

Possibility of Arterial Velocity Pulse Index as a Risk Factor of Cardiovascular Disease in Patients with Hypertension

Takashi Hitsumoto

Hitsumoto Medical Clinic, Shimonoseki

Background: Arterial dysfunction is considered as one of the most important factors which lead to cardiovascular events. On the other hand, arterial velocity pulse index (AVI) is explored as novel markers of arterial function and used in clinic. The aim of this study is to clarify possibility of AVI as a risk factor of cardiovascular disease in patients with hypertension.

Methods: 426 hypertensive outpatients with no history of cardiovascular events (Mean age: 65±12years, Male/Female: 167/259) were enrolled. AVI was measured using commercial device (AVE-1500, Shisei datum Co., Ltd., Japan), and examined relationships between AVI and various clinical parameters.

Results: There were weak positive correlations between AVI and blood pressure levels. AVI had significant relations with urinary albumin excretion ($r=0.19$, $p<0.001$), high sensitivity CRP concentrations ($r=0.21$, $p<0.001$), derivatives of reactive oxygen metabolites test as a marker of oxidative stress ($r=0.33$, $p<0.001$), brain natriuretic peptide concentrations ($r=0.29$, $p<0.001$), and high sensitivity troponin T concentrations ($r=0.42$, $p<0.001$). Furthermore, multiple regression analysis revealed that these factors were selected as independent variables for AVI as a subordinate factor.

Conclusion: These results indicate that AVI has a possibility to predict cardiovascular events in patients with hypertension from view point of cardiorenal syndrome. Furthermore, inflammation and oxidative stress are closely associated with increase of AVI.

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