Association between brachial-ankle pulse wave velocity and new-onset atrial fibrillation: A report from Kailuan Study

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Background: Several risk factors are common between atrial fibrillation (AF) and atherosclerosis. The brachial-ankle pulse wave velocity (baPWV) is a marker of arterial stiffness.

Objectives: To investigate the predictive value of baPWV for new-onset AF.

Methods: All participants without AF as of December 31, 2020 from the Kailuan cohort were included. Demographic characteristics and baPWV were recorded. The primary endpoint was new-onset AF. Participants were divided into three groups according to baPWV. We analyzed the predictive value when baPWV was as a continuous variable.

Results: A total of 49,872 subjects (mean age: 47.57 years old, 74.2% male) were included with follow-up of 6.17 (3.95-8.46) years. Compared with normal baPWV group, the risk of AF increased with increasing baseline baPWV, whereby the adjusted hazard ratio (aHR) of the high baPWV group and the atherosclerotic group were 1.82 (95% confidence interval [CI]: 1.18-2.80) and 2.08 (95% CI: 1.31-3.30), respectively. As a continuous variable, for every 361 cm/s increase in baseline baPWV, the risk of AF increased by 21.7% (aHR: 1.22; 95% CI: 1.08-1.37). In subgroup analysis of non-hypertensive patients, the risks of AF in the high baPWV group (aHR: 3.16, 95% CI: 1.74-5.74) and atherosclerotic group (aHR: 2.26, 95% CI: 1.02-5.05) were significantly higher, compared with normal baPWV group. In overweight patients, the risk of AF in atherosclerotic group was significantly higher than in normal baPWV group (aHR: 1.69, 95% CI: 1.00-2.83).

Conclusions: The risk of AF increases with the increase of baPWV, and baPWV is of predictive value in occurrence of AF.