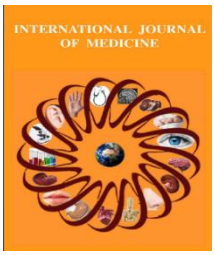

International Journal of Medicine
ISSN (P): 1468-3814; ISSN (e): 2667-7008

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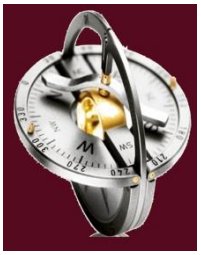

Volume: 1(1) 2019

Original Research

Clinical Presentation and Outcome Patterns in Patients with Benign Prostatic Hyperplasia: A Hospital-Based Observational Study.

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Received: 11 Nov 2019 / Accepted: 12 Dec 2019

Abstract

Background: Benign prostatic hyperplasia is a frequent cause of lower urinary tract symptoms among elderly men and contributes to impaired urinary function, recurrent retention, and reduced quality of life. *Objectives:* To evaluate the clinical presentation, baseline disease severity, treatment patterns, and short-term outcome profile among patients with benign prostatic hyperplasia. *Methods:* This hospital-based observational study was conducted at Kurnool Medical College, Kurnool, Andhra Pradesh, India, from February 2019 to May 2019. Fifty clinically diagnosed patients with benign prostatic hyperplasia were included. Demographic details, comorbidities, presenting symptoms, International Prostate Symptom Score severity, prostate volume, serum prostate-specific antigen, maximum urinary flow rate, post-void residual urine volume, treatment modality, and follow-up outcomes were recorded. Descriptive statistics were used, and baseline and follow-up parameters were compared using appropriate tests. *Results:* The mean age was 66.4 ± 7.8 years, and the largest proportion belonged to the 61-70 years age group. Hypertension and diabetes mellitus were present in 36.0% and 32.0% of patients, respectively. Nocturia was the most common symptom, followed by weak urinary stream and increased urinary frequency. Moderate and severe symptom categories accounted for 48.0% and 40.0% of patients, respectively. The mean prostate volume was 48.6 ± 16.4 mL, baseline maximum urinary flow rate was 9.8 ± 3.1 mL/second, and post-void residual urine volume was 78.5 ± 42.6 mL. Clinical improvement was observed in 80.0% of patients. Mean International Prostate Symptom Score decreased from 22.6 ± 6.8 to 11.4 ± 5.2, while maximum urinary flow rate improved to 14.7 ± 4.2 mL/second. *Conclusion:* Benign prostatic hyperplasia commonly presented with nocturia, weak stream, frequency, and incomplete emptying. Most patients had moderate-to-severe symptoms at presentation. Medical therapy was effective in the majority, while surgery was needed in selected patients with severe symptoms or inadequate response.

Keywords: *Benign prostatic hyperplasia; lower urinary tract symptoms; International Prostate Symptom Score; prostate volume; uroflowmetry; post-void residual urine; transurethral resection of prostate.*

Introduction

Benign prostatic hyperplasia (BPH) is a non-malignant enlargement of the prostate gland that commonly affects ageing men. Histological and clinical evidence indicates that the burden of BPH increases progressively with age, particularly after the fifth decade of life [1,2]. Although BPH is a pathological diagnosis, its clinical relevance is mainly expressed through lower urinary tract symptoms (LUTS), bladder outlet obstruction, acute urinary retention, recurrent urinary tract infection, and impaired quality of life. Because ageing of the male population is increasing in many regions, BPH continues to represent an important urological and public health problem [3,4].

The symptom complex of BPH includes both storage and voiding symptoms. Nocturia, frequency, urgency, weak urinary stream, hesitancy, straining, intermittency, and the sensation of incomplete bladder emptying are commonly encountered in routine clinical practice. These symptoms are often bothersome, disturb sleep, reduce daily functioning, and lead to repeated outpatient visits [5]. The International Prostate Symptom Score (IPSS), originally developed as the American Urological Association symptom index, remains a widely used instrument for grading symptom severity and monitoring treatment response in men with LUTS suggestive of BPH [6].

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DOI: 10.61336/im/19-01-12

Clinical evaluation of BPH requires a structured approach. History, physical examination, digital rectal examination, urinalysis, serum prostate-specific antigen (PSA) when clinically indicated, ultrasonographic assessment of prostate volume, uroflowmetry, and post-void residual urine estimation are commonly used to define disease severity and guide management [7,8]. Maximum urinary flow rate and post-void residual urine volume offer objective information regarding voiding function, while prostate volume and PSA can help identify patients at higher risk of progression, acute retention, and future surgical requirement [9,10].

Management of BPH is individualized according to symptom severity, prostate size, complications, patient preference, and response to therapy. Alpha-adrenergic blockers provide relatively rapid symptomatic relief, whereas 5-alpha reductase inhibitors are useful in patients with larger prostates and reduce long-term progression risk. Combination therapy has shown greater benefit in selected patients with progressive disease [11,12]. Surgical intervention, particularly transurethral resection of the prostate, continues to be used for patients with refractory symptoms, recurrent retention, recurrent infection, bladder stones, or renal functional compromise [13,14].

Hospital-based observational data are useful because they reflect the clinical spectrum of patients who actually seek care. Such data also provide insight into presenting symptoms, severity patterns, baseline functional parameters, treatment choices, and early outcomes in local practice settings. The present study was conducted with the objective of evaluating the clinical presentation, IPSS-based symptom severity, laboratory and ultrasonographic findings, treatment modalities, and outcome patterns among patients with benign prostatic hyperplasia attending a tertiary care teaching hospital.

Materials and Methods

Study design and setting: This hospital-based observational study was conducted in the Department of Urology/General Surgery clinical services of Kurnool Medical College, Kurnool, Andhra Pradesh, India. The study was designed to describe the clinical presentation, baseline disease profile, treatment pattern, and short-term outcome among patients diagnosed with benign prostatic hyperplasia.

Study period and sample size: The study was carried out from February 2019 to May 2019. A total of 50 patients satisfying the selection criteria during the study period were included by consecutive sampling. The sample size was based on the number of eligible patients who presented to the hospital during the defined study period.

Study population: Men diagnosed clinically and radiologically with benign prostatic hyperplasia were considered for inclusion. Patients aged 50 years and above with lower urinary tract symptoms suggestive of BPH and willingness to participate were included. Patients with known or suspected carcinoma prostate, neurogenic bladder, urethral stricture, previous prostate surgery, active severe systemic illness precluding evaluation, or incomplete clinical records were excluded.

ata collection procedure: After obtaining consent, demographic details, relevant comorbidities, smoking history, previous urinary tract infection, presenting symptoms, and history of acute urinary retention were recorded using a structured proforma. Symptom severity was assessed using the International Prostate Symptom Score, which classifies symptoms as mild, moderate, or severe [6]. Clinical examination included abdominal examination and digital rectal examination. Laboratory evaluation included urine examination, serum creatinine, and serum PSA where clinically indicated. Ultrasonography was used to assess prostate volume, bladder wall changes, vesical calculus, and post-void residual urine volume. Uroflowmetry was used to record maximum urinary flow rate when the patient was able to void adequately.

Treatment and follow-up assessment: Patients were managed according to clinical severity, prostate size, complications, and treating physician decision. Medical management included alpha-blocker therapy alone or combination therapy with an alpha-blocker and 5-alpha reductase inhibitor. Transurethral resection of the prostate was performed in selected patients with severe symptoms, recurrent acute urinary retention, poor response to medical therapy, or associated complications. Follow-up assessment included symptom improvement, repeat IPSS, maximum urinary flow rate, post-void residual urine volume, recurrent retention, persistent LUTS, and recurrent urinary tract infection.

Statistical analysis: Data were entered into a spreadsheet and analysed using descriptive statistics. Continuous variables were expressed as mean and standard deviation, while categorical variables were presented as frequency and percentage. Baseline and follow-up continuous variables were compared using paired statistical testing. A p-value less than 0.05 was considered statistically significant.

Ethical considerations: Institutional Ethics Committee approval was obtained before commencement of the study. Written informed consent was obtained from all participants. Patient confidentiality was maintained throughout data collection, analysis, and manuscript preparation.

Results

A total of 50 patients diagnosed with benign prostatic hyperplasia were included in the study. The mean age of the study population was 66.4 ± 7.8 years. Most patients belonged to the age group of 61-70 years. Diabetes mellitus and hypertension were the common associated comorbidities. The baseline demographic and clinical profile of the study participants is shown in Table 1.

Table 1. Baseline demographic and clinical characteristics of the study participants

Variable	Category / Value	Frequency	Percentage
Total patients	–	50	100.0
Age, years	Mean ± SD	66.4 ± 7.8	–
Age group	50-60 years	12	24.0
	61-70 years	24	48.0
	>70 years	14	28.0
Diabetes mellitus	Present	16	32.0
Hypertension	Present	18	36.0
History of smoking	Present	14	28.0
Previous urinary tract infection	Present	8	16.0

The most common presenting symptom was nocturia, observed in 42 patients, followed by weak urinary stream in 38 patients and increased urinary frequency in 37 patients. Incomplete bladder emptying, hesitancy, urgency, and straining during micturition were also frequently reported. Acute urinary retention was present in 9 patients at presentation (Table 2).

Table 2. Clinical presentation among patients with benign prostatic hyperplasia

Symptom / Clinical feature	Frequency	Percentage
Nocturia	42	84.0
Weak urinary stream	38	76.0
Increased urinary frequency	37	74.0
Hesitancy	32	64.0
Incomplete bladder emptying	30	60.0
Urgency	28	56.0
Straining during micturition	26	52.0

Dysuria	14	28.0
Acute urinary retention	9	18.0
Haematuria	4	8.0

Based on symptom severity using the International Prostate Symptom Score, most patients had moderate-to-severe symptoms. Severe symptoms were noted in 20 patients, while 24 patients had moderate symptoms. Only 6 patients had mild symptoms at presentation (Table 3).

Table 3. Distribution of patients according to IPSS severity

IPSS category	Score range	Frequency	Percentage
Mild	0-7	6	12.0
Moderate	8-19	24	48.0
Severe	20-35	20	40.0

The mean prostate volume was 48.6 ± 16.4 mL. The mean baseline maximum urinary flow rate was 9.8 ± 3.1 mL/second, while the mean post-void residual urine volume was 78.5 ± 42.6 mL. Raised post-void residual urine volume of more than 100 mL was observed in 15 patients. Ultrasonography showed bladder wall thickening in 12 patients and vesical calculus in 3 patients (Table 4).

Table 4. Baseline laboratory and ultrasonographic findings

Parameter	Value / Frequency
Prostate volume, mL, mean ± SD	48.6 ± 16.4
Serum PSA, ng/mL, mean ± SD	3.2 ± 1.4
Maximum urinary flow rate, mL/sec, mean ± SD	9.8 ± 3.1
Post-void residual urine, mL, mean ± SD	78.5 ± 42.6
Post-void residual urine >100 mL	15 (30.0%)
Bladder wall thickening	12 (24.0%)
Vesical calculus	3 (6.0%)
Urinary tract infection	8 (16.0%)
Raised serum creatinine	5 (10.0%)

Among the study participants, 28 patients were managed with alpha-blocker therapy alone, while 14 patients received combination therapy with an alpha-blocker and 5-alpha reductase inhibitor. Surgical management in the form of transurethral resection of the prostate was performed in 8 patients due to severe symptoms, recurrent retention, or poor response to medical therapy.

Clinical improvement was observed in 40 patients at follow-up. The mean IPSS decreased from 22.6 ± 6.8 at baseline to 11.4 ± 5.2 after treatment. The mean maximum urinary flow rate improved from 9.8 ± 3.1 mL/second to 14.7 ± 4.2 mL/second. Post-void residual urine volume also decreased from 78.5 ± 42.6 mL to 38.2 ± 26.4 mL (Table 5).

Table 5. Outcome pattern after treatment

Outcome parameter	Baseline	Follow-up	p-value
IPSS score, mean ± SD	22.6 ± 6.8	11.4 ± 5.2	<0.001
Maximum urinary flow rate, mL/sec, mean ± SD	9.8 ± 3.1	14.7 ± 4.2	<0.001
Post-void residual urine, mL, mean ± SD	78.5 ± 42.6	38.2 ± 26.4	<0.001
Patients with clinical improvement	–	40 (80.0%)	–
Persistent lower urinary tract symptoms	–	6 (12.0%)	–
Recurrent acute urinary retention	–	3 (6.0%)	–
Recurrent urinary tract infection	–	2 (4.0%)	–

Overall, benign prostatic hyperplasia most commonly presented with nocturia, weak urinary stream, urinary frequency, and incomplete bladder emptying. Most patients had moderate or severe symptoms at presentation. Medical therapy was effective in the majority of patients, while surgical intervention was required in a smaller proportion with severe symptoms, recurrent retention, or inadequate response to conservative management.

Discussion

The present hospital-based observational study evaluated the clinical presentation and outcome pattern among 50 patients with benign prostatic hyperplasia. The mean age of the study population was 66.4 ± 7.8 years, and nearly half of the patients belonged to the 61-70 years age group. This age distribution is consistent with the well-established age-related nature of BPH, where increasing age is closely linked with prostatic enlargement, LUTS progression, and need for clinical evaluation [1,3]. Epidemiological reviews have also shown that the burden of BPH and LUTS rises with advancing age and creates a substantial health-care burden [4,5].

Nocturia was the most common symptom in the present study, followed by weak urinary stream and increased urinary frequency. These findings reflect the mixed storage and voiding symptom profile typically observed in BPH. Storage symptoms such as nocturia, frequency, and urgency often produce marked discomfort, while voiding symptoms such as weak stream, hesitancy, straining, and incomplete emptying indicate possible bladder outlet obstruction. The high frequency of moderate and severe IPSS categories in this study suggests that many patients presented after symptoms became clinically troublesome. The IPSS remains a practical and reproducible clinical tool for quantifying symptom burden and assessing response to treatment [6].

The mean prostate volume was 48.6 ± 16.4 mL, and the baseline maximum urinary flow rate was low at 9.8 ± 3.1 mL/second. In addition, 30.0% of patients had post-void residual urine volume greater than 100 mL. These observations support the importance of combining symptom assessment with objective parameters such as prostate volume, uroflowmetry, and residual urine estimation. Previous studies have reported that prostate size, urinary flow rate, residual urine, and PSA provide useful information for risk assessment and treatment planning, although symptom severity and anatomical enlargement do not always show a simple linear relationship [9,10].

Medical therapy was the primary treatment modality in this study. Alpha-blocker monotherapy was used in more than half of the patients, while combination therapy with an alpha-blocker and 5-alpha reductase inhibitor was used in patients requiring broader pharmacological management. This pattern is consistent with guideline-based care, where alpha-blockers offer symptomatic relief and 5-alpha reductase inhibitors are added in men with larger glands or higher risk of progression [7,8,11]. The significant decline in mean IPSS and improvement in maximum urinary flow rate after treatment indicate meaningful clinical benefit in most patients.

Surgical management with transurethral resection of the prostate was performed in 16.0% of patients, mainly for severe symptoms, recurrent retention, or inadequate response to medical therapy. TURP continues to be an important treatment option for patients with complicated or refractory BPH, despite the availability of newer minimally invasive and laser-based modalities [13,14]. The overall clinical improvement rate of 80.0% in the present study highlights that structured evaluation followed by individualized therapy can produce favourable short-term

outcomes in most patients. Persistent symptoms, recurrent retention, and recurrent infection in a smaller subset underline the need for regular follow-up and timely escalation of therapy.

Limitations

This study was conducted at a single tertiary care centre with a limited sample size of 50 patients. Follow-up duration was short, so long-term recurrence, progression, reoperation, and medication adherence outcomes were not assessed. Selection was hospital-based, and patients with mild symptoms in the community were under-represented. Quality-of-life scoring, sexual function assessment, and urodynamic confirmation were not included.

Conclusion

Benign prostatic hyperplasia in this hospital-based study predominantly affected elderly men, especially those aged 61-70 years. Nocturia, weak urinary stream, increased urinary frequency, and incomplete bladder emptying were the leading presenting symptoms. Most patients had moderate-to-severe IPSS at presentation, with reduced maximum urinary flow rate and increased post-void residual urine volume indicating significant functional impairment. Medical therapy produced clinical improvement in the majority of patients, with significant reduction in symptom score and improvement in urinary flow parameters. Surgical treatment was required for selected patients with severe disease, recurrent retention, or inadequate response to conservative management. Early evaluation, symptom scoring, objective urinary assessment, risk stratification, and individualized treatment remain central to better clinical outcomes.

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