

The difference of autonomic function in acute phase between right and left middle cerebral artery stroke

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Introduction: Previous studies mainly investigate the role of right or left hemispheres affecting sympathetic-parasympathetic tone by using heart rate variability (HRV) of 24-hour Holter electrocardiography. However, we do not fully understand brain mechanisms and role affecting autonomic function system. We evaluated whether right or left middle cerebral artery (MCA) ischemic stroke affect autonomic function differently in the acute phase of ischemic stroke. Methods: Patients with acute ischemic stroke involving MCA territory were included. Patients with diabetes and cardiac disease were excluded. HRV, autonomic function test (quantitative sudomotor axon reflex test, head-up tilt test, sympathetic skin response, heart rate variation with respiration and Valsalva ratio) were performed during admission after acute stroke onset. HRV measurements include time and frequency domain parameters. We analyzed the differences of autonomic function between patients with right and left MCA territory stroke. Results: Among 35 patients, there were 16 with right MCA infarction and 19 with left MCA infarction. Insular involvement was found in 4 patients in each group. Compared to patients with left MCA infarction ($918.8 \pm 103.2\text{ms}$), those with right MCA infarction ($806.8 \pm 102.5\text{ms}$, $P = 0.003$) had shorter RR interval in 24-hour Holter electrocardiography. In patients with right MCA infarction, frequency domain parameters including very low frequency and high frequency were significantly lower than in those with left MCA infarction. The decrease in time domain parameters was shown in patients with right MCA infarction compared to those with left MCA infarction. However, there was no difference in autonomic function test between the two groups. Conclusions: Laterality of MCA infarction in acute phase of stroke may affect autonomic function differently. HRV showed difference according to laterality of MCA infarction.