Original Research Article

DOI: http://dx.doi.org/10.18203/2349-2902.isj20180992

A clinico pathological study and management of benign enlargement of prostate

Ashish Mor*, Surender Mohan Sharma, Sujoy Mukherjee, Rishi Jindal

Department of Surgery, Rohilkhand Medical College and Hospital, Bareilly, Uttar Pradesh, India

Received: 23 February 2018 Accepted: 05 March 2018

*Correspondence:

Dr. Ashish Mor,

E-mail: drashishmor8057@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Benign prostatic hyperplasia (BPH) is the non-malignant enlargement of the prostate gland. Prolonged obstructions may eventually lead to acute urinary retention, recurrent urinary tract infection, hematuria, bladder calculi, and renal insufficiency.

Methods: Hundred cases of benign enlargement of prostate were studied from November 2015 to 2016. Patients diagnosed as benign enlargement of prostate by clinical digital rectal examination, investigation like USG were included in this study. Patients with urinary retention due to strictures and urolithiasis, carcinoma were excluded.

Results: Mean age of presentation was 64.4, and 34% were found to be in severe group of IPSS grading. There was a significant co-relation between the PVRU and prostate volume. There were 16% cases of acute urinary retention, 2% cases presented with bladder stones. Benign enlargement of prostate, IPSS score, Post voidal residual urine has a weak correlation with the increasing age as observed.

Conclusions: Benign enlargement of prostate is a disease of elderly with peak incidence in the 5th and 6th decade of life, BPH has co-relation with inguinal hernia, AUR which is 16%. There was no correlation between the age of the patient and the severity of symptoms with respect to IPSS score. There was no correlation between the age of the patient and the severity of symptoms with respect to IPSS score. In present study there was a statistically significant relation were found between prostate volume and post voidal residual urine. Large amount of residual urine is the indication for surgery because it predisposes to infections and stone formation.

Keywords: Benign enlargement of prostate, IPSS score, Post voidal residual urine

INTRODUCTION

The name 'prostate' is originally derived from a Greek word 'prohistani' 'means to stand in front of'. The prostate is the largest accessory sex gland of males. It is a musculo-glandular, exocrine gland that secretes alkaline fluid which constitutes about 20-30% volume of the seminal fluid. Changes in the prostatic fluid composition and/or secretion affects sperm functions and may lead to male infertility.

Benign enlargement of prostate refers to stromal and glandular epithelial hyperplasia that occurs in the

periurethral transition zone of the prostate that surrounds the urethra.

BPH clinically manifests as lower urinary tract symptoms (LUTS) consisting of irritative (urgency, frequency, nocturia) and obstructive symptoms (hesitancy, interrupted urinary stream, straining to initiate urination and sensation of incomplete bladder emptying).¹

The prevalence of LUTS due to BPH increases with increasing age. Moderate to severe symptoms occur in 40 to 80% of men after the age 60 and by 80 years, respectively. Nearly all men develop microscopic BPH

by the age of 90 years.² Historically, voiding symptoms have been related to obstruction of the bladder outlet.³

Caine in 1986 gave concept of dynamic component which is related to the level of sympathetic stimulation of alpha receptors in the (a) prostatic capsular muscle⁴ prostatic adenoma (c) bladder base.⁴ This suggested the possibility of treatment with alpha adrenergic antagonists.

Medical treatment has come to stay because of the limitations of prostate surgery in elderly persons with various comorbidities or unwilling for surgery.

The aim was to study the clinico- pathological aspects of 'benign enlargement of prostate'.

Objectives

- To study the age distribution pattern and common symptoms in benign enlargement of prostate.
- To study the levels of prostate specific antigen (PSA) in benign enlargement of prostate.
- To study the correlation between prostate volume and postvoid residual urine volume in BEP.
- To study the surgical modes of treatment of benign enlargement prostate and the associated postoperative complications

METHODS

Study design and setting

In this dissertation of clinical study of Benign enlargement of prostate, 100 cases admitted to Rohilkhand medical college, Bareilly, Uttar Pradesh, India from November 2015 to November 2016 were studied with the help of data available from the hospital records. During this period 100 cases admitted to different surgical units were studied in detail as per the proforma enclosed. All the patients studied in this study were followed up from the moment they were admitted until they were discharged from the hospital. All the patients were followed up in OPD up to 3 months' post-surgery.

Methodology

Method of collection of data (including sampling procedure, if any)

Definition of a study subject: Male patients more than 50 years of age with LUTS and prostatomegaly on digital rectal examination and abdominal ultrasound. Collection of data as per the proforma. The study was divided into 4 groups:

- 1. Clinical study
- 2. Biochemical study
- 3. Pathological study

- 4. Sonological study
- **1. Clinical study:** Conducted under the following headings.
- Incidence of age
- Clinical examination included detailed general survey, associated diseases and systemic and genitourinary system.
- Rectal examination was done in all cases to know the grades of enlarged prostate and the lobes involved on the following basis.

Grade I: The prostate is just palpable and upper limit is easily reached.

Grade II: The prostate is well palpable and the upper limit is reached with difficulty.

Grade III: The upper limit of the prostate cannot be reached.

- **Surgical treatment**: In 28 cases, (Trans vasical prostatectomy) and in 72 cases, Trans uretheral resection of prostate) was done.
- **Follow up**: Most of the cases were followed up during the study period for a period of 3 months on monthly basis in OPD.
- **2. Biochemical study**: Biochemical estimations like blood urea, serum creatinine and prostate specific antigen were done in the college lab of Rohilkhand Medical College,Bareilly,Uttar Pradesh, India.
- **3. Pathological study:** Histopathological study was done in the Department of Pathology. Gross examination of the specimens was made. The pieces of tissues were taken from the selected areas for histopathological examination and all attempts were made to identify carcinoma in situ.
- **4. Sonological study:** This study was done in the sonology department under the guidance of associate professor of radiology. The size of prostate, the lobes involved and residual urine volume were assessed sonologically. The consolidated, essential and relevant information of the cases studied were tabulated under different headings in the master chart.

Treatment protocol

Surgical Treatment

Trans urethral resection of prostate (TURP) and transvesical prostatectomy

All the patients in the surgical treatment group underwent Transurethral resection of prostate (TURP) and Transvesical prostatectomy (TVP).

Anaesthesia

All the operations were done under spinal anaesthesia. TURP was done in lithotomy position while TVP was performed in supine position.

Inclusion criteria

Patients admitted and positively diagnosed as benign enlargement of prostate by clinical digital rectal examination and investigation like USG were included in this study.

Exclusion criteria

Carcinoma prostate, all the cases managed by medical management and other causes of urinary retention like stricture urethra and stones and existing co-morbid conditions.

Data analysis

The results obtained in the study were compiled in a tabulated form. Mean \pm Standard Deviation (SD) were analysed using with Statistical Package for Social Sciences (SPSS 23.0). Chi-square test was used for analysis of the data. The level P < 0.001 was considered as the cut-off value for significance.

Ethical consideration

Due permission was taken from the hospital ethical committee to carry out this study.

RESULTS

In present study of one hundred patients, youngest patient in the study was 50 years old patient and the oldest patient in the study was of 80 years. Maximum incidence was found in the age group of 50-60 years. Mean age of presentation was 64.46 (Figure 1).

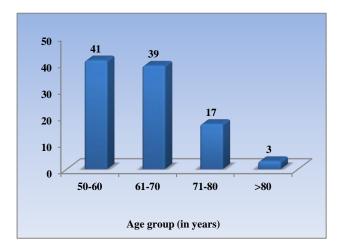


Figure 1: Age distribution of the patients.

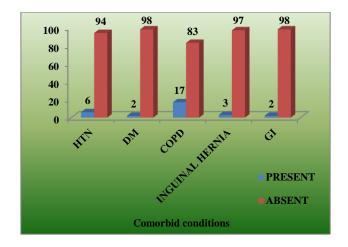


Figure 2: The incidence of comorbid conditions.

In this study we found the most common comorbid condition was COPD in 17% which was also common in this age group. Second highest incidence was of hypertension which was 6% (Figure 2).

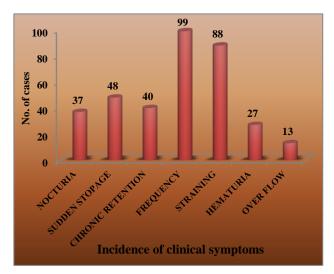


Figure 3: Number of patients presenting with symptoms.

In present study author found out of 100 patients 37 patients presented with nocturia and 48 % with sudden stoppage of urinary stream without AUR. 40% of patients presented with chronic retention and almost all of the patients i.e. 99% presented with frequency of stream, 27% patients presented with haematuria (Figure 3).

Out of 100 cases 34 % were found to be in severe group. 32% in moderate group and 34% in mild group. This shows that the patients presented with mixed symptoms of mild to severe in nature (Figure 4).

In this study author found a significant correlation between IPSS score and the prostate volume as the pvalue was highly significant (Table 1).

Table 1: Co-relation of severity of IPSS and prostate volume.

IPSS	Prostate volume		F-value	D volue
grading	Mean	SD	r-value	r-value
Mild	49.73	16.54		<0.0001(HS)
Moderate	62.56	20.82	22.67	
Severe	78.79	15.91	_	

^{*}HS-Highly significant.

In this study we found that the mean duration of presentation (in months) in mild severity of IPSS group was 4.79 as compared to 6.84 in moderate and 6.11 in severe group.p-value was not significant showing no relation in duration of symptoms and grades of the symptoms (Table 2).

Table 2: Co-relation of age and IPSS severity.

A go (yooyo)	IPSS grading			
Age (years)	Mild	Moderate	Severe	
50-60	13	14	14	
61-70	16	12	11	
71-80	4	6	7	
>80	1	0	2	
Total	34	32	35	

^{*} $\chi^2 = 1.697, P = 0.945$ (Not significant).

In present study we did not find any correlation between duration of symptoms and IPSS grading (p-value insignificant) (Table 3).

Table 3: Co-relation of duration and IPSS grading.

IPSS and in a	Duration (in months)		F- value	P-
grading	Mean	SD	value	value
Mild	4.79	4.26		0.406
Moderate	6.84	10.19	0.727	0.486 (NS)
Severe	6.11	5.39	_	

^{*}NS-Not significant.

Table 4: Correlation between prostate volume and residual urine.

Prostate volume	N	Mean	S.D	F- value	P-value, (significant)
20-40	18	36.17	13.98		D 0 001
41-60	33	59.73	35.30		
61-80	21	86.86	40.94	23.28	P<0.001 H.S
81-100	28	115.21	37.05		п.ъ
Total	100	36.17	13.98		

^{*}One Way Anova Test. Karl Pearson's coefficient of correlation = 0.655 HS

In this study author found that there was a significant corelation between the postvoidal residual urine and prostate volume, p-value=0.001 which is highly significant (One Way Annova Test) (Table 4, Figure 4).

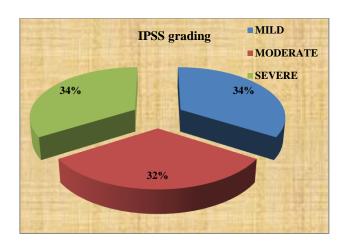


Figure 4: Percentage of cases in respect to IPSS grading.

DISCUSSION

Benign enlargement of prostate is the major problem in our country and the world. Benign Prostatic hyperplasia is a common cause of lower urinary tract symptoms (LUTS) in men over 50 years and can have a significant impact on the quality of life of sufferers. The first change of BPH begins at about age 35 and consists of microscopic stromal nodules that occur around the periurethral glands. Management of BPH has witnessed remarkable swing from the gold standard TURP towards non operative treatment with drugs, as well as plethora to less invasive procedures like incision hyperthermia thermotherapy, lasers, vaporization of prostate with vaporizer etc.

Hundred cases were selected on the basis of inclusion and exclusion criteria mentioned above. Criteria were designed to exclude all cases of carcinoma prostate and the cases managed non-surgically (medical management).

Clinical study

Age incidence

In the study done by M. Emberton in Europe in the year 2008, 14% of the men were in the 4th decade and more than 40% of men were in there 6th decade which is in the similar range in present study with 41% in fifth decade and 39% in sixth decade.^{5,6}

In present study mean age of incidence is 64.4 which is similar to Lepor H, Ridaud G in their study done in 1991 (63.9 ± 1.0) .⁷

Associated illness

In a study done by NicolásTorralba JA in 2003 in a total of 163 patients 113 were classified as suffering clinical BPH and 75 as hypertensive. Among 75 hypertensive patients 31 presented with IPSS greater than 7 (41.3%) in comparison to 20 out of 88 non hypertensive patients

(22.7%), being the difference statistically significant. This is in contrast to our study where only 6% of patients presented with LUTS are suffering from hypertension.

Complications

In a study done by Li XD shows the correlation of BPH and inguinal hernia and concluded that TURP combined with repair of inguinal hernia at the same time was a simple and effective method, which can avoid second operation, and it was more significant to the aged especially. In current study, out of 100 diagnosed cases of BPH only 3 cases had inguinal hernia. BPH was managed first and inguinal hernia was operated later with mesh hernioplasty.

In older literature, the risk of recurrent AUR was cited as 56% to 64% within 1 week of the first episode and 76% to 83% in men with diagnosed BPH, which in contrast to this study only 16 cases were presented to us with AUR. Though many patients have the history of AUR in the past for which they have been catheterized in the past.

Mc Connell in 1994, reported that 20 to 30% of men undergoing prostate surgery have urinary retention and I to 2% of them have concomitant bladder stones which is similar to present study (2%).¹²

In the American Urological Association Cooperative Study in (1989) 27% of patients had acute urinary tract infection which is in range of our study which is (26%).¹³

Post operative complications

Reich O in 2008, found in their study the mortality rate for transurethral prostate resection was 0.10%. ¹⁴ The most relevant complications were failure to void (5.8%), significant urinary tract infection (3.6%), bleeding requiring transfusions (2.9%) and transurethral resection syndrome (1.4%). The resected tissue averaged 28.4 gm. In our study we observed hematuria in 18% of cases post operatively among patients operated by TURP and open prostatectomy. A 68% of the patients had uneventful post operative recovery and only 1% required blood transfusion.

IPSS grading

Basawaraj NG in 2015 showed that maximum number of patients 52 (41.3%) were having severe symptoms, 47 (37.3%) patients were having moderate symptoms and 27 patients (21.4%) were having mild symptoms.¹⁵ Whereas in present study, we found 34%, 32%, 34% as severe, moderate and mild respectively.

In a similar study done by the same author in 2015, to find the correlation between prostate volume and IPSS grading and it was observed that prostate volume had statistically significant but weak correlation with IPSS (r=0.40, p=0.001), which was similar to our study p-value 0.001. In current study we found no significant correlation between the age and IPSS grading. This was indicative that severe symptoms could appear in a relatively younger age group. In the same manner no relation was observed in duration of symptoms and the IPSS score and IPSS versus grades on DRE.

Biochemical data

PSA

Kumar M in 2016 on 131 cases of BPH, 78.6% cases had serum PSA level within 0.4ng/ml and 21.3% had modest elevation i.e.; 4.1-10ng/ml which is relative to our study 63% in <4 ng/ml group and 29% in 4-10ng/ml group.¹⁶

Gupta A in her study in 2014, showed the age specific reference range of serum PSA values was 0.71ng/ml in those younger than 40 yrs.; 0.85ng/ml in 40-49 yrs.; 1.13ng/ml in 50-59 yrs. group; 1.45ng/ml in 60-69-year group; 1.84ng/ml in 70-79 yrs.¹⁷ group and 2.35 ng/ml in men older than 80 years. Where as in our study there is a weak correlation between the serum PSA level and the age (p-value is 0.197).

Blood urea

Reshma K in 2011 in his case control study of 75 patients shows the mean range of blood urea 74.27±68.77 (Mean±SD) which in contrast to our study which shows the Mean±SD -44.3±29.44.¹⁸ In a similar study done but the same author shows the Mean±SD of serum creatinine 2.74±2.53 in cases of BPH in contrast to our study which is 1.2 ±0.86.

Sonographical findings

Prostate volume and post void residual urine

Kolman C in 1999, The distribution of post-void residual was highly skewed with a median of 9.5 ml. and 25^{th} and 75^{th} percentiles equal to 2.5 and 35.4, respectively, where as in our study maximum percentage was found in >100 ml group which is 33%. In the same study done by the same author found that a significant co-relation of postvoid residual with prostate volume was (RS = 0.24, P<0.001). The odds of postvoid residual urine observed in greater than 50ml were 2.5 times more for men with prostate volume greater than 30ml. In our study we observed the similar results and found the co-relation of postvoidal residual urine and prostate volume (P = 0.001) is highly significant.

Histopathological finding

Biopsy

Out of 100 cases 75 cases were found to have adenomatous hyperplasia and other 25 had adenomatous

hyperplasia with chronic prostatitis. All the cases of adenocarcinoma were excluded from the study.

CONCLUSION

Benign enlargement of prostate is a disease of old men with peak incidence in the 5th and 6th decade of life (41% in 5th decade and 39% in 6th decade). COPD was the most common comorbid condition which was encountered in our study (17%) followed by hypertension (6%) and inguinal hernia (3%).BPH is a disease of the elderly and has co-relation with hypertension due to age related factors and also was found to be associated with inguinal hernia. So the patient had to strain during micturition often. AUR (acute urinary retention) was the commonest reason for the admission to the surgical unit which was 16% of the total cases along with urinary tract infection and bladder calculi 26% and 2% respectively. IPSS grading system was used to categorize the patients in severe, moderate and mild group of symptoms which were 34%, 32% and 34% respectively. There was a weak correlation between the prostate volume and the IPSS score. In this study there was no correlation between the age of the patient and the severity of symptoms with respect to IPSS score. P-value was not significant. PSA has a weak correlation with the increasing age as observed in our study. Ultrasonography was the good modality in determining the post residual volume of urine. TRUS was better than abdominal USG in terms of High amount of residual urine was the indication of the surgery because it predisposes to infections and stone formation. Adenomatous hyperplasia was found to be the most common pathological variety. In present study there was a statistically significant relation between prostate volume and post voidal residual urine.

Funding: No funding sources Conflict of interest: None declared

Ethical approval: The study was approved by the

Institutional EthicsCommittee

REFERENCES

- Miller J, Tarter TH. Combination therapy with dutasteride and tamsulosin for the treatment of symptomatic enlarged prostate. Clin Interv Aging. 2009;4:251-8.
- 2. Berry SJ, Coffey DS, Walsh PC, Ewing LL. The development of human benign prostatic hyperplasia with age. J Urol. 1984;132:474-9.
- 3. Reohrborn GC. Beningn prostatic hyperplasia: etiology, pathophysiology, epidemiology, and natural history. Campbell-Wash urology. 10th ed. Philadelphia: Saunders Esavier. 2012:2576-81.
- Curtis NJ. BPH: Costs and treatment outcomes. Am J Manag Care. 2006;12:141-8.

- 5. Emberton M, Cornel EB, Bassi PF, Fourcade RO, Gomez JMF, Castro R. Benign prostatic hyperplasia as a progressive disease: a guide to the risk factors and options for medical management. Int J Clin Pract. 2008;62(7):1076-86.
- DeLellis RA. The neuroendocrine system and its tumors: an overview. Am J Clin Pathol. 2001;115:5-16.
- Lepor H, Williford WO, Barry M. A randomized placebo controlled trial of terazosin and fmasteride monotherapy and terazosin/fmasteride combination therapy in men with clinical benign prostatic hyperplasia. N Engi J Med. 1996;335(8):533-39.
- Nicolás JT, Tornero JR, Bañón VP, Server GP, López PC, Pérez MA. Relation between hypertension and clinical cases of benign prostatic hyperplasia. Archivos espanoles de urologia. 2003 May;56(4):355-8.
- Li XD. Twenty-eight cases report of transurethral resection of the prostate combined with repair of inguinal hernia. Zhonghua Nan KeXue. 2002;8(2):148-9.
- Breum L, Klarskov P, Munck LK, Significance of acute urinary retention due to intravesical obstruction. Scand J Urol Nephrol. 1982;16:21-4.
- 11. Klarskov P, Andersen JT, Asmussen CF. Symptoms and signs predictive of the voiding pattern after acute urinary retention in men. Scand J Urol Nephrol. 1987;21:23-8.
- 12. Mc Connell JD. Hormonal treatment of benign prostatic hyperplasia. Urol Clin North Am. 1995;22:387-400.
- 13. Perrin P, Barnes R, Hadley H, Bergman RT. Forty years of transurethral prostatic resections. The Journal of urology. 1976 Dec 1;116(6):757-8.
- 14. Reich O, Gratzke C, Bachmann A. Morbidity, mortality and early outcome of transurethral resection of the prostate: a prospective multicenter evaluation of 10,654 patients. J Urol. 2008;180(1);15-6.
- Basawaraj NG, Dasan TA, Patil SS. Correlation of sonographic prostate volume with international prostate symptom score in South Indian men. J Urol. 2008;180;(1):15-6.
- 16. Kumar M, Khatri SL,Saxena V. Clinicopathological study of prostate lesions. Indian J Basic Applied Med Res. 2016;6(1)695-04.
- 17. Gupta A, Gupta D,Raizada A. A hospital based study on reference range of serum prostate specific antigen levels. Indian J Med Res. 2014;140(4):507-12.
- 18. Reshma K, Kuthethur S, Manjerekar P, Gopal M. Evaluation of biochemical markers of renal dysfunction in prostate disorders and healthy controls. Int J Biochem Adv Res. 2014;5(9)
- 19. Kolman C, Girman CJ, Jacobsen SJ, Lieber MM. Distribution of post-void residual urine volume in randomly selected men. J Urol. 1999;161(1):122-7.

Cite this article as: Mor A, Sharma SM, Mukherjee S, Jindal R. A clinico pathological study and management of benign enlargement of prostate. Int Surg J 2018;5:1275-80.