Prognostic values of perfusion-metabolic mismatch in Tl-201 and BMIPP scintigraphic imaging in patients with chronic coronary artery disease and left ventricular dysfunction undergoing revascularization

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Objectives: The aim of this study was to assess the prognostic value of the amount of perfusion-metabolic mismatch in revascularized patients with left ventricular (LV) dysfunction by means of Thallium (Tl)-201 and BMIPP imaging. ***Methods:*** Seventy-six patients with LV dysfunction and coronary artery disease underwent Tl-201 and BMIPP imaging. They were revascularized with either coronary artery bypass graft or balloon angioplasty and were entered into this study. To quantify the amount of perfusion-metabolic mismatch, SPECT images were displayed as polar maps and analyzed semiquantitatively. The patients were followed up for a mean period of 32 months for cardiac mortality and non-fatal cardiac events. Standard follow-up left ventriculography was performed 6 to 12 months after revascularization. ***Results:*** Thirty-two patients exhibited a large amount of perfusion-metabolic mismatch (≥ 7 segments, group A), 28 patients had a small amount of perfusion-metabolic mismatch (2 to 6 segments, group B), and 16 patients were found to have no perfusion-metabolic mismatch (group C). Similar pre-revascularization LVEF of $35 \pm 5\%$, $34 \pm 8\%$ and $36 \pm 6\%$ increased to $45 \pm 8\%$ ($p < 0.0001$), to $38 \pm 8\%$ ($p < 0.05$), and to $36 \pm 3\%$ (n.s.), respectively, after revascularization. The functional improvement after revascularization in group A was accompanied by a low rate of cardiac events during follow-up and better cardiac event free survival as judged by the Kaplan-Meier method ($p < 0.05$, vs. group B and C). ***Conclusion:*** In revascularized patients with severe LV dysfunction, the presence of a large amount of perfusion-metabolic mismatch evaluated by Tl-201 and BMIPP imaging identifies patients with the best prognosis.

Key words: fatty acid metabolism, left ventricular dysfunction, viability, revascularization, long-term prognosis