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Comparison of the European Society of Hypertension stratification and European Society of Cardiology HeartScore for prediction of coronary artery disease and stroke in essential hypertension

Authors:
N Vogiatzakis¹, C Tsioufis¹, K Dimitriadis¹, P Iliakis¹, A Kasiakogias¹, I Liatakis¹, E Koutra¹, I Leontsinis¹, D Konstantinidis¹, A Laina¹, M Kouremeti¹, K Thomopoulos¹, D Tousoulis¹, ¹First Cardiology Clinic, University of Athens, Hippokration Hospital - Athens - Greece,

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Background/Introduction: For estimation of overall cardiovascular risk the European Society of Hypertension (ESH) proposes stratification according to blood pressure (BP), prevalence of risk factors, asymptomatic target organ damage, diabetes, kidney and symptomatic cardiovascular disease, while the European Society of Cardiology (ESC) HeartScore constitutes another potent predictive tool of adverse outcome.

Purpose: The aim of the present study was to compare the predictive role of ESH stratification and ESC HeartScore for the incidence of the composite end-point of coronary artery disease (CAD) and stroke in a cohort of essential hypertensive patients.

Methods: We followed up 2150 essential hypertensives (mean age 55.7 years, 1085 males, office BP=145/91 mmHg) for a mean period of 8 years. All subjects had at least one annual visit. Patients were divided based on the ESH risk categories as well as according to the ESC HeartScore. CAD was defined as the history of myocardial infarction or significant coronary artery stenosis revealed by angiography or coronary revascularization procedure. Stroke was defined as rapid onset of a new neurological deficit persisting at least 24 hours unless death supervened confirmed by imaging findings.

Results: The incidence of CAD, stroke and their composite over the follow-up period were 2.8% (n=60), 1.11% (n=24) and 3.9% (n=84), respectively. By using the ESH stratification, regarding the total population 15.3% (n=329) was of low and moderate risk, 54.4% (n=1170) was of moderate to high and high risk and 30.3% (n=651) was high to very high and very high risk. According to the ESC HeartScore 89.2% (n=1918) was of low to moderate risk, 10% (n=215) of high risk and 0.8% (n=17) of very high risk. Cox-regression analyses revealed that high to very high and very high ESH risk category was related to increased risk for the composite end-point of CAD and stroke (hazard ratio=4.5, p<0.0001), while focusing on the ESC Heart Score the composite end-point was predicted by the high risk category (hazard ratio=3.43, p<0.0001). Using the Akaike’s information criterion the ESH risk model had better fit than the ESC HeartScore due to the lowest Akaike's values (1442.66 vs 1498.31, respectively).

Conclusions: In essential hypertensive patients categorization of patients by means of the ESH stratification and the ESC HeartScore are both predictive of future cardiovascular events. Based on our results, the ESH risk stratification constitutes a better prediction model for CAD and stroke than the ESC HeartScore in essential hypertension and its estimation is essential in order to improve overall risk assessment in this setting.