# A COMPARATIVE STUDY OF TERAZOSIN AND TAMSULOSIN IN MEDICAL TREATMENT OF SYMPTOMATIC BENIGN PROSTATIC HYPERPLASIA (BPH)

Abdus Salam [1] AKM Anwarul Islam [2] Kazi Mohammed Monwarul Karim [3] Mohammed Monowar-Ul-Hoque [3]

**Abstract**

This study was designed to compare the efficacy and safety of terazosin and tamsulosion in the treatment of symptomatic benign prostatic hyperplasia. A clinical trial was carried out in the out patients department of urology, Bangabandhu Sheikh Mujuib Medical University (BSMMU) during the period from January 2003 to January 2004. Total 62 patients of 45-80 years of age, were consequently selected. After completion of baseline clinical evaluation and investigations, participants were divided into two groups, group A and group B. Group A (n=31) was given terazosin 1mg daily for 3 days at bed time and then 2 mg daily at bed time for 2 months. Group B (n=31) was given tamsulosin, 0.4 mg per day for 2 months. Efficacy was evaluated of each group after 2 months follow up and lastly a comparison was made between them. The parameters monitored were international prostate symptoms score(IPSS), maximum urine flow rate (Qmax) and post voidal residual volume (PVR). Tamsulosin 0.4 mg once daily dose and terazosin 1-2 mg incremental dose at least for 8 weeks both are effective in relieving symptoms of BPH but tamsulosin is superior to terazosin in improvement of total IPSS (p<.001) and Qmax (p<.001), PVR (<.01) at the end point.

Outcome of parameters at followup after 2 months. Tamsulosin group showed significant improvement reduction of IPSS (P<0.001), Qmax (P<0.001), reduction of PVR (P<0.01) then terazosin. The incidence of adverse events by administration of tamsulosin was less then that by terazosin. So tamsulosin appears to be safer and more effective than terazosin in symptomatic BPH.

**Key words** : Tamsulosin; Terazosin; IPSS; Qmax; PVR

1. Assistant Professor of Urology
Rajshahi Medical College, Rajshahi
2. Professro of Urology
Bangabandhu Sheikh Mujib Medical Univesity (BSMMU), Dhaka
3. Assistant Professor of Urology
Chittagong Medical College, Chittagong

**Correspondence** : Dr Abdus Salam

## Introduction

Lower urinary tract symptoms suggestive of symptomatic benign prostatic hyperplasia (BPH) are a very common disease in elderly men[1]. The incidence of benign prostatic hyperplasia is age related[2]. The prevalence of histologic BPH in autopsy studies is about 20% in men aged 41-50 years, 50% in men aged 51-60 years and over 90% men above the age of 80 years[3]. As the life expectancy is increasing, the number of patients with symptomatic BPH is also increasing.

The clinical manifestation BPH included lower urinary tract symptoms, poor bladder emptying, urinary retention, detrusor instability, urinary tract infection, haematuria and renal insufficiency.

Dynamic obstruction is caused by increased muscle tone of the bladder neck and prostate which is regulated by a1 adrenergic receptor [4].

A reduction in tone might be expected to reduce prostatic urethral pressure and to improve obstructive symptoms.

a blocker has now been prescribed for treatment of BPH for almost 20yrs [5]. prostatic urethra, urinary bladder neck constituting about 70% of its a1 A receptor [6].

Medical treatment for BPH may be in the form of a1 receptor blockers and 5a reductase inhibitor. But it is now well known that a1 receptor blockers (like terazosin, tamsulosin) is safe and more effective than 5a reductase inhibitors and combination of the two (leporetal)[7].

Over the last decade, the incidence of the surgery has declined in all most all countries and the incidence of medical treatmentis rising[8]. The goal of study was to findout safety of a blockers to improve the IPSS sore Qmax and PVR, in symptomatic BPH.

## Materials and method

This was a randomized clinical trial conducted in the department of urology, Bangabandhu Sheikh Mujib Medical University(BSMMU) Dhaka form January 2003 to January 2004. Study population included the patients who attended outpatient department of urology, BSMMU, Dhaka with symptomatic BPH.

The method and purpose of the study were explained to the patients and only those who agreed were finally Selected. Written consent was taken from each respondent. The inclusion criteria were, male between 45 to 80 yrs. IPSS 8 to 19, PVR 50 to 100ml. Peak urine flow rate (Qmax) more then 10ml /S but less then or equal to 15ml/S, voided volume of at least 150 ml.

Patients with carcinoma prostate, refractory retention of urine, recent U.T.I., recent gross haematuria, bladder stone, hydroureteronephrosis, renal insufficiency (S.creatinine >2mg/dl), large bladder diverticula, neurogenic bladder. Stricture urethra, were excluded from the study.

A total 62 patient were randomly selected for this study, they are numbered in 1 to 62. Odd numbers were considered as a terazosin (group A) and even number as tamsulosin (group B). All history and examination followed a similar protocol. A detail data sheet was completed and this included particulars of the patients, results of the physical examinations and relevant base line investigations. The patients were supplied with Bengali version IPSS sheet and they were well explained and helped in expressing their symptoms in numerical representation of IPSS.

Thorough physical examination was done with special attention to urogenital system and nervous system. Blood pressure (BP) was measured in lying and standing position to exclude postural hypotension. Digital rectal examination was done in the urology OPD to determine the prostate size and to exclude carcinoma prostate, perianal sensation, anal tone and bulbocavernosus reflex, sensory and motor response, Jerks and reflexes were examined to detect any neurological deficit.

Urine R/M/E, C/S, PSA, Serum creatinine was done to exclude U.T.I, carcinoma prostate renal failure. USG of the KUB and prostate with MCC and PVR was done to see the change in kidney urinary stone disease bladder wall thickness, prostate size echotexture and any hypoechoic lesion in the prostatc. Uroflowmetry was considered reliable when voided volume is more then 150ml. plain x-ray K.UB was done to exclude urinary stone disease and any lesion in the vertebral column.

In suspected case, neuropathic bladder was excluded by voiding cystometry and urethral stricture was excluded by retrograde urethrogram.

TC, DC, ESR, Hb%, Serum total protein and albumin were done to exclude any side effects of terazosin and tamsulosin.

After completion of baseline clinical evaluation and investigation, participants were divided into two groups, group A and group B. Group A (n=31) was given terazosin 1 mg daily for 3 days at bed time and then 2 mg daily at bed time for 2 months. Group B (n=31) was given tamsulosin 0.4 mg per day for 2 months. Efficacy was evaluated of each group after 2 months and comparison was made between them. During follow up visit after 2 months BP (both in lying and standing) was recorded. Uroflometry was done. USG of kidney, ureter, urinary bladder, prostate, PVR, MCC were done. IPSS score was also evaluated. Blood count like TC, DC, Hb% PCV, Serum total protein and albumin were done to exclude adverse effects. Any side effects of the drugs were recorded.

All statistical analysis was carried out using SPSS software. All results were expressed as mean ± SD or in frequency as applicable. The results were compiled and analyzed using students 't' test and chi-squared test as appropriate. Results were considered significant if $p<0.05$.

**Results**

There was no significant difference in mean age, base line peak urine flow rate (Qmax), base line international prostate symptoms score (IPSS) and base line post voidal residue (PVR).

**Table I :** Comparision of base line date of two groups, group A (Terazosin) & group B (Tamsulosin)

| Parameters | Patient group | Mean ± SD | p-value |
|---|---|---|---|
| Age | Terazosin (n=31) | 64.23 ± 6.63 | 0.95 |
| | Tamsulosin (n=31) | 64.13 ± 6.29 | |
| Qmax | Terazosin (n=31) | 12.32 ± 1.05 | 0.44 |
| | Tamsulosin (n=31) | 12.55 ± 26 | |
| IPSS | Terazosin (n=31) | 15.84 ± 1.85 | 0.78 |
| | Tamsulosin (n=31) | 15.71 ± 1.90 | |
| PVR | Terazosin (n=31) | 88.55 ± 21.28 | 0.81 |
| | Tamsulosin (n=31) | 87.26 ± 23.05 | |
| | (Unpaired 't' test) | | |

**A. Terazosin group**

In the follow-up visit after 2 months, treated with terazosin, the mean values of IPSS, Qmax and PVR were 9.52±1.89 points, 15.35±1.05 ml/sec and

52.58±13.10 ml respectively. Mean value change of IPSS, Qmax and PVR were 6.32±2.90 points, 3.03±0.98 ml/sec and PVR 36.06±12.38ml respectively in terazosin group. In comparison to baseline mean values, IPSS, Qmax and PVR values were significantly changed (p<0.05) (Table II).

**B. Tamsulosin group**

In follow-up visit, after 2 months, treated with tamsulosin, the mean values of 1PSS, Qmax and PVR were 8.48±1.15 points, 16.52±1.23 ml/sec and 43.03+12.5 ml respectively. Mean value change of IPSS, Qmax and PVR were 7.23±1.76 points, 3.97±0.66 and 44.23± 16.91 ml respectively in tamsulosin group. In this visit, all mean values of variables were significant change (p<0.05), in comparison to baseline studies (Table III).

Follow-up visit after two months (change of Qmax).

In the follow-up visit, after two months mean Qmax in terazosion group (n=31) was 15.35±1.05 ml/sec. In comparison to baseline mean Qmax this value shows significant change (p<0.05, in paired 't' test). Similarly, mean Qmax in the tamsulosin group was 16.52±1.23 ml/sec. In comparison to baseline, this value also shows significant change (p<0.05). Qmax change in terazosin group from baseline was 3.03±0.98 ml/sec and in tamsulosin group was 3.97+0.66 ml/sec. Both groups had significant increase in mean Qmax (p<0.001 in 't' test) in the follow up visit (Table IV).

In this study, mean percentage improvement of Qmax in terazosin group was 24.61±7.97 ml/sec and in tamsulosin was 32.20+5.33 ml/sec. In comparison, therefore, the tamsulosin group showed significantly higher flow rate (p<0.05 in unpaired 't' test). So, in follow-up visit after two months tamsulosin was more effective then terazosin group.

Follow-up visit after 2 months (change of IPSS).

In the second follow-up visit, mean IPSS in terazosin group (n=31) was 9.52±1.86 points. In comparison to baseline mean IPSS this value shows significant change (p<0.05 in paired 't' test). a Similarly, mean IPSS in the tamsulosin group was 8.48+1.15 points. In comparison to baseline, this value also shows significant change (p>0.05). IPSS change in terazosin group from baseline was 6.32±2.90 points and tamsulosin group was

**Table II** : Results of terazosin group in follow up visit after two months

| | Baseline (Mean ± SD) | Second follow-up (Mean± SD) | Change from baseline (Mean± SD) | Mean % Change ± SD | p-value |
|---|---|---|---|---|---|
| IPSS (Points) | 15.84 ± 1.85 | 9.52 ± 1.86 | 6.32 ± 2.90 | 39.8 ± 17.78 | p<.001 |
| Qmax (ml/s) | 12.32 ± 1.05 | 15.35 ± 1.05 | 3.03 ± .98 | 24.61 ± 7.97 | p<.001 |
| PVR (ml) | 88.65±21.28 | 52.58±13.10 | 30.06 ± 12.38 | 40.7±13.9 | p<.001 |
| BP (S) mmHg | 140.70±11.4 | 129.84±10.2 | 10.81±13.97 | 6.759±8.73 | p<.001 |
| Standing (D) | 86.00±21.76 | 81.61±5.06 | 4.39±6.98 | 4.61±7.35 | p<.001 |
| BP (S) mmHg | 137.26± | 12.06±9.56 | 11.19±13.41 | 8.15±9.76 | p<.001 |
| Lying (D) | 83.32±5.03 | 78.42±4.42 | 4.90±6.19 | 5.88±7.43 | p<.001 |

(Paired 't' test)

S=systolic pressure, D= Diastolic pressure

**Table III** : Results of tamsulosin group in follow up visit after two months

| | Baseline (Mean ± SD) | Second follow-up (Mean± SD) | Change from baseline (Mean± SD) | Mean % Change ± SD | p-value |
|---|---|---|---|---|---|
| IPSS (Points) | 15.71±1.90 | 8.48±1.15 | 7.23±1.76 | 46.02±10.21 | P<.001 |
| Qmax (ml/s) | 12.55±1.26 | 16.52±1.23 | 3.97±0.66 | 32.20±5.33 | P<.001 |
| PVR (ml) | 87.26±23.05 | 43.03±12.5 | 44.23±16.91 | 50.68±14.54 | P<.001 |
| BP-mmHg S | 141.61±14.8 | 130.48±12.7 | 11.131±16.72 | 6.95±10.4 | P<.01 |
| Standing (D) | 85.32±6.96 | 81.71±7.39 | 3.61±11.49 | 3.80±12.1 | P>.05 |
| BP (S) | 136.13±13.95 | 124.52±23.7 | 11.61±26.7 | 8.46±18.99 | P>.05 |
| mmHg Lying (D) | 82.23±6.08 | 78.71±6.17 | 3.52±9.49 | 4.22±11.39 | P>.05 |

(Paired 't' test)

S=systolic pressure, D=Diastolic pressure.

7.23±1.76 points. Both groups had significant decrease in mean IPSS ($p<0.001$ in 't' test) in the second visit (Table -V).

In this study, mean percentage improvement of IPSS in terazosin group was 39.8±17.78 points and in tamsulosin was 46.02±10.21 points. In comparison of IPSS change, therefore tamsulosin group showed significantly better response than terazosin in second visit ($p<0.01$ in unpaired 't' test).

Follow-up visit after two months (change of PVR) In the follow-up visit after two months mean PVR in terazosin group (n=31) was 52.58±13.10 ml. In comparison to baseline mean PVR this value shows significant change ($p<0.05$ in paired 't' test). Similarly, mean PVR in the tamsulosin group was 43.03±12.5 ml. In comparison to baseline, this value also shows significant change ($p<0.05$). PVR change in terazosin group from baseline was 36.06±12.38 ml and tamsuiosin group was 44.23±16.91 ml. Both groups had significant decrease in mean PVR ($p<0.01$ in 't' test) in the second visit (Table-VI).

**Table IV** : Comparison of Qmax between terazosin group and tamsulosin group on different follow-up visit

| Group | Baseline (Mean± SD) | second follow-up (Mean± SD) | P (in the same group comparison with baseline) | Change from baseline (Mean± SD) | Mean % change ± SD | P-value (in comparison of Qmax change between terazosin and tamsulosin |
|---|---|---|---|---|---|---|
| Terazosin | 12.32 ± 1.05 | 15.35 ± 1.05 | P<.001 | 3.03 ± 98 | 24.61 ± 7.97 | P<.001 |
| Tamsulosin | 12.55 ± 1.26 | 16.52 ± 1.23 | P<.001 | 3.97 ± 0.66 | 32.20 ± 5.33 | |

(Paired 't' test)

**Table V** : Comparison of IPSS between terazosin group and tamsulosin group on different follow-up visit

| Group | Baseline (Mean± SD) | second follow-up (Mean± SD) | P (in the same group comparison with baseline) | Change from baseline (Mean± SD) | Mean % change ± SD | P-value (in comparison of Qmax change between terazosin and tamsulosin |
|---|---|---|---|---|---|---|
| Terazosin | 15.84±1.85 | 9.52±1.86 | P<.001 | 6.32±2.90 | 39.8±17.78 | P<.05 |
| Tamsulosin | 15.71±1.90 | 8.48±1.15 | P<.001 | 7.23±1.76 | 46.02±10.20 | |

(Paired 't' test)

**Table VI** : Comparison of PVR between terazosin group and tamsulosin group on different follow-up visit

| Group | Baseline (Mean± SD) | second follow-up (Mean± SD) | P (in the same group comparison with baseline) | Change from baseline (Mean± SD) | Mean % change ± SD | P-value (in comparison of Qmax change between terazosin and tamsulosin |
|---|---|---|---|---|---|---|
| Terazosin | 88.65±21.28 | 52.58±13.10 | P<.001 | 36.06±12.38 | 40.7±13.9 | P<.001 |
| Tamsulosin | 87.26±23.05 | 43.03±12.5 | P<.001 | 44.23±16.91 | 50.68±14.54 | |

(Paired 't' test)

In this study, mean percentage improvement of PVR in terazosin group was 40.71±13.9 ml and in tamsulosin was 50.68±14.54 ml. In comparison of PVR change, therefore, tamsulosin group showed significantly better response than terazosin in second follow-up visit ($p<0.01$ in unpaired 't' test).

Adverse effect of terazosin and tamsulosin group during 2 months of therapy.

In this study, among terazosin group, postural hypotension, dizziness, headache, hypotension (lying) rhinitis and asthenia were 9.6%, 19.35%, 12.90%, 6.45%, 0%, 6.45% respectively. In the tamsuiosin group, these were 0%, 6.45%, 3.2%, 0%, 3.2% and 3.2% respectively (Table VII).

**Table VII** : Adverese effect of terazosin and tamsulosin group.

| Asset | Terazosin Percentage (%) | Tamsulosin Percentage (%) |
|---|---|---|
| I) Postural hypotension | 9.67 | 0 |
| II) Dizzines | 19.35* | 6.45* |
| III) Headache | 12.90** | 3.2** |
| IV) Hypotension (lying position) | 6.45 | 0 |
| V) Rhinitis | 0 | 3.2 |
| VI) Asthenia | 6.45 | 3.2 |

* P< 0.05 in -Z- test
** P<.05 in -Z- test

**Discussion**

Benign prostatic hyperperlasia is a condition of ageing male. It is well established the incidence of BPH risk increase with age.

Alpha receptor blockers generally improve urinary symptoms and peak urinary flow rates 2 to 4 week after introduction of the therapy[9]. So the present study "A comparative study of terazosin and tamsuiosin for symptomatic benign prostatic hyperplasia (BPH) were designed for 2 months period.

In this study age range was 52-78 yrs. with a mean for terazosin group was 64.23 ± 6.63 yrs and tamsuiosin group was 64.13 ± 6.29 yrs. The results of age of two group were statistically insignificant ( P>0.05).

Baseline mean of IPSS in terazosin group was 15.8411.85 and in tamsuiosin group was 15.71±1.90 points.

Base line Qmax of terazosin group was 12.32±1.05 ml/Sec and tamsuiosin was 12.55±1.26ml/Sec respectively.

Base line PVR of terazosin group was 88.55 ± 21.28ml and tamsuiosin gorup was 87.26±23.25ml.

All baseline parameters like Qmax, IPSS PVR in terazosin and tamsuiosin group were statistically insignificant. So these factors did not affect study.

Patients having specific drugs in specific group for continuously for 2 months and follow up done by taking different parameters.

Mean IPSS after 2 months in terazosin group 9.52±1.86 points. This shows significant improvement from base line value (P<.05) and in tamsulosin group mean IPSS was 8.48±1.15 points which was also a significant improvement from base line value (P<.05).

Follow up visit after 2 months mean IPSS improvement from base line was 6.32±2.90 points for terazosin and 7.23±1.76 points for tamsuiosin. Therefore the tamsulosin group showed significant reduction of IPSS score than terazosin ((P<.001).

The percentage improvement of IPSS in terazosin group was 39.8±17.78 points and tamsulosin group was46.02±10.21 points. Mean Qmax after 2 months in terazosin group was 15.3511.05 ml/Sec and in tamsulosin group was 16.52±1.23ml/Sec. This was significant higher in both group from base line.

Qmax improvement from base line was 3.05±98ml/Sec for terazosin, 3.97+0.66 ml/Sec for tamsulosin group. Here also the tamsulosin group showed significant higher flow rate than terazosin (P<0.001).

The percentage improvement of Qmax in terazosin group form base line was 24.61 ±7.97 ml/Sec. and for tamsulosin was 32.20±5.33ml/Sec.

Mean PVR after 2 months in terazosin group was 52.58±13.10ml and tamsulosin group was 43.03±12.5ml. PVR improvement from base line was 36.06±12.38ml for terazosin 44.23±16.91 ml for tamsulosin.

The percentage improvement of PVR in tarazosin group was 40.7±13.9ml and in tamsulosin group was 50.68Is±14.54ml.

Many of this studies revealed maximum effect of tarazosin and tamsulosin in between 8-12 weeks. This results is compatible with the study of Brawer et al[10].

A study done by Chappie et al (1996)[11]. They have

found maximum urinary flow rate improved to a greater extent in tamsulosin group (1.6 ml/sec. 16%) than the placebo. Similar effect has been found in the study done by Schulman et al (2001)[12], Abrams et al (1999)[13]. A study by Elhilali et al (1996)[14], with 1-10 mg of terazosin titration dose, Qmax improvement was 13% more in terazosin group than placebo (terazosin minus placebo).

**Complication**

The most common adverse effects we found were, headache, asthenia, dizziness, rhinitis and retrograde delayed ejaculation. Tarazosin group showed more postural hypotension, headace than tamsulosin group.

In other study, postural hypotension, headache, asthenia is much more common with terazosin. This study compatible with study done by Na et al, (1998)[15]. They also showed incidence of adverse effect by administration of tamsulosin was less than that of terazosin group (13 and 50% respectively, ($p<0.01$). This is supported by study done by DeMey and Terpstra, (2000)[16], Tewari and Narayan, (1999)[17], Okada et al (2000)[18] Tsujii et al (2000)[19]. In another study by Lee, (2000)[20].

**Conclusion**

It can be concluded that tamsulosin 0.4 mg once daily dose and terazosin 1-2 mg incremental dose at least for 8 weeks both are effective in relieving symptoms of BPH but tamsulosin is superior to terazosin in improvement of total IPSS ($p<.001$) and Qmax ($p<.001$), PVR ($<.01$) at the end point. The incidence of adverse events by administration of tamsulosin was less than that by terazosin. So tamsulosin appears to be safer and more effective than terazosin in symptomatic BPH.

**References**


1. Zimmern P: Medical treatment modalities for lower urinary tract symptoms: What are the relevant difference in randomized controlled trials? Eur Urol. 2000; 38: 18-24
2. Chappte CR: Introduction and concluding remarks. Eur Urol. 2000; 38: 1-6
3. Berry S.J., Coffey, D.S., Walsh, P.C. and Ewing L.L. The development of benign prostatic hyperplasia with age. J Urol. 1984; 132: 474-479
4. Caine M. Pfau A, Perlberg S : The use of alpha adrenergic blockers in benign prostatic obstruction. Br J Urol. 1976; 48: 255-263
5. Kirby RS: Terazosin in benign prostatic hyperplasia: effects in blood pressure in normotensive and hypertensive men. Br J Urol 1998; 82: 373-379
6. Kirby RS, Bryan J, Eardley I, Christmas RJ, Liu S, Holmes SAV, et al. Finasteride in the treatment of benign prostatic hyperplasia: A urodynamic evaluation. Br J Urol. 1992; 70: 65-72
7. Lepor H, Willford Wo, Barry MJ : The efficacy of terazosin, finesteride or both in benign prostatic hyperplasia. Veterans Affairs Co-operative Studies Benign Prostatic Hyperplasia Study Group. New Engl J Med 1996; 335: 533-539
8. Lu-Yao GL, Barry MJ, Chang CH: Transurethral resection of the prostate among medicare beneficiaries in the United states : Time treads and outcomes Prostate Patient Outcomes Research Team (PORT). Urology 1994; 44: 692-698
9. Jonler, M; Rickman, M; Brushiest, R.C. BPH, Current pharmacological treatment. Drugs. 1994; 47: 66-81
10. Brawer M. K; Adams G. Epstein H. Terazosin in the treatment of BPH. Arch. Fam. Med. 1993; 2: 929-935
11. Chappie CR, Wyndaele JJ, Nordling J, Boeminghaus F, Ypma AF, et al., Tamsulosin, the first prostate-selective alpha 1 A-adrenoceptor antagonist. A meta-analysis of two randomized, placebo-controlled, multicentre studies in patients with benign prostatic obstruction (symptomatic BPH). European Tamsulosin Study Group. Eur Urol. 1996; 29: 155-167
12. Schulman CC, Lock TM, Buzelin JM, Boeminghaus F, Stephenson TP. et al., Long-term use of tamsulosin to treat lower urinary tract symptoms/benign prostatic hyperplasia. J Urol. 2001; 166: 1358-1363
13. Abrams P. Speakman M, Stott M, Arkell D, Pocock R. A dose-ranging study of the efficacy and safety of tamsulosin, the first prostate-selective alpha 1 A-adrenoceptor antagonist, in patients with benign prostatic obstruction symptomatic benign prostatic hyperplasia). Br J Urol. 1997; 80: 587-596
14. Elhilali MM, Ramsey EW, Barkin J: A multicenter, randomized, double-blind,

placebo-controlled study to evaluate the safety and efficacy of terazosin in the treatment benign prostatic hyperplasia. Urology 1996; 47: 335-342

15. Na YJ, Guo YL, Gu FL. Clinical comparison of selective and non-selective alpha 1A-adrenoceptor antagonists for bladder outlet obstruction associated with benign prostatic hyperplasia: studies on tamsulosin and terazosin in Chinese patients. The Chinese Tamsulosin Study Group. J Med 1998; 29: 289-304
16. DeMey C, Terpstra I. : Orthostatic effects ofAlfuzozin twice daily vs. Tamsulosin once daily in the Morning. AUA Annual Meeting, 2000, Atlanta, April 29-May 4, 2000
17. Tewari A., Narayan P : Alpha-adrenergic blocking drugs in the menagement of benign prostatic hyperplasia: interactions with antihypertensive therapy. Urology 1999; 53: 14-20
18. Okada H, Kamidono S, Yoshioka T, Okuyama A, Ozono S. et al., A comparative study of terazosin and tamsulosin for symptomatic benign prostatic hyperplasia in Japanese patients. BJU-Int. 2000; 85: 676-681
19. Tsujii T. Comparison of prazosin, terazosin and tamsulosin in the treatment of symptomatic benign prostatic hyperplasia: a short term open, randomized multicenter study. BPH Medical Therapy Study Group. Benign prostatic hyperplasia. Int J Urol. 2000; 7: 199-205
20. Lee M.: Tamsulosin for the treatment of benign prostatic hypertrophy. Ann. Pharmacother 2000; 34: 188-199