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ACCURACY OF A POSITIVE ADENOSINE STRESS PERFUSION CMR TO IDENTIFY A SIGNIFICANT CULPRIT VESSEL STENOSIS

ACC Poster Contributions
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Background: The diagnostic evaluation of patients with suspected ischemic heart disease frequently involves a functional assessment of ischemia. Adenosine stress perfusion cardiac magnetic resonance imaging (CMR) is a non-invasive test with high accuracy to detect significant coronary artery disease. The real world assessment of the accuracy for which a positive adenosine CMR scan correctly identifies the culprit vessel is untested. We sought to determine the accuracy of a positive stress perfusion CMR for identifying the correct culprit vessel by comparing these results against 'gold standard' coronary angiography.

Methods: Over an 18 month period 362 patients underwent an adenosine stress CMR study in our tertiary referral centre. Perfusion imaging was obtained at stress (adenosine 140 µg/kg/min) and rest on a 1.5T scanner. Late enhancement was assessed with dual pass gadolinium (0.2mmol/kg total dose). Of these 362 patients, 96 had a positive study with 37 patients having a coronary angiogram subsequently performed at the same centre. A coronary angiogram was deemed to be 'significant' if an epicardial segment had an angiographic stenosis ≥50%. The presence or absence of a significant lesion together with the correlation between ischaemic territory on CMR and angiographic culprit vessel was evaluated.

Results: Thirty seven patients (60% male, age 65.1 years ± 11.3; mean ± SD) had a positive CMR with subsequent angiography, with follow up data for a median 24 months (IQR 21-27 months). Thirteen patients (35%) had previous myocardial infarction or revascularisation. Of the cohort of 37, six (16%) had normal angiograms and 31 (84%) had a significant epicardial stenosis. Of the six false positives, three had localised septal hypoperfusion, while a further three had circumferential defects. Of the 31 patients correctly identified, CMR accurately established the territory of the culprit vessel in 29 (94%).

Conclusions: Adenosine stress perfusion CMR accurately identifies the territory supplied by the culprit vessel (29 out of 31 - 94%). Furthermore, we reaffirm the high specificity (84%) of stress perfusion CMR.