MORPHOLOGICAL AND FUNCTIONAL CHARACTERISTICS OF CAROTID ARTERIES SHOW SIMILAR ACCURACY IN THE PREDICTION OF MULTIVESSEL CORONARY ARTERY DISEASE

Poster Contributions
Hall C
Sunday, March 30, 2014, 9:45 a.m.-10:30 a.m.

Session Title: Prevention: Familial Hypercholesterolemia, Novel Therapies and Cardiovascular Risk
Abstract Category: 20. Prevention: Clinical
Presentation Number: 1183-149

Authors: Georgios Benetos, Konstantinos Toutouzas, Maria Drakopoulou, Archontoula Michelonga, Charalampia Nikolau, Constantina Masoura, Konstantinos Stathogiannis, Constantina Aggelis, Eleftherios Tsimis, Elias Siorets, Christodoulos Stefanadis. First Department of Cardiology, Hippokration Hospital, Athens Medical School, Athens, Greece

Background: Carotid artery intima-media thickness (IMT), a measure of carotid artery morphology, is a surrogate marker of coronary artery disease (CAD). Still, it does not provide information concerning the functional properties of carotid plaques. Microwave Radiometry (MR) allows in vivo noninvasive measurement of the internal temperatures of tissues reflecting inflammation. The aim of this study was to evaluate whether carotid artery MR measurements show similar predictive accuracy with established risk prediction models in multivessel CAD detection.

Methods: Consecutive patients (n=368) scheduled for coronary angiography were included in the study. IMTmax was assigned as the maximal IMT value of both carotid arteries. Respectively, ΔTmax by MR was assigned as the maximal value of the temperature differences (ΔT) of both arteries. Multivessel CAD was defined as the presence of ≥50% stenosis in ≥2 major epicardial vessels. We further compared with the use of c-statistic two risk prediction models: 1) traditional risk factors (TRF - sex, age, smoking, dyslipidemia, arterial hypertension, diabetes mellitus and family history) plus IMTmax, and 2) TRF plus ΔTmax.

Results: Of 368 patients, 130 (35.30%) had 1-vessel CAD, 124 (33.70%) patients had 2-vessel CAD and 61 patients (16.60%) had 3-vessel CAD, while 53 (14.40%) did not have significant CAD. Patients with multivessel CAD had higher ΔTmax compared with patients with 1-vessel or no CAD (1.00±0.49 vs 0.78±0.48°C, p<0.001). In multiple logistic regression analysis, ΔTmax was an independent predictor for the presence of multivessel CAD, when adjusted for TRF and IMTmax (p=0.02, OR: 1.77, 95% CI 1.08-2.90). The risk prediction models TRF+ΔTmax and TRF+IMTmax showed similar predictive capacity for the presence of multivessel CAD (c-statistic=0.698, 95% CI 0.648-0.745, p<0.01 vs 0.701, 95% CI 0.651-0.747, p<0.01, pdiffer. = 0.87).

Conclusion: The predictive value of ΔTmax was comparable to that of IMTmax. Thus, the evaluation of both functional and structural characteristics of carotid plaques can be useful in the prediction of the extent of coronary artery disease.