THE INCREMENTAL PROGNOSTIC VALUE OF ADENOSINE PERFUSION CMRI FOR THE RISK STRATIFICATION OF PATIENTS WITH DIABETES MELLITUS: A PROSPECTIVE FOLLOW-UP STUDY

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Background: There is evidence that myocardial ischemia in patients with diabetes mellitus is often present without the exhibition of symptoms but with negative prognostic consequences. Aim of our study was to determine the prognostic value of a reversible perfusion deficit assessed by adenosine perfusion cardiac magnetic resonance imaging (CMR) in a consecutive cohort of diabetes mellitus patients independent of clinical symptoms.

Methods: Consecutive patients with diabetes mellitus type II of any duration that underwent adenosine perfusion CMR were screened for enrollment. It was irrelevant whether the patients exhibited symptoms that are likely to be of ischemic origin. A reversible perfusion deficit was assessed by adenosine-perfusion imaging and late gadolinium enhancement on a 1.5 T whole-body CMR-scanner and was defined as hypoperfusion during adenosine without corresponding late gadolinium enhancement. The primary endpoint was defined as cardiac death, non-fatal myocardial infarction and stroke.

Results: The study population consisted of 239 consecutive patients with prior diagnosed diabetes mellitus. During the follow-up period of 5.0 ± 2.1 years 33 primary endpoints occurred. Patients with an event were significantly older (67.7 ± 8.6 years vs. 63.6 ± 10.3 years, p = 0.02), had lower left ventricular ejection fractions (53.9 ± 18.2 % vs. 60.0 ± 15.3 %, p = 0.04) and more often a reversible perfusion deficit (21 (63.6 %) vs. 57 (27.7 %), p < 0.0001) than patients without. In a multivariate analysis, a reversible perfusion deficit was the strongest predictor for an event with a 3.76-fold increased risk (p = 0.0003). Whether the patients presented symptomatically at enrollment had no influence on their particular risk and event-free survival.

Conclusions: Adenosine perfusion CMR allows excellent risk stratification in patients with diabetes mellitus, independent of other risk factors or the presence of ischemic symptoms.