

Rosuvastatin Ameliorate Renal Dysfunction and Glomerulosclerosis in DOCA-salt Hypertensive Rats

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Background : The pleiotropic effects of statins may contribute to the amelioration of end-organ damage in hypertension. We investigated the effects of rosuvastatin (crestor, 20 mg/kg/day) on renal dysfunction and glomerulosclerosis in DOCA-salt hypertension.

Methods : Rats were implanted with DOCA strips (200 mg/kg sc) 1 week after unilateral nephrectomy. They were maintained with or without rosuvastatin for 4 weeks. Three weeks after DOCA implantation, systolic blood pressure was measured by tail cuff method and urinary albumin excretion ratio (UAE) was calculated by urine microalbumin and creatinine. The expression of nitric oxide synthase (NOS), soluble guanylyl cyclase (sGC), ICAM-1, MCP-1, CTGF and heat shock proteins (HSP) was determined in the kidney by semiquantitative immunoblotting and immunohistochemistry. The glomerulosclerosis was determined by masson-trichrome stain.

Results : In hypertensive DS rats, the blood pressure was not affected by rosuvastatin treatment. The creatinine clearance was decreased, and UAE markedly increased in DOCA-salt rats, which was attenuated by rosuvastatin treatment. The expression of endothelial- and inducible NOS, ICAM-1, MCP-1, CTGF and HSPs was increased, while that of neuronal NOS and sGC decreased in the kidney of DOCA-salt rats, which was counteracted by rosuvastatin treatment. The glomerulosclerosis was also attenuated by rosuvastatin treatment.

Conclusion : Rosuvastatin treatment improves microalbuminuria, renal function and glomerulosclerosis, although the blood pressure was not affected in DOCA-salt hypertension.