Abstract: P309

Prognostic value of global stress myocardial blood flow in patients with suspected obstructive coronary artery disease

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Background

We have previously demonstrated that reduced regional stress myocardial blood flow (MBF, < 2.3 ml/g/min) by 15O-water positron emission tomography (PET) perfusion imaging accurately detects obstructive coronary artery disease (CAD) and provides prognostic information. It has also been previously shown that reduced global perfusion defined as coronary flow reserve (CFR) of < 2.0 is a strong prognostic marker, but the prognostic value of global stress MBF by 15O-water PET is unknown.

Purpose

We evaluated the prognostic value of reduced global stress MBF by 15O-water PET during adenosine stress in patients with suspected CAD.

Methods

Consecutive patients from 2006 to 2014 who had sequential coronary CT angiography (CTA) and 15O-water PET performed at our hospital for evaluation of suspected obstructive CAD were evaluated. PET perfusion imaging was performed only if obstructive CAD (= 50% stenosis) was suspected based on coronary CTA. All patients (n=512) who had 15O-water PET during adenosine stress performed were included in this study. Major adverse events (AE), including cardiovascular (CV) mortality, myocardial infarction (MI) and unstable angina pectoris (UAP) were recorded from hospital records during an average follow-up of 6.2 years. Prognostic value of reduced global stress MBF defined as < 2.0 ml/g/min was evaluated by Kaplan-Meier analysis.

Results

During mean follow-up of 6.2 years there were 43 events (7 CV deaths, 22 MIs and 14 UAPs) corresponding to an annual event rate of 1.4%. Out of 512 patients, 89 had reduced global stress MBF (< 2.0 ml/g/min). Out of 423 patients who had preserved global stress MBF (= 2.0 ml/g/min), 207 showed regional ischemia defined as stress MBF < 2.3 ml/g/min, whereas 216 had no regional ischemia. Patients with reduced global stress MBF had significantly higher annual AE rate than patients with normal global stress MBF (2.6% vs. 1.2%, p = 0.012). Regional ischemia in the presence of preserved global stress MBF was associated with an intermediate annual event rate of 1.6% (p = 0.007 vs. reduced global stress MBF). Patients having preserved global stress MBF without regional ischemia had the lowest event rate (0.7%, p = 0.007 vs. preserved global stress MBF with regional ischemia, or reduced global stress MBF).
Conclusion

Globally reduced stress MBF by 15O-water perfusion PET is associated with increased risk of adverse events. Compared with regional ischemia, global MBF provides incremental prognostic information.