

Changes in baroreflexes induced by L-dopa

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L-Dopa commonly reduces the blood pressure in Parkinsonian patients. This hypotension is seldom sufficiently severe to produce symptoms.

We have investigated the mechanism of hypotension induced by L-dopa by comparing the baroreflex responses before treatment, during therapy with maximum tolerated doses of L-dopa alone, and during treatment with maximum tolerated doses of L-dopa given in combination with L-alpha methyl dopahydrazine 300 mg/day, which blocks the conversion of L-dopa to catecholamines outside the central nervous system.

The intra-arterial blood pressure responses to Valsalva's manoeuvre and postural change were investigated in 18 patients before treatment. The investigations were repeated in all patients during L-dopa therapy, and in 10 patients recordings were also obtained during the combined regimen of L-dopa plus L-alpha methyl dopahydrazine 2 h after receiving the drugs. Results of the Valsalva's manoeuvre were expressed as a 'constrictor index' (Reid *et al.*, 1971). The index fell from 0.485 ± 0.077 to 0.312 ± 0.051 (mean \pm S.E. of mean) while taking L-dopa alone, this impairment in baroreflex function being significant ($P < 0.001$). With L-alpha methyl dopahydrazine in combination with L-dopa the mean index was 0.472 ± 0.076 (not significantly different from pretreatment values).

The supine blood pressures were significantly reduced from 157/86 (mean) before treatment to 146/75 (mean) on L-dopa alone ($P < 0.05$) and 147/75 (mean) on L-dopa in combination with L-alpha methyl dopahydrazine ($P < 0.001$). Treatment with L-dopa alone led to a significant ($P < 0.05$) reduction of the blood pressure during 35° head up tilt, from 157/94 (mean) to 142/83 (mean). With L-alpha methyl dopahydrazine plus L-dopa, the blood pressures returned towards pretreatment values, though this trend did not attain statistical significance.

The plasma concentration of L-dopa was estimated in 7 patients during both treatment regimens. One and a half hours after their noon dose, the concentrations ranged from 0.15 to 2.44 $\mu\text{g/ml}$ between patients, but the values for each patient were not significantly influenced by the addition of L-alpha methyl dopahydrazine.

It is concluded that the impairment of baroreflex function by L-dopa is mediated, at least in part, at the periphery. In contrast, mechanisms operating within the central nervous system may contribute to the lowering of supine blood pressure in patients receiving L-dopa.

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REFERENCE

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Isoprenaline-induced tachycardia in man

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Conolly, Davies, Dollery & George (1971) reported that an intravenous infusion of a low dose of isoprenaline caused an increase in the dose of isoprenaline,