Study of Cardiovascular Effects of Pravastatin in Fludrocortisone-Salt-Induced Hypertension in Rats.

Thesis

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Abstract

Background and purpose: This study investigates the effect of pravastatin on systolic blood pressure, cardiovascular remodeling and impaired endothelial function induced as early signs of cardiovascular disease in fludrocortisone-salt induced hypertensive rats.

Methods: The study of protective and therapeutic effects of pravastatin at a dose of 20mg/kg/day/orally was carried out on 32 albino male rats (150- 200 g) randomly assigned into four groups: Normal group (distilled water for 8 weeks), Hypertensive group (fludrocortisones 250μ/kg/day/orally +1% salt for 8 weeks), pravastatin pretreated group (pravastatin for 8 weeks+ fludrocortisone+1% salt from4th week to 8th week) and pravastatin treated group (fludrocortisone+1% salt for 8 weeks+ pravastatin from4th week to 8th week). The effect of protection was assessed by systolic blood pressure measurement, echocardiographic data (LVEDD, LVESD, EF and FS %), vascular response of aorta to phenylephrine and acetylcholine, histomorphometric changes of aorta and biochemical measurements (MDA, superoxide anion and nitrite in urine).

Results: Pravastatin produced significantly hypotensive effect in pretreated (125.23±4.54 mmHg) and treated (119.53±3.2 mmHg) groups compared to hypertensive group (174±1.08 mmHg) at the end of the study, and LVH was significantly reduced by pravastatin in both groups. There was significant ($p<0.05$) increase in Phenylephrine contraction in hypertensive group compared to pretreated and treated group and there was high significant ($p<0.05$) increase in relaxation of aorta to Ach in pretreated and treated group compared to hypertensive group. Superoxide anions, MDA were reduced and urinary nitrite was elevated by pravastatin treatment. Finally pravastatin prevented aortic wall thickening after treatment.

Conclusion: Pravastatin, independent of its lipid-lowering properties, could be a useful therapeutic agent to prevent the development of cardiovascular disorders in prehypertensive and hypertensive states.

Key Words: Pravastatin; fludrocortisone; hypertension; ventricular hypertrophy; echocardiography; endothelial dysfunction.