Increased Arterial Stiffness Is Associated With Silent Intracranial Artery Stenosis in Hypertensive Patients

Dingliang Zhu, Jin Zhang, Yan Li, Wenquan Niu, Yi Zhang, Pingjin Gao
Department of Hypertension, Ruijin Hospital, School of Medicine, Shanghai Jiaotong University; Vascular Evaluation Center, Shanghai Institute of Hypertension; Shanghai Key Laboratory of Vascular Biology, Shanghai 200025, China

Stroke is a leading cause of death in China. In ischemic stroke, intracranial artery (ICA) stenosis is more prevalent in Chinese than in Caucasian. Aortic stiffness is known of an independent predictor for stroke. However, little is known about the relation of cerebral vessel stenosis with arterial stiffness in hypertensive patients. The purpose of this study is to assess whether aortic stiffness can predict silent ICA stenosis in hypertensive patients. A total of 203 hypertensive patients (49.8% men, a mean age of 60.0±11.2 years,) who were asymptomatic and without a history of cerebrovascular disease and off antihypertensive therapy for ≥ 4 weeks underwent 24-hour ambulatory blood pressure monitoring (ABPM), carotid-femoral pulse wave velocity (cf PWV) measurement and brain CT angiography (CTA) to detect ICA stenosis. We detected ICA stenosis in 28 participants (13.8%). Age, body mass index (BMI) , hypertension duration , systolic blood pressure (SBP) , mean arterial pressure (MAP), pulse pressure (PP) and cf PWV were significantly related to ICA stenosis in univariate analyses (all $P<0.05$). Multivariate analyses, adjusted for age, gender, height, total cholesterol(TC) /high-density lipoprotein cholesterol (HDL-C), heart rate (HR), glucose and MAP, showed that a higher cf PWV (adjusted OR:1.23; CI: 1.00-1.50, $P<0.05$) conferred a consistent association with ICA stenosis. In conclusion, cf PWV is independently associated with stenosis of intracranial artery in hypertensive patients.