

CAROTID PLAQUE-THICKNESS AND COMMON CAROTID IMT SHOW ADDITIVE VALUE IN CARDIOVASCULAR RISK PREDICTION AND RECLASSIFICATION

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Carotid plaque size and the mean common carotid intima-media thickness measured in plaque-free areas (PF CC-IMTmean) have been identified as predictors of vascular events (VEs), but their complementarity in risk prediction and stratification is still unresolved. The aim of this study was to evaluate the independence of carotid plaque thickness and PF CC-IMTmean in cardiovascular risk prediction and risk stratification.

The IMPROVE-study is a European cohort (n=3,703), where the thickness of the largest plaque detected in the whole carotid tree was indexed as cIMTmax. PF CC-IMTmean was also assessed. Hazard Ratios (HR) comparing the top quartiles of cIMTmax and PF CC-IMTmean versus their respective 1-3 quartiles were calculated using Cox regression. After 36.2 months follow-up, there were 215 VEs (125 coronary, 73 cerebral and 17 peripheral). Both cIMTmax and PF CC-IMTmean were mutually independent predictors of combined-VEs, after adjustment for center, age, sex, risk factors and pharmacological treatment [HR (95%CI) = 1.98 (1.47, 2.67) and 1.68 (1.23, 2.29), respectively]. Both variables were independent predictors of cerebrovascular events (ischemic stroke, transient ischemic attack), while only cIMTmax was an independent predictor of coronary events (myocardial infarction, sudden cardiac death, angina pectoris, angioplasty, coronary bypass grafting). In reclassification analyses, PF CC-IMTmean significantly adds to a model including both Framingham Risk Factors and cIMTmax (Integrated Discrimination Improvement; IDI = 0.009; $p=0.0001$) and vice-versa (IDI = 0.02; $P<0.0001$).

We conclude that cIMTmax and PF CC-IMTmean are independent predictors of VEs, and as such they should be used as additive rather than alternative variables in models for cardiovascular risk prediction and reclassification.