with Prostatic Disorders. *Int J Med Res Prof*. 2017 Sept; 3(5):69-73. DOI:10.21276/ijmrp.2017.3.5.014