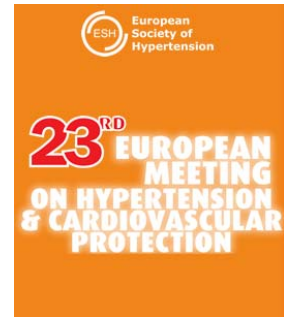


Arteriograph Cohort Study

Monday, June 17 09:00 - 11:00
ESH - LARGE ARTERIES - Parallel Oral Session



AORTIC STIFFNESS MEASURED BY A NOVEL OSCILLOMETRIC METHOD INDEPENDENTLY PREDICTS CARDIOVASCULAR MORBIDITY AND MORTALITY: A STUDY OF 4146 SUBJECTS

T. Kahan (1), P. Boutouyrie (2), A. Cziráki (3), M. Illyés (3), S. Laurent (2), F.T. Molnár (4), G. Schillaci (5), M. Viigimaa (6)

(1) Karolinska Institutet, Department of Clinical Sciences, Danderyd Hospital, Stockholm (SWEDEN), (2) Pharmacology Department and INSERM U 970, Hôpital Européen Georges Pompidou, Paris (FRANCE), (3) University of Pécs Medical School, Heart Institute, Pécs (HUNGARY), (4) Budapest University of Technology and Economics, Department of Hydrodynamic Systems, Budapest (HUNGARY), (5) Università degli Studi di Perugia, Unità di Medicina Interna, Terni (ITALY), (6) Tallinn University of Technology, Technomedicum, North Estonia Medical Centre, Tallin (ESTONIA)

Objective: Carotid-femoral pulse wave velocity (cfPWV) assessed by applanation tonometry evaluates aortic stiffness and predicts cardiovascular morbidity and mortality independently of classical CV risk factors. We studied the prognostic information provided by a novel and simpler oscillometric method, measuring aortic pulse wave velocity (PWVao) from a sole arm cuff.

Design and method: We studied 4,146 subjects (51% women) aged 35-75 years, who attended voluntary health screening in Hungary. Oscillometric PWVao (Arteriograph, TensioMed Ltd, Budapest, Hungary) measurement was performed in addition to a medical history, physical examination, and laboratory tests. All events (all cause mortality, non-fatal myocardial infarction, and non-fatal stroke according to ICD codes) were provided by the Hungarian National Health Insurance Fund, which performed an independent statistical analysis. Cox regression analyses were used to identify predictive factors for a composite endpoint, combining above events.

Results: Mean age was 53 years, brachial blood pressure 136/82 mm Hg, and total cholesterol 5.2 mM. There were 16% smokers, 48% patients on cardiovascular medications and 8% on antidiabetic drugs; 10% had a previous cardiovascular hospitalization. There were 241 events (100 deaths, 56 non-fatal myocardial infarctions, and 86 non-fatal strokes) during a mean follow-up of 5.5 years. In univariate analysis, a 1.0 m/s increase in PWVao was associated with HR 1.49 [1.34–1.65], $P < 0.001$, for the composite endpoint. PWVao independently predicted the composite outcome in the final model of multivariate analysis (HR = 1.14 [1.01-1.30]) adjusted for pulse pressure, ejection duration, male gender, age, concomitant cardiovascular disease and treatment with thrombocyte inhibitors (all $P < 0.05$); body mass index, smoking, heart rate, blood pressure, augmentation index, diabetes, and cardiovascular drug therapy were all accounted for.

Conclusions: Aortic pulse wave velocity assessed by a simple oscillometric method using an arm cuff only independently predicted all cause mortality and major CV events in a large cohort of subjects attending health screening. Using a simpler oscillometric cuff method for assessing aortic stiffness may facilitate risk assessment in routine clinical practice.