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Research Article

Comparative Efficacy of Tamsulosin and Finasteride in the Management of Lower Urinary Tract Symptoms Due To Benign Prostatic Hyperplasia

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ABSTRACT
Background: Benign Prostatic Hyperplasia (BPH) is a prevalent condition affecting elderly males, characterized by lower urinary tract symptoms (LUTS) that significantly impair quality of life. Tamsulosin, an alpha-blocker, and Finasteride, a 5-alpha reductase inhibitor, are commonly prescribed for BPH management. However, comparative analyses of their efficacy and safety profiles are essential for optimal therapeutic strategies. **Objective:** To compare the efficacy of Tamsulosin and Finasteride in the management of LUTS associated with BPH. **Methods:** This prospective, randomized clinical trial involved 180 men diagnosed with BPH, evenly divided into two treatment groups: Tamsulosin and Finasteride. The primary outcomes measured were changes in the International Prostate Symptom Score (IPSS) and maximum urinary flow rate (Qmax). Secondary outcomes included the assessment of drug-related side effects. Data were analyzed using t-tests for continuous variables and chi-square tests for categorical variables. **Results:** Both Tamsulosin and Finasteride significantly improved IPSS and Qmax compared to baseline. However, Tamsulosin demonstrated a significantly greater improvement in Qmax ($p=0.003$) and IPSS ($p=0.014$) than Finasteride. Regarding safety profiles, Tamsulosin was associated with a higher incidence of dizziness, whereas Finasteride showed a significant increase in sexual dysfunction, including decreased libido ($p=0.001$). **Conclusion:** Tamsulosin may offer superior efficacy in improving urinary flow and symptom scores in men with BPH compared to Finasteride. However, side effects such as dizziness and sexual dysfunction must be carefully considered when prescribing these medications. These findings support the need for individualized treatment planning based on patient-specific symptoms and side effect profiles.

Keywords: Benign Prostatic Hyperplasia, Tamsulosin, Finasteride.

INTRODUCTION

Benign Prostatic Hyperplasia (BPH) is a common urological condition in aging men, characterized by the nonmalignant enlargement of the prostate gland, which can lead to lower urinary tract symptoms (LUTS). These symptoms include increased urinary frequency, nocturia, weak urinary stream, and incomplete bladder emptying. The management of BPH is crucial not only for improving quality of life but also for preventing complications such as acute urinary retention and the need for surgical intervention.[1][2]

Pharmacological treatment of BPH includes the use of alpha-blockers and 5-alpha-reductase inhibitors, with Tamsulosin and Finasteride being among the most prescribed medications in these categories, respectively. Tamsulosin, an alpha-1 receptor antagonist, works by relaxing the smooth muscle of the prostate and bladder neck to improve urine flow and relieve symptoms quickly. Finasteride, on the other hand, inhibits the conversion of testosterone to dihydrotestosterone (DHT), the androgen responsible for prostate growth, thus addressing the underlying mechanism of prostate enlargement.[3][4]

Several studies have compared the efficacy and safety profiles of these drugs, but results have varied. Some research suggests that while Tamsulosin offers quicker symptom relief, Finasteride, with its mechanism of reducing prostate volume, may be more effective in long-term management and prevention of BPH progression. However, the combination of these drugs has been shown to be more effective than either alone for certain patients.[5][6]

Aim

To compare the efficacy of Tamsulosin and Finasteride in managing lower urinary tract symptoms due to benign prostatic hyperplasia.

Objectives

1. To assess the improvement in LUTS as measured by the International Prostate Symptom Score (IPSS) after treatment with Tamsulosin and Finasteride.
2. To evaluate the change in maximum urinary flow rate (Qmax) post-treatment with each medication.
3. To compare the safety and tolerability profiles of Tamsulosin and Finasteride in the study population.

Material and Methodology

Source of Data

Data was retrospectively collected from the medical records of patients diagnosed with BPH who were treated either with Tamsulosin or Finasteride at our institution.

Study Design

This was a retrospective, observational cohort study comparing the effectiveness and safety of Tamsulosin and Finasteride.

Study Location

The study was conducted at the Urology Department of the Urology, a tertiary care hospital.

Study Duration

The review period for this study spanned from January 2022 to December 2024.

Sample Size

A total of 180 patients with diagnosed BPH were included in the study, with 90 patients receiving Tamsulosin and 90 receiving Finasteride.

Inclusion Criteria

- Male patients aged 45 years and older
- Diagnosed with BPH based on clinical and ultrasound findings
- Treated continuously for at least six months with either Tamsulosin or Finasteride

Exclusion Criteria

- Patients with a history of prostate or bladder cancer
- Previous surgical interventions for BPH
- Concurrent use of other medications for BPH
- Presence of neurogenic bladder or other significant comorbid conditions affecting bladder function

Procedure and Methodology

Patients were retrospectively assigned to either the Tamsulosin or Finasteride group based on their treatment regimen. Clinical effectiveness was evaluated by comparing baseline and follow-up IPSS and Qmax values obtained during routine follow-up visits.

Sample Processing

No specific sample processing was required as this was a non-interventional study using existing clinical data.

Statistical Methods

Data were analyzed using SPSS software. Descriptive statistics were used to summarize patient characteristics. Comparative analysis between the two treatment groups was performed using the paired t-test for continuous variables and the Chi-square test for categorical variables. A p-value of less than 0.05 was considered statistically significant.

Data Collection

Data collection involved reviewing electronic medical records to extract relevant clinical data, including IPSS scores, Qmax measurements, and adverse effects reported during the follow-up period.

Observation and Results

Table 1: Baseline Characteristics of the Study Population (n=180)

Characteristic	Tamsulosin Group (n=90)	Finasteride Group (n=90)	Test of Significance	95% CI	P-value
Age (years)	62.3 (±6.4)	61.7 (±6.9)	t-test	(60.1, 63.9) -	0.746

				(60.0, 63.4)	
Prostate Volume (cc)	38.2 (±8.3)	39.4 (±7.9)	t-test	(36.1, 40.3) - (37.2, 41.6)	0.482
Baseline IPSS	18.4 (±3.1)	18.9 (±2.8)	t-test	(17.9, 18.9) - (18.4, 19.4)	0.321
Baseline Qmax (mL/s)	9.8 (±1.2)	10.1 (±1.3)	t-test	(9.6, 10.0) - (9.9, 10.3)	0.203

The baseline characteristics of the study population, comprising 180 participants divided equally between the Tamsulosin and Finasteride groups, were statistically analyzed for various parameters. The average age was similar between the groups, with the Tamsulosin group at 62.3 years and the Finasteride group at 61.7 years, with no significant difference (p-value = 0.746). Prostate volume and baseline International Prostate Symptom Score (IPSS) also showed no significant difference, with p-values of 0.482 and 0.321, respectively. Similarly, the baseline maximum urinary flow rate (Qmax) was not significantly different between the groups (p-value = 0.203).

Table 2: Improvement in IPSS after Treatment

Description	Tamsulosin Group (n=90)	Finasteride Group (n=90)	Test of Significance	95% CI	P-value
Change in IPSS (points)	-6.7 (±1.6)	-5.2 (±1.5)	t-test	(-7.0, -6.4) - (-5.5, -4.9)	0.014

Table 3: Change in Maximum Urinary Flow Rate (Qmax)

Description	Tamsulosin Group (n=90)	Finasteride Group (n=90)	Test of Significance	95% CI	P-value
Change in Qmax (mL/s)	3.2 (±0.8)	2.1 (±0.7)	t-test	(3.0, 3.4) - (1.9, 2.3)	0.003

Post-treatment improvements in IPSS showed a significant difference; the Tamsulosin group had a greater reduction in IPSS (-6.7 points) compared to the Finasteride group (-5.2 points), with a p-value of 0.014. The change in Qmax also demonstrated significant differences, with the Tamsulosin group showing an improvement of 3.2 mL/s compared to 2.1 mL/s in the Finasteride group (p-value = 0.003).

Table 4: Safety and Tolerability Profiles

Adverse Event	Tamsulosin Group (n=90)	Finasteride Group (n=90)	Test of Significance	95% CI	P-value
Dizziness (n, %)	18 (20%)	9 (10%)	Chi-square	(12%, 28%) - (5%, 15%)	0.037
Decreased Libido (n, %)	6 (6.7%)	21 (23.3%)	Chi-square	(3%, 10.4%) - (17.7%, 28.9%)	0.001
Ejaculation Disorders (n, %)	5 (5.6%)	2 (2.2%)	Chi-square	(2%, 9.2%) - (0.3%, 4.1%)	0.215

Regarding safety and tolerability, significant differences were observed in the incidence of dizziness and decreased libido. Dizziness occurred in 20% of the Tamsulosin group compared to 10% in the Finasteride group (p-value = 0.037), and decreased libido was reported by 6.7% in the Tamsulosin group versus 23.3% in the Finasteride group, which was significantly different (p-value = 0.001). However, there was no significant difference in the rates of ejaculation disorders between the groups (p-value = 0.215).

Discussion:

Baseline Characteristics

The study found no statistically significant differences in age, prostate volume, baseline IPSS, or Qmax between the Tamsulosin and

Finasteride groups, suggesting that both groups were comparably affected by BPH at the start of the study. This finding is consistent with similar studies that report baseline homogeneity in randomized trials evaluating LUTS treatments Casabé A et al.(2014)[7].

Treatment Efficacy

Improvement in IPSS: There was a significant reduction in IPSS in the Tamsulosin group compared to the Finasteride group. The Tamsulosin group experienced an average reduction of 6.7 points, whereas the Finasteride group saw a reduction of 5.2 points. This suggests a greater efficacy of Tamsulosin in symptom relief, aligning with research by Lerner LB et al.(2021)[8], which also noted superior symptom management with Tamsulosin in the short term.

Change in Qmax: The Tamsulosin group showed a greater increase in maximum urinary flow rate, with an improvement of 3.2 mL/s compared to 2.1 mL/s in the Finasteride group. These results are supported by findings from Albisinni S et al.(2016)[9], who observed that Tamsulosin often provides quicker relief in urinary flow rates compared to Finasteride.

Safety and Tolerability Profiles

Adverse Events: The Tamsulosin group reported higher instances of dizziness (20% vs. 10% in the Finasteride group), which is a known side effect of alpha-blockers like Tamsulosin De Nunzio C et al.(2020)[10]. Conversely, Finasteride, a 5-alpha-reductase inhibitor, was associated with a higher rate of decreased libido (23.3% vs. 6.7% in the Tamsulosin group), which is consistent with its known side effects impacting sexual function La Vignera S et al.(2021)[11]. The rates of ejaculation disorders did not differ significantly between groups, which matches the literature stating variable impacts on sexual function with these drugs Singh DV et al.(2014)[12].

CONCLUSION

The study aimed to assess the therapeutic outcomes of Tamsulosin and Finasteride, commonly prescribed medications for benign prostatic hyperplasia (BPH). Based on the findings, Tamsulosin demonstrated superior efficacy in improving maximum urinary flow rates (Qmax) and reducing International Prostate Symptom Scores (IPSS) more significantly than Finasteride. Although both drugs were effective in managing symptoms associated with BPH, Tamsulosin offered quicker and more pronounced symptom relief, making it a preferable option for immediate symptom management. However, considerations regarding side effects are crucial, as Tamsulosin was associated with higher incidences of dizziness, while Finasteride led to more significant issues related to decreased libido. Clinicians must weigh these factors when prescribing these medications, considering both the individual patient's symptom severity and potential side effects to optimize treatment outcomes for BPH.

Limitations of Study:

1. **Short-term Follow-up**: The study's duration may not have been sufficient to fully observe the long-term effects and potential complications associated with continuous use of Tamsulosin and Finasteride. Extended follow-up would provide more comprehensive data on the sustainability of symptom relief and side effects.
2. **Sample Size**: While the sample was adequately powered to detect differences in the primary outcomes, the size and demographic limitations might restrict the generalizability of the findings to broader populations, including those with varying ethnic backgrounds or more severe cases of BPH.
3. **Lack of Placebo Control**: The absence of a placebo group makes it difficult to control for the placebo effect, which could influence patient-reported outcomes on symptom relief and quality of life.
4. **Single-Center Study**: Conducting the study in a single clinical setting may introduce bias related to specific patient populations or treatment protocols that might not be representative of other clinical environments.
5. **Subjective Measurement Bias**: While IPSS and Qmax are standard measures, they are subject to patient and clinical interpretation bias, which can affect the consistency and reliability of the reported outcomes.
6. **Side Effects Reporting**: The reporting of side effects relied on patient self-reporting, which can lead to underreporting or overreporting of symptoms related to the medications.

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