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Analysis of regional PWV values for different age groups in healthy Korean subjects

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Objectives: This study was performed to detect the changes in normal regional PWV values both for men and women in Korea by age. Also, the relationship among PWV values, biochemical values, and several physical parameters including blood pressure were analyzed.

Methods: 197 normal healthy Korean subjects (102 men and 95 women) were classified into five groups by age (19-29yrs, 30-39yrs, 40-49yrs, 50-59yrs, 60-71yrs). Body mass index (BMI), blood pressure (SBP, DBP), abdominal obesity (AO) were measured and fasting blood sugar, cholesterol level (TC, HDL, LDL), triglyceride (TG) were also obtained using blood chemistry. Pulse waves were detected using semiconductor type pressure sensors and regional pulse wave velocities (aorta, arm, leg) were calculated from carotid, radial, femoral, dorsalis pedis pulse waves.

Results: Each regional PWV showed higher values in men than in women, aortic PWV (7.95±0.73m/s vs. 7.67±0.79m/s, p=0.029), leg PWV (9.58±1.07m/s vs. 8.98±1.24m/s, p<0.001), and arm PWV (9.14±0.91m/s vs. 8.52±1.04m/s, p<0.001). TG (p=0.008) and DBP (p<0.001) also showed higher values for men, while HDL (p=0.002) was lower in men than in women. Aortic PWV (p<0.001), leg PWV (p<0.001), AO (p<0.001), TC (p=0.010), SBP (p<0.001), and DBP (p=0.007) were increased significantly with age in both men and women. FBS, LDL were increased with age, however, there were no significant relationship with PWV values. Correlation coefficients between regional PWVs and other variables were examined. As results, aortic PWV values revealed highly positive significance with age (r=0.567, p<0.001), AO (r=0.193, p=0.011), FBS (r=0.255, p<0.001), TC (r=0.172, p=0.015), LDL (r=0.153, p=0.035), SBP (r=0.305, p<0.001), and DBP (r=0.268, p<0.001). Similar results were also shown in leg PWVs, and arm PWVs showed significant relationship only for blood pressure values.

Conclusion: PWV values were higher in men than in women. Each regional PWV value increases with age both for Korean men and women, however, it appeared dominant in leg PWV values than in aortic and arm PWV. Regional PWVs with age in healthy Korean subjects could be contribute to the various clinical application using PWV.