



**TO STUDY THE OUTCOME OF ALPHA BLOCKER (TAMSULOSIN) THERAPY IN
BPH PATIENTS WITH CORRELATION TO THEIR URINARY BLADDER WALL
THICKNESS**

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ABSTRACT

Introduction: Benign prostatic hyperplasia (BPH) is a common condition in older men. The prevalence of BPH increases with age. The most common lower urinary tract symptoms are hesitancy, weak stream, nocturia, and incontinence. BPH may also be complicated by recurrent urinary tract infections (UTIs)³ or bladder stones⁴. It is estimated that one half of all men with histologic BPH experience moderate to severe lower urinary tract symptoms⁵. The study aim is to investigate the effect of Tamsulosin on the measurement of bladder wall thickness in patients of benign prostatic hyperplasia, to investigate the effect of Tamsulosin on International Prostate Symptoms Score in patients of Benign Prostatic hyperplasia with correlation to their urinary bladder wall thickness & to study the outcome of alpha blocker (Tamsulosin) Therapy in BPH patients with correlation to their urinary bladder wall thickness. **Methods & Materials:** 140 patients with Benign prostatic Hyperplasia coming to Surgery OPD and getting admitted to the department of surgery between June 2014 to Sept 2015, were analyzed prospectively. The data regarding clinical data, including digital rectal examination (DRE) and IPSS of previously diagnosed BPH patients with LUTS were obtained by questionnaire- interview with the patients themselves. The data was analyzed by SPSS 21.0 version. **Result:** Out of 140 patients During the first 2 months, 8 patients lost follow up and 10 patients found to be poor drug compliance. Finally 122 patients with BPH, who properly complied with the regimen, were included in this study. In this study. Most of the study population presented with prostate size between 41-60 cc with mean prostate volume 47.86 ± 17.27 cc, with Bladder Wall Thickness between 6.01-6.50 mm in 28 patients least being between 6.51 to 7.0 mm and 9.01 to 9.50 mm in 5 patient each with mean thickness 6.55 ± 1.42 mm & with total IPSS and the voiding symptom subscore between 8-19/35 with mean IPSS 15.54 ± 4.16 . An Alphablocker Tamsulosin (0.4 mg) was prescribed to all patients for 8 weeks. After 8 weeks of medication, the IPSS was reevaluated and the patients were divided into two Groups. The Responder Group included patients who reported improvement of the IPSS storage symptom subscore of 2 points or more. The Nonresponder Group included patients who reported no or < 2 points improvement of the IPSS storage symptom subscore. In this study we found that prostate volume had no significant influence with BWT in Nonresponder Group and in Responder Group. There is no significant improvement in IPSS in patients with high bladder wall thickness. There is significant improvement in IPSS in patients with less bladder wall thickness. **Conclusion:** Bladder Wall Thickness was related to IPSS and the storage symptom score in LUTS/BPH patients. With Bladder Wall Thickness increase, the responsiveness of alphablockers to irritative symptom was decreased in LUTS/BPH patients. Bladder Wall Thickness may be a useful parameter for predicting responsiveness of irritative symptoms to alphablocker therapy in LUTS/BPH patients. Patient having bladder wall thickness > 7 mm can be planned for operative modality of treatment directly as majority of Non Responder Group are among them, without alfa blocker therapy and outcome of this therapy can be assessed further in other study.

KEYWORDS: BPH, DRE, IPSS, LUTS.

INTRODUCTION

Benign prostatic hyperplasia (BPH) is a common condition in older men. Because the severity of symptoms does not correlate with the degree of

hyperplasia and other conditions can cause similar symptoms, the clinical syndrome that often accompanies BPH has been described as lower urinary tract symptoms. The most common lower urinary tract

symptoms are hesitancy, weak stream, nocturia, and incontinence. BPH may also be complicated by recurrent urinary tract infections (UTIs)^[1] or bladder stones^[2] is estimated that one half of all men with histologic BPH experience moderate to severe lower urinary tract symptoms.^[3] International Prostate Symptom Scoring System is used to assess severity of benign prostatic hyperplasia (BPH). A score of 7 or less indicates mild BPH; a score of 8 to 19 indicates moderate BPH; a score of 20 to 35 indicate severe BPH. Symptomatic men should have a digital rectal examination to assess the size and contour of the prostate. PSA levels also correlate with prostate volume⁹. Watchful waiting is recommended in men who have mild symptoms (IPSS of 7 or less).^[4] Alpha-1-receptor antagonists improve lower urinary tract symptoms by promoting smooth muscle relaxation. Tamsulosin and Alfuzosin are selective agents for treating constriction of prostatic smooth muscles. Alpha blockers relieve symptoms in men with moderate to severe BPH.

MATERIAL AND METHODS

The study was done in SVBP hospital, Meerut which is a tertiary teaching hospital. 140 patients with Benign Prostatic Hyperplasia coming to Surgery OPD and getting admitted to Surgery department during the period from June 2014 to Sept 2015 in SVBP Hospital attached to LLRM Medical College, Meerut were analyzed prospectively. The history and clinical data, including digital rectal examination (DRE) were obtained. The IPSS is calculated as the sum of 7 individual scores related to voiding (sensation of incomplete emptying, intermittency, weak urine stream and straining) and storage (nocturia, urgency and frequency) symptoms. Prostate specific antigen (PSA) of every patient was recorded. Data related to BWT were using a suprapubic sonography obtained and recorded.

After the initial evaluations, an alphablocker Tamsulosin (0.4 mg) was prescribed to all patients for 8 weeks. After 8 weeks of medication, the IPSS was reevaluated and the patients were divided into two groups. The Responder Group included patients who reported improvement of the IPSS storage symptom subscore of 2 points or more. The Nonresponder Group included patients who improved less than 2 points or no improvement. We compared the relationship of the clinical parameters and BWT between the two groups. Clinical and laboratory data were analyzed with SPSS version 23 (IBM Corporation, New York, NY). The data was analyzed by SPSS 23.0 version.

RESULTS

Before treatment started, total 140 patients registered according to inclusion and exclusion criteria. During the first 2 months, 8 patients lost follow up and 10 patients found to be poor drug compliance. Finally 122 patients with BPH, who properly complied with the regimen, were included in this study.

In our study the ages ranged from 44 to 80 yrs. Common age of presentation was in 5th & 6th decade. i.e. 52.5% of study population with mean age of 58.40±7.66 yrs. (Table:1).

Table 1: Showing Age Distribution.

Age in yrs	Total N=122
40- 50	22(18.03%)
51-60	32(26.22%)
61- 70	32(26.22%)
71-80	16(13.11%)

The mean Prostate volume pretreatment in our study is 47.86±17.27 cc. Maximum being 41-60 cc in 55 patients i.e 45.08% of study population & Minimum being 81-100 cc in 12 patients i.e 9.83% of study population. (Table-2).

Table 2: Showing prostate volume in cc pretreatment.

Prostate vol in CC	Total N=122
20- 40	27(22.13%)
41-60	55(45.08%)
61- 80	38(31.14%)
81- 100	12(9.83%)

In this study most of the patients presented with Bladder Wall Thickness between 6.01 - 6.50 mm in 28 patients i.e 22.95% of study population least being between 6.51 to 7.0 mm and 9.01 to 9.50 mm in 5 patients i.e 4.09% of study population each with mean thickness 6.55±1.42 mm (Table- 3).

Table 3: Bladder wall thickness pre treatment in MM.

Bladder Wall Thickness in MM	Total N=122
5.0--5.50	21(17.21%)
5.51 - 6.0	23(18.85%)
6.01 - 6.50	28(22.95%)
6.51 - 7.0	5(4.09%)
7.01 - 7.50	8(6.55%)
7.51- 8.0	8(6.55%)
8.01 - 8.50	9(7.37%)
8.51 - 9.0	9(7.37%)
9.01 - 9.50	5(4.09%)
9.51 - 10.0	6(4.91%)

In this study most of the patients presented with total IPSS and the voiding symptom subscore between 8-19/35 i.e 62% of study population with mean IPSS 15.54±4.16. (Table- 4).

Table 4: IPSS scoring pre treatment.

IPSS	Total N=122
Mild (0-7)	0(0%)
Moderate (8- 19)	76(62.29%)

Severe (20- 35)	46(37.70%)
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In our study after 2 months of Tamsulosin (0.4mg) therapy most of the patients presented with prostate size of 20-40 cc in 66 patients i.e. 54.09% of study population with mean prostate size 42.89 ± 15.38 cc (table-5).

Table 5: Prostate volume in CC post treatment.

Prostate Vol in CC	Total N=122
20- 40	66(54.09%)
41-60	37(30.32%)
61- 80	19(15.57%)

Table 6: Bladder wall thickness post treatment.

Bladder wall thickness in MM	Total N=122	Nonresponder N= 40	Responder N=82
4.0- 5.0	56	0	80
5.01- 5.50	10	0	0
5.51- 6.0	12	0	0
6.01-6.50	2	0	0
6.51-7.0	2	2	0
7.01-7.50	11	10	1
7.51-8.0	8	7	1
8.01-8.50	11	11	0
8.51-9.0	6	6	0
9.01-9.50	3	3	0
9.51-10.0	1	1	0

Out of 122 patients treated with Tamsulosin (0.4mg) for 2 months in Responder Group most of the patients presented with IPSS of 8 19/35 in 42 patients and least being between 0-7/35 in 40 patient and in Non

Out of 122 patients treated with Tamsulosin (0.04 mg) for 2 months in Responder Group most of the patients presented with Bladder Wall Thickness of 4.0 to 5.0 mm in 56 patients and least being between 7.01mm to 8.0 mm in 1 patient and in Nonresponder Group most of the patients presented with Bladder Wall Thickness 8.01 to 8.5 mm in 11 patients and least being 9.51 to 10.0 mm in 1 patient.

Responder Group most of the patients presented with IPSS of 8-19/35 in 32 patients and least being 20-25/35 in 8 patient.

Table 7: IPSS scoring post treatment.

IPSS	Total N=122	Nonresponder N= 40	Responder N=82
Mild (0-7)	40	0	40
Moderate (8- 19)	74	32	42
Severe (20- 35)	8	8	0

There is no significant improvement in Prostate size in patients in Non Responder Group 50.65 ± 21.02 cc to 45.31 ± 12.46 cc ($p > 0.05$) and in Responder Group

46.50 ± 15.08 cc to 45.31 ± 12.46 cc ($p > 0.05$) which is statistically not significant.

Table 8: Comparison of Prostate Volume in CC Pre and Post Treatment.

Variable	Responder N=82	Non responder N=40	Total N=122
Prostate volume in cc			
Baseline	46.50 ± 15.08	50.65 ± 21.02	47.86 ± 17.27
Endpoint	42.31 ± 14.46	45.31 ± 12.46	42.89 ± 15.38
P value	0.056	0.062	0.068

There is no significant improvement in Bladder Wall Thickness in patients with high Bladder Wall Thickness Non Responder Group 8.34 ± 0.77 mm to 8.09 ± 0.75 mm ($p > 0.05$) which is statistically not significant

Thickness Responder Group 5.67 ± 0.607 mm to 4.49 ± 0.06 mm ($p < 0.001$) which is statistically significant.

Compared to there is significant improvement in Bladder Wall Thickness in patients with low Bladder Wall

Table 9: Comparison of Bladder Wall Thickness Pre and Post Treatment.

Variable	Responder N=82	Non responder N=40	Total N=122	P value
BWT in MM				
Baseline	5.67±0.60	8.34±0.77	6.55 ± 1.42	0.001
Endpoint	4.49 ± 0.06	8.09±0.75	5.67 ±1.81	0.001
P value	0.001	0.056	0.001	

There is no significant improvement in symptom score in patients with high Bladder Wall Thickness (Nonresponders) 19.67±2.77 to 17.97 ±2.97 i.e < 2 points (p<0.005) which is statistically significant.

Compared to there is significant improvement in symptom score in patients with low Bladder Wall Thickness (Responders) 13.52±3.1 to 9.26 ±2.51 i.e > 2 points (p<0.005) which is statistically significant. (Table-10).

Table 10: Comparison of IPSS Scoring Pre and Post treatment.

Variable	Responder N=82	Non responder N=40	Total N=122	P value
IPSS				
Baseline	13.52±3.10	19.67±2.77	15.54± 4.16	0.001
Endpoint	9.26 ±2.51	17.97 ±2.97	11.67 ±4.39	0.001
P value	0.001	0.001	<0.001	

DISCUSSION

Urodynamic study is the gold standard clinical test for assessing lower urinary tract function. However, it is time consuming and invasive with associated morbidity.^[6] Interest has therefore arisen in the development of noninvasive methods for assessing lower urinary tract function. The diagnostic potential of measurements of BWT, detrusor wall thickness, and Ultra Sound estimated bladder weight in men with LUTS and various degrees of BOO have been explored.

In the largest such study, Hakenberg et al^[7] reported mean transabdominal US measurements of BWT in 172 healthy men and 166 healthy women of 3.33 and 3.04 mm, respectively.

Khullar et al.^[8] (73) found significant differences in median BWT between female patients with OAB due to detrusor overactivity (DO) and those without DO. A cutoff BWT of 5 mm had 84% sensitivity and 89% specificity for DO.

Serati et al^[9] reported significantly thick BWT in patients with urodynamic "pure DO" with 13.33% sensitivity and 97.67% specificity for DO.

The bladder wall consists of bladder adventitia, which gives a hyperechoic (bright) appearance on US, and then the bladder muscle layer, which gives a hypoechoic (dark) appearance on US. The innermost layer is the bladder mucosa, which gives a hyperechoic (bright) appearance on US. BWT is measured by including the inner and outer hyperechoic lines in the measurement.^[10,11]

Given the above background, we assumed that BWT could be a useful, noninvasive parameter for evaluation of LUTS/BPH patients.

As Khullar et al^[8] founded in female OAB patients, BWT was positively correlated to IPSS storage subscore in male LUTS/BPH patients. BWT was also positively correlated with IPP, which is related to the progression of dynamic component of BOO due to BPH.^[12] BWT was correlated with the storage symptom score in LUTS/BPH patients.

Because medical treatment is the first option for LUTS/BPH patients^[13], we prescribed selective Alphablockers to the patients for 8 weeks and divided the patients into two groups according to the degree of improvement in the IPSS storage symptom subscore.

We expected that the IPSS storage subscore would not improve in LUTS/BPH patients with larger BWT after Alphablocker monotherapy.

We supposed that the bladder dysfunction induced by bladder wall hypertrophy, would not completely improve after the dynamic component of BOO was relieved with Alphablocker treatment.

The result was Patients in the Nonresponder Group had a larger BWT and larger prostate volume which is similar to results found in Jung Soo Park et al.^[14] But larger prostate volume had little influence in the Nonresponder Group which is similar to results found in Jung Soo Park et al.^[14] Only BWT had a significant influence in the Nonresponder Group.

The IPSS voiding subscore was significantly improved in both groups. However, the IPSS storage subscore was

not improved in patients who had larger BWT. Which is similar to results found in Jung Soo Park *et al.*^[14]

According to our results, LUTS/BPH patients with larger BWT have more advanced detrusor changes that cannot be reversed with the relief of dynamic component of BOO. For patients with BPH Alphablocker medication with Antimuscarinic medication can effectively relieve the symptoms.^[15] In cases of LUTS/BPH patients with increased BWT, prescription of Antimuscarinic medication with an Alphablocker would be effective for improving the patient's irritative symptoms.

CONCLUSION

Bladder Wall Thickness was related to IPSS and the storage symptom score in LUTS/BPH patients. With Bladder Wall Thickness increase, the responsiveness of alphablockers to irritative symptom was decreased in LUTS/BPH patients. Bladder Wall Thickness may be a useful parameter for predicting responsiveness of irritative symptoms to alphablocker therapy in LUTS/BPH patients. Patient having bladder wall thickness > 7 mm can be planned for operative modality of treatment directly as majority of Non Responder Group are among them, without alfa blocker therapy and outcome of this therapy can be assessed further in other study. In this study there was no control group and number of patients are also less so that we require more studies of different population group. So that metaanalysis of the data can be performed and outcome of metaanalysis will be more specific for further utilization of this clinical outcome.

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