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Meeting abstract

121 Prognostic value of normal adenosine stress cardiac magnetic resonance imaging exams – one year follow-up results of a prospective study

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Background

Adenosine-stress cardiac magnetic resonance imaging (CMR) is increasingly proposed for non-invasive detection of relevant coronary artery disease (CAD). While its high diagnostic accuracy for detection of significant CAD has been demonstrated in multiple studies, CMR application in clinical routine is questioned by limited knowledge on the prognostic impact of CMR findings. Given the clinical impact of underdiagnosing significant CAD, the CMR exam's negative predictive value for the occurrence of major adverse cardiac events (MACE) and for prognosis seems particularly important. In this context, our study was designed to determine the prognostic value of normal adenosine-stress CMR in routine patients.

Methods

We prospectivly enrolled consecutive patients referred to our hospital for evaluation of suspected CAD who underwent adenosine stress CMR with resulting exclusion of adenosine-stress hypoperfusion and delayed enhancement and consecutively had deferred invasive coronary angiography. Patients were scanned in a 1.5 T whole-body scanner (GE Signa Excite). Patients were observed for 12 months for occurrence of MACE as primary endpoint: cardiovascular mortality, myocardial infarction, revascularization therapy, hospitalization due cardiovascular event. Follow-up interviews with the patients or referring physicians were performed 6 and 12 months after inclusion into the study.

Results

218 consecutive patients fulfilled the inclusion criteria and were included into the study. Indication for CMR was either symptomatic angina (Canadian Cardiovascular Society [CCS] II in 92 [42,2%] and CCS III in 14 [6,4%]) or evaluation of myocardial ischemia in CCS I patients presenting with arrhythmia, syncope and/or equivocal stress tests and underlying cardiovascular risk factors (n = 112 [51,4%]). MACE rate during 6 months after the exam was 1/218 (0.46%) due to stent implantation performed in one patient. At the 12 months follow-up, a second MACE (bypass surgery) was recorded, thus the total MACE rate was 2/218 (0.92%). Negative predictive value of normal adenosine-stress CMR was 99.5% at 6 months and 99.1% at 12 months. There were no cases of cardiac death or myocardial infarction.

Conclusion

Normal adenosine stress CMR examination predicts a very low MACE rate and an excellent one-year prognosis in patients with suspected CAD. Our results provide clinical reassurance that patients at risk for CAD-associated MACE were not missed by adenosine stress CMR. Hence, CMR may serve as a reliable non-invasive gatekeeper to reduce the number of redundant diagnostic coronary angiographies.