

## **Abstract**

**Objective:** Although blood pressure (BP) is a major determinant of arterial stiffness, whether high pulse wave velocity (PWV) adversely influences cardiac parameters and cardiovascular (CV) outcome in patients without high BP remains unclear.

**Methods:** Outpatients without high BP (n=320), defined as systolic BP  $\geq$ 140 mmHg, were enrolled in this retrospective study. At baseline, all patients underwent echocardiography and multidetector computed tomography to determine the coronary artery calcification (CAC) score. Arterial stiffness was assessed based on brachial–ankle PWV (baPWV), from which patients were classified into two groups: those with high ( $\geq$ 18 m/s, n=89) and low baPWV ( $<$ 18 m/s, n=231). Cardiac parameters and CV event incidence during the follow-up period were compared between these groups.

**Results:** In multivariable linear regression analysis, baPWV was significantly associated with CAC score and serum N-terminal pro-brain natriuretic peptide hormone level, after adjustment for confounding factors. In multivariable logistic regression analysis, baPWV  $\geq$ 18 m/s was significantly associated with CAC score  $\geq$ 400 (odds ratio: 2.466, 95% confidence interval: 1.012–6.009, p=0.0471). Kaplan–Meier analysis showed that the high-baPWV group experienced more CV events during the 575 days of follow-up (20% vs. 6%, p=0.0003).

**Conclusions:** High baPWV was associated with greater CAC and a high risk of a future CV event, especially coronary artery disease, even in patients without high BP.

**Keywords:** pulse wave velocity; blood pressure; coronary artery calcification