AN ECHOCARDIOGRAPHIC COMPOSITE CARDIAC CALCIFICATION SCORE PREDICTS MAJOR CARDIOVASCULAR EVENTS IN PATIENTS WITH STABLE CORONARY ARTERY DISEASE: THE HEART AND SOUL STUDY

Poster Contributions
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Background: Transthoracic echocardiography (TTE) enables detection of calcification in several discrete sites within the cardiovascular system. We have previously shown that mitral annular calcification and aortic valve sclerosis are independently associated with cardiovascular (CV) events in patients with coronary artery disease (CAD). However, the prognostic value of a composite cardiac calcification score in patients with established CAD, computed by combining multiple sites of calcification using TTE, is unknown.

Methods: We performed transthoracic echocardiograms in a prospective cohort study of 595 outpatients with stable CAD, and computed a composite cardiac calcification score by grading severity of calcification in 6 sites: mitral annulus, aortic valve, aortic ring, sinotubular junction, papillary muscle tip, and left main coronary artery. The primary endpoint was occurrence of major CV events [Unable to Display Character: &amp;#8211;] a composite clinical outcome including all-cause mortality, myocardial infarction, stroke, transient ischemic attack, and hospitalization for heart failure. We used Cox proportional hazards models to estimate the association of baseline composite cardiac calcification score with occurrence of major CV events.

Results: Over a median follow-up of 4.2 years, 179 major CV events occurred. In the highest quartile of composite cardiac calcification score, 42% of participants suffered a major CV event versus 22% in the lowest quartile (hazard ratio 2.16, 95% CI 1.46-3.22, p<0.001). The risk of all-cause mortality (hazard ratio 2.36, 95% CI 1.49-3.75, p<0.001) and myocardial infarction (hazard ratio 3.91, 95% CI 1.45-10.57, p=0.007) was significantly higher in participants in the highest quartile of composite cardiac calcification score when compared to the lowest quartile. After adjusting for multiple CV risk factors, participants in the highest quartile of composite cardiac calcification score had a 61% greater risk of major CV events compared to the lowest quartile (adjusted hazard ratio 1.61, 95% CI 1.05-2.48, p=0.03).

Conclusions: A TTE-derived composite cardiac calcification score independently predicted the occurrence of major CV events in patients with pre-existing CAD.