THE HEART RATE RESPONSE TO ADENOSINE CAN RISK STRATIFY PATIENTS WITH DIABETES MELLITUS UNDERGOING MYOCARDIAL PERFUSION IMAGING

ACC Poster Contributions
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Background: Myocardial perfusion imaging (MPI) is a useful method for risk assessment in diabetes mellitus (DM) patients. We previously reported that the heart rate response (HRR) to adenosine is blunted in DM. We hypothesized that HRR has an incremental prognostic value to MPI.

Methods: There were 879 patients who had adenosine MPI between Sept-Dec 2006. A HRR<10% (% change from baseline) was considered blunted. The outcome of interest was overall mortality.

Results: There were 350 (40%) patients with DM (mean age 60±12yrs, 49% women, 49% Caucasian). The MPI was abnormal in 149 (43%) patients (31% abnormal perfusion, 30% EF <50%). There were 93 (27%) deaths at a mean follow-up of 40±14months. DM patients had a lower HRR than non-DM (23.4±16.3% vs. 29.5±21.4%, P<0.0001). A blunted HRR was associated with increased mortality in the overall population (log-rank P<0.0001) as well as in those with normal (P=0.002) and abnormal MPI (P<0.0001). Patients with normal MPI and a HRR greater than 30% were at low risk (7%) whereas those with abnormal MPI and a blunted HRR where at high risk (66%) of death at 4 years (Figure). In a Cox regression analysis, a blunted HRR was a stronger predictor of mortality (HR 2.8, P<0.0001) than MPI (HR 2.5, P<0.0001) after controlling for age, gender, race, history of myocardial infarction, and beta-blocker use.

Conclusion: The HRR to adenosine adds significant prognostic data to traditional MPI variables in patients with DM and helps in better risk-stratification of this high-risk patient group.