Abstract: P1539

Aortic pulse wave velocity measured by an oscillometric device independently predicts all-cause mortality in a cohort of 4146 subjects

Authors:
Z Lenkey¹, M Illyes¹, T Kahan², P Boutouyrie³, S Laurent³, FT Molnar⁴, GA Schillaci⁵, M Viigimaa⁶, A Cziraki¹, ¹University of Pecs, Medical School, Heart Institute - Pecs - Hungary, ²Karolinska Institute, Department of Clinical Sciences - Stockholm - Sweden, ³European Hospital Georges Pompidou, Pharmacology Department and INSERM U 970 - Paris - France, ⁴Budapest University of Technology and Economics, Department of Hydrodynamic Systems - Budapest - Hungary, ⁵University of Perugia, Department of Internal Medicine - Perugia - Italy, ⁶Tallinn University of Technology, Technomedicum - Tallinn - Estonia,

Topic(s):
Prevention – Cardiovascular Risk Assessment: Scores

Citation:
Objectives. Assessment of carotid-femoral pulse wave velocity by applanation tonometry independently predicts all-cause and cardiovascular mortality. However, there has been a need for a simpler, user-independent measurement with a validated device, that is applicable even in the primary care setting.

Methods and subjects. 4146 subjects (49% men) aged 35-75 years were measured in multiple centers in Hungary. Subjects visited the outpatient department of these centers on their own initiative. The measurement of aortic pulse wave velocity (PWVao) with Arteriograph was performed in addition to taking past medical history, physical examination and laboratory tests. The mean follow-up time of the study was 5.5 years. The number of events (all cause mortality) were provided by the Hungarian National Health Insurance Fund. Cox regression analyses were used to identify predictive factors for this endpoint.

Results. The mean age of the study population was 53 years, brachial systolic and diastolic blood pressure were 137 ± 20 and 82 ± 11 mmHg, and heart rate was 70 ± 10 1/min. The mean value of SCORE was 3 in this large cohort. 410 subjects had a registered cerebro-or cardiovascular event before the measurement, the number of smokers was 656 (16%), 1974 subjects were treated with at least one anti-hypertensive drug (48%), while the number of subjects on lipid-lowering, antidiabetic or antiplatelet medication were 807 (19%), 352 (8%) and 398 (17%), respectively. There were 116 fatal events during a mean follow-up of 5.5 years. According to the Cox regression, PWVao is a significant and independent predictor of all cause-mortality and in univariate analysis, a 1.0 m/s increase in PWVao was associated with HR 1.7 [1.47–1.98; p<0.001], for this endpoint.

Conclusion. Aortic pulse wave velocity measured by an invasively validated, simple, oscillometric device predicted all-cause mortality in a large cohort of relatively young subjects of the general population that may improve risk stratification even in the everyday clinical practice or primary care setting.