QUANTITATIVE RELATIONSHIP BETWEEN CORONARY CALCIUM SCORE AND HYPERAEMIC MYOCARDIAL BLOOD FLOW AS ASSESSED BY HYBRID [15O]PET/CT IMAGING IN PATIENTS EVALUATED FOR CORONARY ARTERY DISEASE

i2 Poster Contributions
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Background: Coronary atherosclerosis burden as expressed in coronary artery calcium (CAC) might be of value in predicting a declined hyperaemic myocardial blood flow (MBF). The aim of this study was therefore to evaluate the relationship between CAC content and hyperaemic MBF in patients undergoing hybrid [15O]PET/CT imaging.

Methods: We evaluated 225 (mean age 58 ± 10, 114 men) patients with a low to intermediate likelihood for coronary artery disease (CAD) and without a documented history of CAD undergoing vasodilator stress [15O]H2O PET/CT and CAC scoring. The CAC score and hyperaemic MBF were analyzed.

Results: 88 of 225 patients (39.1%) had a CAC score (CACS) of zero. 134 of 225 patients (59.6%) had subclinical CAD based on an abnormal CACS. Of those with CAC, the CACS was 1-100, 101-399, > or = 400, and > or =1000 in 32.9%, 16.4%, 5.3% and 4.9 % of patients, respectively. Global CAC score showed a significant inverse correlation with hyperaemic MBF (r = -0.308, p < 0.001). With increasing CACS, there was a decline in hyperaemic MBF on a per-patient basis (3.66 ± 1.33 vs 3.17 ± 0.97 vs 2.60 ± 0.84 vs 2.08 ± 0.66 vs 2.02 ± 0.50, p < 0.001, with total CACS = 0, 1-100, 101-399, > or = 400, and > or =1000, respectively). Hyperaemic MBF averaged 3.66 ± 1.33 ml/min/g and 2.84 ± 0.98 ml/min/g in subjects with a total CACS = 0 and CAC > 0, respectively (p < 0.001).

Conclusions: In patients with a low to intermediate likelihood risk for CAD, a greater CAC burden is associated with a decreased hyperaemic MBF. Further studies are warranted for defining CAC cut-off values for prediction of a diminished hyperaemic MBF.