Vessels and Endothelium

12.18 Correlation between Ambulatory Arterial Stiffness Index (AASI) and Pulse Wave Velocity in a General Population: the Vobarno Study

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Introduction. The measurement of Ambulatory Arterial Stiffness Index (AASI) as a marker of arterial compliance and its relation with target organ damage (TOD) are still controversial.

Aim. To assess the relationship between AASI, pulse wave velocity (PWV), and other markers of TOD in a general population.

Methods. The study included 263 untreated subjects (age 54 ± 9 years, 46% males, 47% hypertensive patients). In all subjects, laboratory examinations and measurement of PWV, left ventricular mass index (LVMI), carotid intima-media thickness (IMT), clinic and 24 hours BP were performed. From individual 24-h recordings the regression slope of diastolic on systolic BP values was computed; AASI was calculated as 1 minus the regression slope.

Results. No difference in AASI was observed between normotensive subjects and hypertensive patients (0.35 ± 0.13 vs 0.37 ± 0.14 , p ns), while PWV was significantly greater in hypertensive patients (12.1 ± 3.0 vs 10.1 ± 1.5 m/s, $p < 0.001$). At univariate analysis AASI was significantly related directly to PWV, age, clinic and 24 h SBP, and inversely to the difference between daytime and night-time SBP (SDN) (all $p < 0.01$). At multivariate analysis AASI was significantly related to age, SBP and SDN ($p < 0.05$) but not to PWV. After adjustment for confounding factors, PWV, but not AASI, was significantly correlated with LVMI, IMT and creatinine clearance (respectively $b = 0.16$, 0.22 and $b = -0.20$, $p < 0.001$).

Conclusions. In a general population sample, AASI is weakly related to PWV, an accepted index of arterial stiffness; furthermore this relationship is not present after adjustment for confounding factors. PWV, but not AASI, is related to cardiac, vascular and renal TOD. Our data suggest that AASI should be used with caution as a measure of arterial compliance.