

Role of Alpha Blocker therapy in patients with Intra Prostatic Protusion: an Observational Study

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Abstract: Background: To investigate the role of tamsulosin in patients with benign prostatic enlargement (BPE) with different grades of intravesical prostatic protrusion (IPP). **Methods:** Patients with BPE with IPP were included in this observational study. Intravesical prostatic protrusion was graded as grade 1 (< 5 ml), 2 (5 < IPP < 10 ml) and 3 (> 10 ml). Patients were treated with tamsulosin for twelve weeks. Evaluation was performed before and at the end of treatment by means of International Prostate Symptom Score (IPSS) and uroflowmetry. Patients were considered responders if a reduction of IPSS > 3 points was seen. **Results:** 65 patients were enrolled in our study. Among them 25 (38.5%) showed an IPP grade 1 (group A), 26 (40%) an IPP grade 2 (group B) and 14 (21.5%) an IPP grade 3 (group C). Treatment success was defined as post-treatment IPSS score reduction > 3 points, was obtained in 84%, 42.3% and 7.1% of patients respectively. The odd ratio to obtain a treatment success was of 68.25 (CI 95% 6.8–679) and 9.53 (CI 95% 1.08–84.1) in group A and group B respectively, in comparison to group C (Table 2). Moreover, there is a positive improvement of uroflow parameters in each group (Table 3) with a better improvement after treatment in patients with a low grade IPP with respect to patients with a higher grade IPP. **Conclusions:** IPP appears to be inversely correlated with successful alpha blocker therapy in patients with BPE and may be regarded a useful tool for patients with a low grade IPP with a higher likelihood of achievement in medical therapy as compared to high grade IPP.

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I. Introduction

Benign prostatic hyperplasia (BPH) occurs in more than half of 60-year-old males and nearly all 80-year-old males [1] and is the most common cause of bladder outlet obstruction (BOO) in males over 50 years of age with lower urinary tract symptoms [2]. Medical therapy is the most frequently used in BPO patients [3] and offers relief in illness progression symptoms and alteration [4]. Long-term dropout rates, however, reach 30% to 43% [5] and not all patients profit from the therapy. Nowadays, the standard practice study for patients with BPO consists of uroflowmetry and ultrasound (US) assessment of residual urine (PVR) after voiding [3].

In 2003, Chia et al. first described the USG measurement of IPP to correlate well with BPO (presence and severity) on urodynamic testing, 94% PPV and 79% NPV [6]. The clinical significance of IPP can be explained by the reality that protrusion of the prostate median lobe into the bladder can cause benign prostatic obstruction type "ball valve" with incomplete opening and disturbance of the bladder neck's funneling effect [6, 7].

Additional studies on this subject have shown that IPP can correlate with prostate quantity, detrusor overactivity (DO), bladder compliance, peak urinary flow detrusor stress, BOO index and PVR, and negatively correlates with Qmax [8]. In addition, IPP also appears to effectively predict the result of a catheter-free trial (TWOC) following acute urinary retention [9] and the TURP success rate [10]. However, as regards the connection between IPP and clinical results in patients undergoing medical therapy, few data have been disclosed to date. Studies researching the connection between IPP and alpha-blocker treatment outcomes have shown that this may correlate with decreased efficacy of alpha blockers in patients with IPP and mild / moderate (< 40 ml) volume of prostate (PV) [11, 12].

The objective of this research was to explore the effectiveness of an alpha-blocker (Tamsulosin) in patients with lower symptoms of urinary tract (LUTS) and BPE with or without IPP.

II. Material And Methods

This is an observational prospective study done at Department of urology from January 2018 to March 2019 at Stanley Medical College, Chennai.

We registered male patients between the ages of fifty and seventy-five with BPE identified on USG abdomen with prostate volume more than 30 cc with intra prostatic protrusion.

Criteria for exclusion were: iv Prior urological surgery; iv Patients with urological neoplasia, bladder calculus or any form of neurological abnormality; iv Prior therapy with alpha blockers and 5alpha reductase inhibitors; iv Absence of prostatic intravesical protusion.

All registered patients underwent a baseline assessment using medical history, International Prostate Symptom Score and Life Quality (IPSS / QoL) questionnaire, prostate trans-rectal ultrasound and uroflowmetry. The same doctor conducted all TRUS at the normal bladder filling of 150 ml. In the midsagittal plane, trans rectal ultrasound was conducted and IPP was evaluated along with the volume of the prostate. IPP was recognized by the classification scheme used by Nose et al[13] and was described by the distance from the tip of the protrusion of the prostate into the lumen of the vesicle to the millimetre-sized neck of the bladder. The TRUS-estimated IPP was then graded as Grade 1 (if less than 5 mm), Grade 2 (if between 5 and 10 mm) and Grade 3 (if more than 10 mm). All uroflowmetry was conducted as suggested by the guidelines for good urodynamic procedures at the normal bladder filling of 250–300 ml[14].

All enrolled patients were then treated for twelve weeks with Tamsulosin (0.4 mg / day) and re-evaluated with International Prostate Symptom Score and Life Quality (IPSS / QoL) and uroflowmetry after treatment.

Patients were treated as respondents (therapy success) if IPSS > 3 points were reduced.

Statistical analysis - In an Excel database, all information were categorized. All analysis were conducted using the SPSS 26 software. Statistically significant was a p value < 0.05.

III. Result

65 patients were enrolled in our study. Among them 25 (38.5%) showed an IPP grade 1 (group A), 26 (40%) an IPP grade 2 (group B) and 14 (21.5%) an IPP grade 3 (group C). Treatment success was defined as post-treatment IPSS score reduction > 3 points, was obtained in 84%, 42.3% and 7.1% of patients respectively. The odd ratio to obtain a treatment success was of 68.25 (CI 95% 6.8–679) and 9.53 (CI95% 1.08–84.1) in group A and group B respectively, in comparison to group C (Table 2). Moreover, there is a positive improvement of uroflow parameters in each group (Table 3) with a better improvement after treatment in patients with a low grade IPP with respect to patients with a higher grade IPP.

Table 1 Baseline Patient Characteristics

	Age (mean)	Prostate Volume (Mean)	IPP (mean)	Pre Treatment Q Max (mean)	Pre Treatment IPSS (mean)
Group A	59 years	44.1 cc	3.2 mm	11.1	17.1
Group B	62 years	49.6 cc	7.9 mm	8.9	18.9
Group C	65 years	54.5 cc	11.1 mm	8.2	22.7

Table 2 Comparison between IPP Group and Success of Treatment

	Responders	Non Responders	OR	CI 95%	P value
Group A	21	4	68.25	6.8-679.3	<0.001
Group B	11	15	9.53	1.08-84.1	0.04
Group C	1	13	1		

Table 3 Difference in Q Max Pre and Post Treatment

	Pre-Treatment Q Max (mean)	Post-Treatment Q Max (mean)	Difference	P Value
Group A	11.1	14.9	3.8	<0.001
Group B	8.9	11.3	2.4	<0.001
Group C	8.2	10.3	2.1	<0.001

IV. Discussion

IPP is a promising parameter, shows a strong correlation on urodynamic testing with the presence and severity of BPO.

Additional trials discovered a powerful correlation between IPP and bladder compliance, maximum urinary detrusor pressure, terminal dribbling, BOO index and PVR, while adverse correlation between IPP and Qmax and/or alpha-blocker efficacy was discovered[8, 11, 12, 15]. In addition, a well-designed research by Luo GC et al. showed that the existence of the middle lobe is more obstructive than that of the lateral lobes and could correlate better with the grade of BOO[16]. Data from our research indicate that IPP in patients affected by BPE and LUTS under alpha-blocker therapy are significantly and inversely correlated with treatment achievement. It is essential to emphasize that the definition of achievement used in this study (decrease of IPSS score > 3 points) is consistent with other studies [17].

Our information are comparable to those in the literature; Cumpanas et al. evaluated 183 patients with BPH (PV < 40 mL) treated with tamsulosin and discovered that approximately 40% of patients in the elevated IPP group were nonresponders to therapy and had considerably worse results than patients in the 3-month low IPP group[20]; even in a more latest article, Kalkanli et al.[18] showed that there was an increase in the number of patients in the elevated IPP group. Hirayama et al[19] also released similar information in patients treated with Dutasteride 0.5 mg daily in which IPP was considered to be the highest predictive factor for failure of medical therapy and conversion to surgical intervention with an optimal cutoff value of 8 mm IPP. This value yielded 91 percent sensitivity and 72 percent specificity.

Our outcome shows that IPP helps to predict BPH obstruction and hence the development of BPH (prostate adenoma) and response rate to alpha blocker therapy; therefore, IPP is helpful in stratifying BPH patients with LUTS at the original assessment, helping the urologist decide which patient might profit from medical therapy and avoiding many unnecessary prescriptions for further cost-effectiveness.

V. Conclusion

IPP appears to be inversely correlated with successful alpha blocker therapy in patients with BPE and may be regarded a useful tool for patients with a low grade IPP with a higher likelihood of achievement in medical therapy as compared to high grade IPP.

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