**INCREMENTAL DIAGNOSTIC VALUE OF DYNAMIC CT-BASED MYOCARDIAL PERFUSION IMAGING FOR THE DETECTION OF HEMODYNAMIC RELEVANT CORONARY ARTERY STENOSIS AS DETERMINED BY FRACTIONAL FLOW RESERVE**

**M. Greif1**, F. von Ziegler1, J. Tittus1, C. Becker2, F. Bamberg1, A. Becker1

1University of Munich, Department of Cardiology, Munich, 2University of Munich, Department of Radiology, Munich, Germany

Objectives: To determine the diagnostic accuracy of CT-based dynamic myocardial perfusion imaging (CT-dMPI) for the detection of hemodynamically relevant coronary stenosis we compared CT-dMPI to the invasive measurement of fractional-flow reserve (FFR).

Methods: 63 patients underwent CT-dMPI with adenosine stress using a fast Dual Source CT system. At subsequent invasive angiography, FFR measurement was performed in coronary arteries with luminal narrowing 40-75%. Myocardial blood flow (MBF) and volume (MBV) were derived from CT using a model-based parametric deconvolution method for each myocardial segment (AHA segment modell) which was related to any coronary stenosis and classified hemodynamically relevant if FFR was<0.75.

Results: 57 patients completed the study. MBF and MBV were lower in myocardial segments pertaining to hemodynamic relevant coronary stenoses (77.6±26.1vs.123.9±34.2 ml/100ml/min and 16.1±6 vs.25.1±5ml/100ml/min, for MBF and MBV, respectively; both p<0.001). While the diagnostic accuracy of CT angiography for the detection of significant coronary artery stenosis was high (sensitivity:95 %,specificity97 %), it was low for the detection of its hemodynamic relevance (PPV:47%). Using the information on MBF to reclassify the lesions, 42(46 %) coronary lesions were graded as not hemodynamically impaired, resulting in a significantly increased PPV of 78%. The presence of a coronary stenosis with a corresponding MBF <75 ml/100 ml/min in CT was a strong predictor for a hemodynamic relevant stenosis, OR:85.9, 95%-CI: 23.3–424,3).

Conclusion: Our data suggest that CT-dMPI permits detection of hemodynamic relevant coronary artery stenoses with a high diagnostic accuracy. CT may therefore allow the simultaneous assessment of both coronary morphology and function.