

Overzicht promotie trajecten AGIKO's in Revalidatie Nederland

Beschrijving promotietraject van:

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Titel :
Humoral control of blood pressure in spinal cord-injured individuals

Onderzoeksdesign :
Experimental case-control study

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Samenvatting :
Under normal conditions, blood pressure is maintained primarily by the sympathetic nervous system and the renin-angiotensin-aldosterone system (RAAS), with a minor role for vasopressin. However, in patients with a complete spinal cord lesion the neural connections between the brain and the peripheral sympathetic nervous system are disrupted, and therefore the role of the sympathetic nervous system in blood pressure control in these patients is reduced. This alteration in neural contribution may have important consequences for the role of the humoral system in blood pressure regulation. Patients with lesion levels above the fifth thoracic vertebra, experience major problems in their blood pressure control. Under resting conditions in the upright sitting position the systolic and diastolic blood pressure is extremely low, with concomitant symptoms of lethargy. Resting plasma renin levels are elevated in these patients in comparison with controls. Moreover, head up tilt causes hypotension in spinal cord-injured patients, with little change in plasma norepinephrine levels, but marked increases in plasma renin activity and vasopressin levels. Finally, these patients are prone to autonomic dysreflexia; a massive uncontrolled sympathetic discharge triggered by stimuli (such as a full bladder or pain) arising below the lesion level. This reaction is dramatic with a huge and, dangerous increase in blood pressure. Evidence suggests that autonomic dysreflexia is induced only in part by the overreaction of the sympathetic nervous system below the lesion. A role for the renin-angiotensin-aldosterone system is quite probable. This study will elucidate the role of the RAAS system and vasopressin in blood pressure control when the autonomic nervous system fails, and the following key objectives will be addressed:

- i) What is the contribution of angiotensin II to resting vascular tone?
- ii) What is the contribution of angiotensin II and vasopressin to tilt induced vasoconstriction and orthostatic hypotension?
- iii) What is the contribution of the sympathetic nervous system and the RAAS system to the hypertensive reaction during autonomic dysreflexia?