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Effect of Terazosin on the Lipid Profile in Patients with Symptomatic Benign Prostatic Hyperplasia

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Key Words

Terazosin · Benign prostatic hyperplasia · Lipid · Cholesterol

Abstract

Introduction: To determine the changes in plasma lipid levels in symptomatic benign prostatic hyperplasia (BPH) patients receiving terazosin treatment. ***Materials and Methods:*** The study included 99 patients with BPH aged 44–74 years. The patients were divided into 3 groups: in group 1 (n = 25) with baseline total cholesterol levels of >220 mg/dl, terazosin 5 mg/day was used; in group 2 (n = 56) with basal total cholesterol levels of < 220 mg/dl, terazosin 5 mg/day was used, and group 3 (n = 18) did not use terazosin and was defined as the control group. Plasma levels of total cholesterol, low-density lipoprotein, high-density lipoprotein and triglyceride were recorded, and the high-density lipoprotein to total cholesterol ratio was calculated at the beginning of the study and after 12 weeks. ***Results:*** The total cholesterol level decreased from the baseline level by 10.88% after 12 weeks ($p < 0.05$) in group 1. The decrease was observed in 22 of 25 patients (88%). In group 1, the mean plasma total cholesterol level decreased significantly ($p < 0.05$), but the decrease was not significant in group 2 and no change was observed in group 3. The mean plasma low-density lipoprotein level decreased significantly in group 1 ($p < 0.05$), but no change was observed in the other 2 groups. The mean plasma high-density lipoprotein level increased in group 1, whereas no change was observed in the other 2 groups. The mean plasma triglyceride level decreased significantly in groups 1 and 2 ($p < 0.05$), but no change was observed in group 3. The high-density lipoprotein to total cholesterol ratio increased significantly in group 1, but no change was observed in the other 2 groups. ***Conclusion:*** We suggest that terazosin may be a reasonable choice because of the beneficial effect on the lipid profile in older symptomatic BPH patients with a higher ratio of dyslipidemia.

Introduction

Benign prostatic hyperplasia (BPH) is the most common benign tumor in men over 40 years of age, and becomes symptomatic in older ages. Although many studies have been done on the beneficial effect of the selective α_1-blocker terazosin, which is commonly used in the treatment of symptomatic BPH, hypertension, and in the regulation of the lipid profile [1–4], there are few controlled

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studies that show its effects on plasma lipid levels in BPH patients [5–7]. The plasma cholesterol level, which increases with age, is a risk factor for coronary artery disease [8, 9]. The National Cholesterol Education Program (NCEP) has suggested that plasma cholesterol levels between 200 and 240 mg/dl are borderline elevated in adults [10]. In our study, the alterations in lipid profile in patients who used terazosin for symptomatic BPH were evaluated, and the patients were divided into 3 groups according to the different total cholesterol levels.

Patients and Methods

110 patients with symptomatic BPH were included this prospective study. Of these patients, 11 were excluded from the study because of side effects of terazosin or lack of follow-up. The remaining 99 patients were examined in the outpatient clinic and they were divided into 3 groups: group 1 (n = 25) with baseline total cholesterol levels of >220 mg/dl used terazosin 5 mg/day; group 2 (n = 56) with basal total cholesterol levels of <220 mg/dl used terazosin 5 mg/day, and group 3 (n = 18) did not use terazosin and was defined as the control group. Plasma levels of total cholesterol, low-density lipoprotein (LDL), high-density lipoprotein (HDL) and triglycerides were recorded and the HDL to total cholesterol ratio was calculated at the beginning of the study and after 12 weeks. To avoid alterations in plasma lipid profile, patients who used any other drugs or who were on a diet were excluded from the study. The paired sample t test and ANOVA test were used for the statistical analysis.

Results

The mean age of the patients was 59.5 ± 7.4 (44–74) years. The measurements of Q_{max}, IPSS and body mass index in each group were similar ($p > 0.05$). Table 1 shows comparative data on the effectiveness of terazosin in improving symptoms and urinary flow rate. After 12 weeks, the plasma cholesterol levels decreased in 22 of 25 (88%) patients in group 1. Mean decrease was 10.88% ($p < 0.05$). The decrease was not significant in group 2. No change was observed in group 3. The plasma LDL levels in group 1 decreased significantly, while no change was observed in other 2 groups. The plasma HDL levels in group 1 increased, but this increase was not statistically significant. No change was observed in the other 2 groups. The increase in the HDL to total cholesterol ratio in group 1 had statistical significance while no change was noted in the other groups. Plasma triglyceride levels increased significantly in groups 1 and 2. No change was observed in group 3 (control). The measurements of lipid parameters in each group are shown in figures 1–5. Eight patients (7.2%) discontinued treatment: 3 (2.7%) due to dizziness/vertigo; 2 (1.8%) due to headache; 1 (0.9%) due to syncope, and 2 (1.8%) due to postural hypotension. Three patients were excluded from study because they did not come for control.

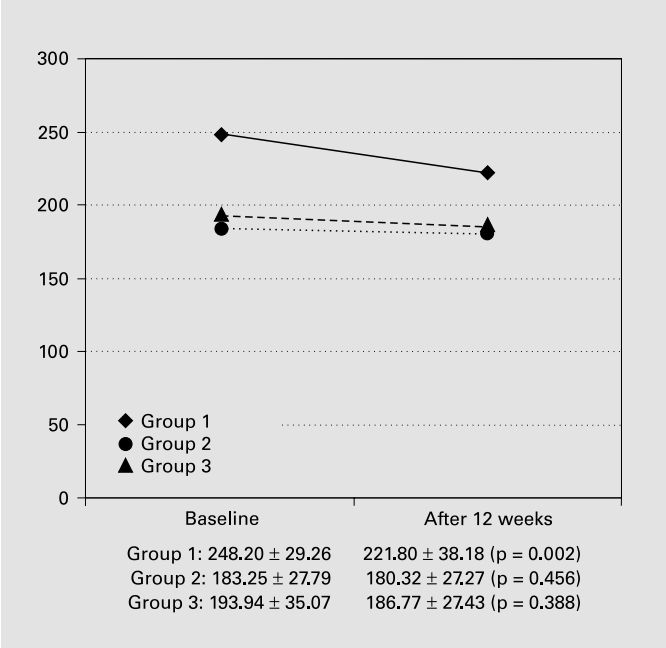

Fig. 1. The mean and standard deviation values of total cholesterol (mg/dl) and p values in each group.

Table 1. Improvements in symptom score and peak urinary flow rates induced by terazosin

	Baseline	12 weeks later	p
IPSS	10.8 ± 0.4	6.2 ± 0.6	<0.01
Q_{max}, ml/s	8.4 ± 0.3	12.5 ± 0.2	<0.01

Discussion

α_1-Adrenoreceptor blockers are the most commonly used drugs in the treatment of BPH. In these patients, diseases such as dyslipidemia and hypertension may accompany BPH. There are studies that suggest the beneficial effects of α-blockers on lipid profile and the regulation of blood pressure, as well as on micturition problems. Tamaki et al. [5] reported that the cholesterol levels decreased

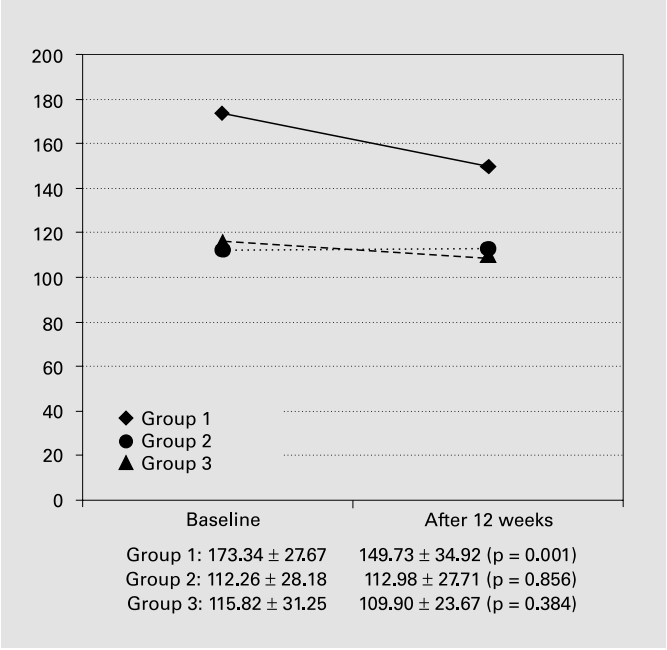

Fig. 2. The mean and standard deviation values of LDL (mg/dl) and p values in each group.

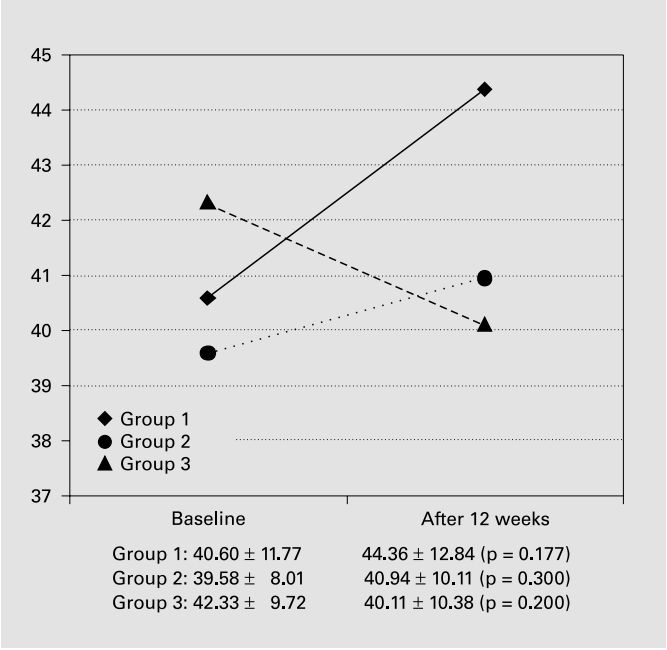

Fig. 3. The mean and standard deviation values of HDL (mg/dl) and p values in each group.

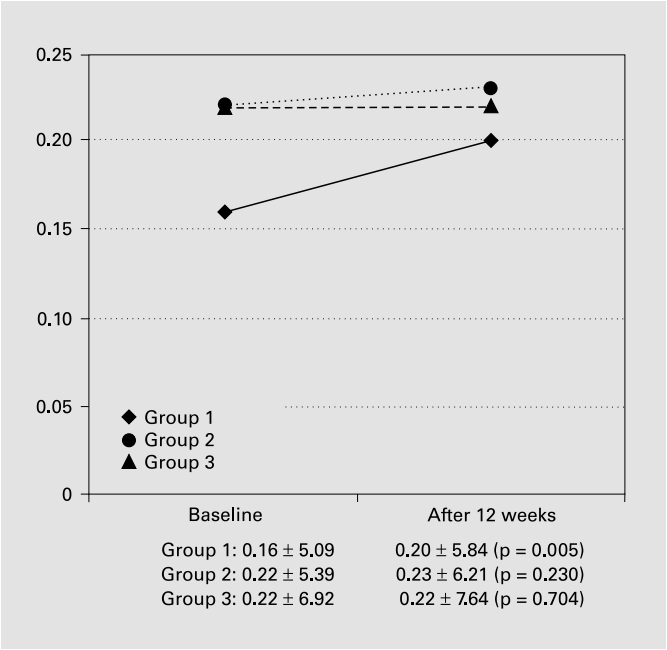

Fig. 4. The mean and standard deviation values of HDL/total cholesterol ratio and p values in each group.

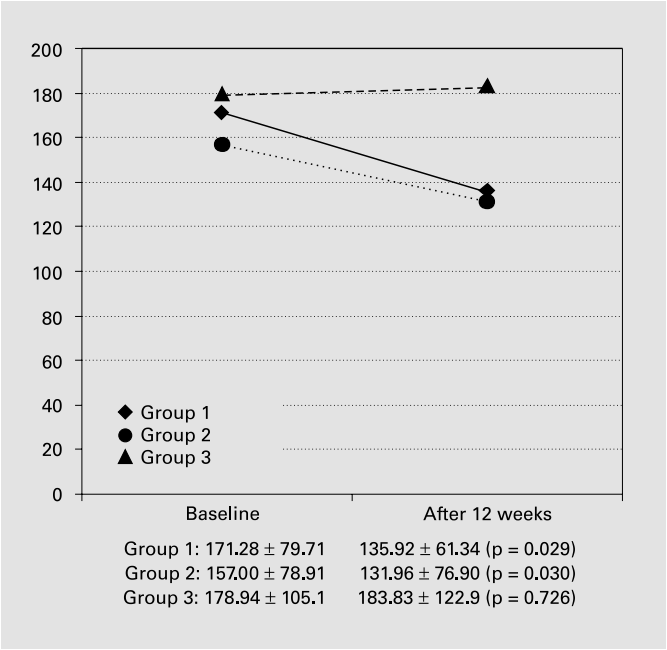

Fig. 5. The mean and standard deviation values of triglycerides (mg/dl) and p values in each group.

after 12 weeks of follow-up in BPH patients who received 2 mg/day terazosin treatment. This decrease was up to 6.6% and was significant especially in patients whose baseline cholesterol levels were >200 mg/dl. In another study, Lowe [6] suggested that there was a significant decrease in total cholesterol, LDL and triglyceride levels and an increase in HDL and the HDL/total cholesterol ratio in 636 patients treated with various doses of terazosin. Lepor [7] also found that the lipid profile changed in BPH patients who were on α-blocker treatment. On the contrary, Ferrier et al. [11] suggested that there was no significant change in the lipid profile in patients who were on terazosin monotherapy, because of the essential hypertension. In our study, a significant decrease in plasma levels of total cholesterol, LDL and triglycerides and an increase in HDL and HDL/total cholesterol ratio was found in patients whose total cholesterol levels were >220 mg/dl and who were taking 5 mg/day terazosin. This improvement was observed in most of the patients in the group (22/25). However, in patients whose total cholesterol levels were < 220 mg/dl, and also in the control group, no significant change was observed in these parameters, except the decrease in the triglyceride levels. This effect of α-blockers on lipid metabolism is not yet well understood. In a study, Krone and Nagele [12] claimed that the activity of the LDL receptor of the peripheral cells, a major determinant of cholesterol levels in plasma, was regulated by catecholamines via α_2- and β_2-adrenergic receptors and blockade of these adrenoreceptors with α- and β-adrenergic antagonists could reverse the catecholamine effect. The same authors suggested that α-blockers might also effect the enzymes of lipoprotein lipase, lecithin cholesteryl acyltransferase and cholesterol ester hydrolase. Nash [13] reported in his study that one of the α-blockers, doxazosin, increased the activity of LDL receptors and this effect might be responsible for the beneficial effects of α-blockers on the plasma lipid and lipoprotein levels. A beneficial effect on lipid profile has been found with α-blocker treatment in patients with BPH or hypertension in most of the studies including ours. In the majority of these studies, the group having the most affect from α-blockers is the group with a higher baseline cholesterol level. However, why the drug is ineffective in patients with normal lipid profiles and is effective in patients with dyslipidemia is not clear. Clarification of this subject may be very useful for the regulation of treatment and the treatment dose in patients with such diseases and dyslipidemia. These findings suggest that terazosin may be a reasonable choice because of the preferred effects on the lipid profile in symptomatic BPH patients who are older and have a higher ratio of dyslipidemia.

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