

CARDIOVASCULAR RISK STRATIFICATION THROUGH THE EVALUATION OF COMMON CAROTID STIFFNESS BY SPECKLE-TRACKING ULTRASONOGRAPHY

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Introduction: Carotid speckle-tracking ultrasonography is emerging as a non-invasive and feasible method for evaluating the multi-directional mechanics of carotid arteries. The association between carotid stiffness and cardiovascular (CV) risk has not been fully elucidated.

Aim: We investigated the association between left common carotid (lcc) elastic modulus (lccEM) and pulse wave velocity (lccPWV) and two conventional surrogate markers of CV risk, i.e. lcc intima-media thickness (lccIMT) and aortic PWV (aPWV). Also, we explored the association between lccEM and lccPWV and the 10-year risk of fatal CV events.

Method: Seventy-eight dyslipidemic patients were enrolled among those who referred to our tertiary care center for the management of lipid disorders. The 10-year risk of fatal CV events was estimated according to the European Atherosclerosis Society (EAS) recommendations. Carotid speckle-tracking ultrasonography was used to assess lccEM and lccPWV, while lccIMT was automatically calculated through a grey-scale analysis of the ultrasound images. The SphygmoCor Vx system was used to assess aPWV.

Results: Seventeen (22%), 24 (31%), 21 (27%) and 16 (20%) patients were in the low, moderate, high and very high risk categories, respectively. lccEM correlated with aPWV ($\rho=0.58$, $p<0.001$) and lccIMT ($\rho=0.25$, $p=0.025$), while lccPWV correlated with aPWV ($\rho=0.35$, $p=0.002$) but not with lccIMT. In a binary logistic regression model including age, lccEM, lccPWV, lccIMT and aPWV as independent variables, age (OR=1.098, CI=1.017-1.185; $p=0.017$) and lccPWV (OR=1.717, CI=1.053-2.801; $p=0.030$) were independent predictors of high/very high CV risk.

Conclusion: Carotid speckle-tracking ultrasonography might provide additive information for the CV risk stratification in dyslipidemic patients.