S5 – Autonomic Dysfunction as Measured by Ewing's Battery Test to Predict Poor Outcome after Acute Ischemic Stroke

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Introduction and Project Objectives: Central autonomic dysfunction increases the risk of mortality after stroke. We aimed to investigate whether the severity of autonomic dysfunction as classified by Ewing's battery test can predict poor outcome after acute ischemic stroke.

Method: In this prospective observational study, we enrolled consecutive ischemic stroke patients within 7 days of symptom onset. Autonomic function was assessed by Ewing's battery tests, which consists of three parasympathetic tests (Valsalva maneuver, deep breathing, the 30:15 ratio) and two sympathetic tests (orthostasis and sustained handgrip). We dichotomized the severity of autonomic dysfunction into two groups: severe (definite, severe or atypical) and minor (normal or early). Modified Rankin Scale (mRS) (good outcome: mRS 0~2; poor outcome: mRS 3~6) was evaluated 3 months after index stroke.

Results: 150 patients were recruited (mean age, 66.4±9.9 years; 70.7% males). From Ewing's battery of autonomic function tests, minor autonomic dysfunction was identified in 36 patients (24.0%) and severe autonomic dysfunction was identified in 114 patients (76.0%), respectively. At month 3, a poor functional outcome was found in 32.5% of severe group patients compared to 13.9% in the minor group (P = 0.031). Crude odds ratios (ORs) of the severity of autonomic dysfunction and 3-month unfavorable functional outcome after acute ischemic stroke were 2.979 (95% CI, 1.071-8.284; P=0.036). After adjusting for confounding factors such as diabetes mellitus and ischemic heart disease, which were the 2 variables affecting autonomic dysfunction, the severity of autonomic dysfunction still showed significant association with unfavourable outcome, with ORs of 3.171 (95% CI, 1.116-9.009; P=0.030).

Conclusions: The severity of autonomic dysfunction as measured by Ewing's battery test predicts poor clinical functional outcome after acute ischemic stroke.

Keywords: Autonomic dysfunction; Ischemic stroke; Outcome