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말기신부전 환자의 예후를 예측함에 있어 심근 관류영상 촬영의 유용성: 4.5년간의 추적관찰 연구

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Prognostic Value of Myocardial Perfusion Imaging for Predicting Outcomes in Patients with End-stage Renal Disease: A 4.5-year Follow-up Study

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Introduction: Cardiovascular disease is a major cause of morbidity and mortality in patients with end-stage renal disease (ESRD). Optimal screening for occult coronary artery disease (CAD) may improve clinical outcomes. The aim of this study was to determine the prognostic value of myocardial perfusion imaging measured at the time of initiation of dialysis in asymptomatic ESRD patients.

Methods: Prospective outcome data were collected on 195 patients who started dialysis between January 2005 and March 2008, for median follow-up of 55.7 (34.9-95.4) months. Baseline cardiovascular status was evaluated in all patients based on WHO criteria, resting electrocardiogram and echocardiography. Stress single-photon emission computed tomography (SPECT) myocardial perfusion imaging was performed in subset of patients with diabetes, in those with history of ischemic heart disease, or presence of LV systolic dysfunction (<50%) or regional wall motion abnormality on echocardiography. Endpoints were cardiac events (cardiac death, myocardial infarction) or total events (cardiac events and non-cardiac death).

Results: SPECT was performed in 105 patients and perfusion defect was found in 76 (72.4%) patients (41.9% reversible, 30.5% fixed, and 16.2% mixed). Among the 44 patients (41.9%) with reversible perfusion defect, further evaluation with coronary angiography, followed by appropriate treatments was done in 26 patients. There were a total of 61 events: 20 cardiac deaths, 27 non-fatal cardiac events, and 14 non-cardiac deaths. In SPECT group, the 55.7-month cardiac event-free survival was 56% in patients with reversible perfusion defect and 82% in patients with negative SPECT results (HR 3.43, 95% CI 1.61-7.24, p=0.001). Male gender, diabetes, and the presence of reversible perfusion defect was the only significant predictors of adverse cardiac events by Cox's proportional hazards model (p=0.039, 0.022 and p=0.015). In the subgroup analysis with patients with reversible perfusion defects, intensive treatment including revascularization therapies decreased the risk of adverse coronary events by 60% compared to patients who refused coronary angiography or revascularization treatments (HR 0.40, 95% CI 0.12-1.07, p=0.087).

Conclusion: The presence of abnormal perfusion defects on SPECT was main predictor of mortality in patients with ESRD. Early diagnosis of CAD and intensive treatment before the start of dialysis might enhance survivals, especially in high-risk patients.

Key Words: 심근관류영상, 말기신부전
Myocardial perfusion imaging, End-stage renal diseas