

Dynamic changes in cardiac fatty acid metabolism in the stunned human myocardium

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Background: The chronological changes or mechanisms in cardiac fatty acid metabolism under clinical conditions of hypoxia and ischemia have not been fully elucidated. ^{123}I -15-(*p*-iodophenyl)-3-*R,S*-methylpentadecanoic acid (BMIPP) can be used with single photon emission computed tomography (SPECT) to evaluate myocardial fatty acid metabolism. We investigated chronological changes in energy metabolism in the stunned human myocardium by means of ^{123}I -BMIPP myocardial SPECT.

Methods and Results: We conducted ^{123}I -BMIPP myocardial SPECT in 10 patients with stunned myocardium during the acute, subacute and chronic phases after onset. The left ventricle was divided into 9 regions on SPECT, and the degree of abnormalities in each region was scored in four grades from normal (0) to defect (4). We also examined wash-out rates on BMIPP images. The scores on early BMIPP images in the acute, subacute and chronic phases were 5.6 ± 1.8 , 13.4 ± 3.5 and 2.5 ± 1.1 , respectively, and the score was highest in the subacute phase ($p < 0.001$). Similarly, scores on the late images were 2.3 ± 1.7 , 18.3 ± 4.5 and 4.7 ± 2.6 , respectively, and highest in the subacute phase ($p < 0.001$). The wash-out rates (normal: $18.2 \pm 2.1\%$) in the acute, subacute and chronic phases were $12.1 \pm 4.8\%$, $44.9 \pm 10.0\%$ and $23.1 \pm 4.6\%$, respectively, with the value being lowest during the acute phase ($p < 0.05$), and highest during the subacute phase ($p < 0.001$).

Conclusion: These results suggested that fatty acid metabolism in the stunned human myocardium changes dynamically over time.

Key words: myocardial fatty acid metabolism, myocardial stunning, ^{123}I -BMIPP