

Evaluation of Arterial Elasticity by a Pulse Contour Analysis : A One-Year Follow-Up

Kazuma TAKEUCHI¹⁾²⁾, Akira MATSUNAGA¹⁾, Keita NODA¹⁾,
Munehito IDEISHI¹⁾, Bo ZHANG¹⁾, Hidenori URATA³⁾,
Noritsugu MORISHIGE²⁾, Tadashi TASHIRO²⁾ and Keijiro SAKU¹⁾

*¹⁾Department of Cardiology, ²⁾Cardiovascular Surgery, Fukuoka University School of Medicine
and ³⁾First Department of Internal Medicine, Fukuoka University Chikushi Hospital, Fukuoka, Japan*

Abstract : Background : Arterial elasticity has been suggested to be either a risk factor or a marker of cardiovascular disease. A non-invasive pulse-wave contour analysis is considered to be a good modality for assessing the compliance or elasticity of the large and small arteries. The aim of this study was to determine whether the elasticity of the arteries changed within a year.

Methods : This prospective study included 57 patients with cardiovascular risk factors such as hypertension (41 patients), hyperlipidemia (37), and/or a history of smoking (5). The arterial elasticity was evaluated by a radial artery pulse wave analysis using a noninvasive sensor, a parameter estimating the algorithm and the modified Windkessel model of circulation at entry to the study and at one year after the initial evaluation. This analysis estimated the small artery elasticity index (SAEI) in a non-diseased vessel area. At entry to the study, the serum levels of lipids, lipoprotein (a), and the apolipoprotein A I, A II and B levels were measured.

Results : At one year after the first evaluation, the mean of SAEI in the patients had not changed significantly. No significant correlation was found between the changes in the SAEI and any of the factors that had been measured in this study.

Conclusion : The SAEI did not demonstrate any statistically significant difference at one year after the first evaluation.

Key words : Small artery elasticity, Artery compliance, Cardiovascular risk factor