DETECTION OF ISCHEMIC MYOCARDIAL SEGMENTS CONFIRMED ON INVASIVE FRACTIONAL FLOW RESERVE USING THE TIME INTERVAL THRESHOLD BETWEEN AORTIC VALVE CLOSURE AND REGIONAL PEAK LONGITUDINAL STRAIN

Poster Contributions
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Background: Post-systolic shortening (PSS) has been proposed as a marker of myocardial ischemia, but diagnosis is subjective. We evaluated the time interval between aortic valve closure (AVC) and regional peak longitudinal strain (PLS) as a potential PSS marker for detection of left ventricular (LV) myocardial ischemic segments, confirmed by invasive fractional flow reserve (FFR).

Methods: This is a retrospective analysis of 34 stable patients (29 male; mean age, 64.9±12.5 years) with 40 coronary arteries at ≥50% stenosis confirmed by invasive coronary angiography. They underwent invasive FFR measurements and 2D speckle tracking transthoracic echocardiography (TTE) (Vivid E9) within 36 days and without any clinical incident. Regional PLS in the LV segment were calculated.

Results: Of 40 vessels, we identified FFR 0.80 in 14. ROC curves of time interval between AVC and PLS; area under the curve (AUC) = 0.581, best cutoff point to LV segments ± FFR <0.75=117msec (sensitivity 40%, specificity 96%). ROC curves of time interval between AVC and PLS; AUC=0.521, best cutoff point to differentiate LV segments ± FFR ≤0.80=96.5msec (sensitivity 43%, specificity 73%).

Conclusion: In stable coronary artery disease subjects with ≥50% coronary artery stenosis, the time interval between AVC and regional PLS can differentiate LV segments with FFR <0.75 and ≥0.75 and those with FFR ≤0.80 and >0.80 with thresholds of 117msec and 96.5msec, respectively.