

# ANTIHYPERTENSIVE AND RENAL HAEMODYNAMIC EFFECTS OF ATENOLOL AND NADOLOL IN ELDERLY HYPERTENSIVE PATIENTS

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All beta adrenoceptor blockers are effective antihypertensive agents in the young. They are reported to have varying effects on renal circulation depending on study design and severity of hypertension. In contrast, the efficacy of beta adrenoceptor blocking drugs has not been assessed nor have the renal haemodynamic effects been examined in elderly hypertensives.

We studied the effects of two beta adrenoceptor blocking drugs on renal function in elderly (mean age 70.5 years) patients with essential hypertension (systolic blood pressure greater than 160 mmHg and/or diastolic blood pressure greater than 95 mmHg). Atenolol and nadolol were used. Groups of 10 patients were included in a randomised placebo-controlled crossover study or oral atenolol, 100-200 mg daily, or nadolol, 80-240 mg daily. Placebo and active treatment phases lasted 12 weeks (atenolol) and 10 weeks (nadolol).

Glomerular filtration rate (GFR) and effective renal blood flow (ERBF) were measured from the plasma clearance of injected  $^{51}\text{Cr}$ -EDTA and  $^{125}\text{I}$ -iodohippuran respectively at the end of placebo and active treatment phases.

Both atenolol and nadolol reduced mean arterial pressure (MAP). Atenolol increased ERBF by 25% whereas nadolol reduced it by 20%. Atenolol increased renovascular conductance (ERBF/MAP) while nadolol had no effect. Despite their opposite effects on ERBF, GFR was not altered by either drug.

	PLACEBO	ATENOLOL	PLACEBO	NADOLOL
ERBF ml/min/1.73m <sup>2</sup>	513 $\pm$ 87	646 $\pm$ 116*	599 $\pm$ 36	446 $\pm$ 30**
GFR ml/min/1.73m <sup>2</sup>	56.4 $\pm$ 6.7	58.4 $\pm$ 7.0	49.9 $\pm$ 3.5	52.5 $\pm$ 2.7
MAP mmHg	130 $\pm$ 2	108 $\pm$ 2***	133 $\pm$ 2	114 $\pm$ 3***
Renovascular conductance ml/min/1.73m <sup>2</sup> /mmHg	3.9 $\pm$ 0.6	5.9 $\pm$ 1.0**	4.2 $\pm$ 0.3	4.0 $\pm$ 0.3

Values are mean  $\pm$  SEM

\*P < 0.05    \*\*P < 0.005    \*\*\*P < 0.001.

These data demonstrate that both drugs are effective antihypertensive agents but have opposing effects on ERBF in elderly hypertensives. We speculate that this disparity is due to the difference in beta adrenoceptor selectivity.