AUTOMATED CAROTID INTIMA MEDIA THICKNESS FOR PREDICTION OF SYNTAX SCORE IN JAPANESE CORONARY ARTERY DISEASE PATIENTS

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Background: Atherosclerosis of the carotid artery represents one of the major causes of morbidity and mortality in developed countries. The SYNTAX score (SXscore), is an angiographic score that reflects coronary lesion complexity and it is used to predict clinical outcomes in patients with single or multivessel disease. The purpose of this study was evaluate whether the carotid intima media thickness (CIMT) measured by using an automated software (AtheroEdgeLink) could predict the SYNTAX score for coronary artery disease patients.

Methods: We tested 370 consecutive patients (males 218, females 152; median age 69 years ± 11) who underwent carotid ultrasound and coronary angiography. The SXscore of the 370 patients was independently assessed by two experienced cardiologists, who calculated the SXscore by considering each coronary lesion producing ≥50% diameter stenosis in vessels ≥1.5 mm according to the algorithm available on the SYNTAX website. The CIMT values was measured by the automated system AtheroEdgeLink, which is based on a multi-resolution approach.

Results: In our population we had 150 subjects (prevalence of 40.5%) with evidence of coronary artery disease and the SXscore was 8.1 ± 14.4, whereas the mean CIMT (obtained by averaging the left and right side) was 0.86 mm ± 0.23 mm. The Pearson correlation analysis showed a statistically significant correlation between the CIMT and SXscore (r value = 0.323 ; p value = 0.0001). Using the ROC analysis for presence/absence of coronary artery diseases versus CIMT, we observed that the presence of CIMT of 1 mm is associated with the presence Coronary Artery Disease with a specificity of 90.52%.

Conclusions: Results: of our study using the fully automated AtheroEdgeLink algorithm showed a statistical significant association between CIMT and SXscore. This association was demonstrated by applying an automated strategy to an image database of patients with different risk factors. From a clinical point of view, results indicate that automatically measured CIMT may be considered a reliable parameter to predict the SXscore.