

Changes in perfusion and fatty acid metabolism of rat heart with autoimmune myocarditis

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To elucidate the change in perfusion and aerobic metabolism in myocarditis, tissue counting and dual tracer *ex vivo* autoradiography with Tl-201 and a free fatty acid analog, I-123- or I-125-labeled (p-iodophenyl)-methyl-pentadecanoic acid (BMIPP), were performed in rats with myocarditis induced by immunization with cardiac myosin. Inflammatory damage was classified histologically. At the acute stage (2–4 weeks after the antigen-injection), total heart uptakes of Tl and BMIPP and the ratio (BMIPP/Tl) were significantly reduced in myocarditis rats (N = 15) compared with the controls (N = 12). Myocardial distribution of Tl and BMIPP was not homogeneous. Relative uptake of Tl and BMIPP (N = 9, 128 regions) was gradually decreased with the extent of inflammation, and the regional BMIPP/Tl was smaller than the control. At the subacute stage (7 weeks after the antigen-injection), total Tl uptake in myocarditis rats (N = 5) recovered to the control level (N = 4), but that of BMIPP was still significantly lower than the control. BMIPP/Tl was still significantly lower in myocarditis. Myocardial distribution of Tl and BMIPP recovered to be more homogeneous. Relative uptake of Tl and BMIPP (N = 6, 78 regions) still gradually but significantly decreased with the extent of inflammation. Regional BMIPP/Tl was still depressed in myocarditis. These results indicate that myocardial perfusion and aerobic metabolism were discrepant and heterogeneously suppressed with severe inflammation during the acute stages, but the difference decreases with time. Examination with Tl-201 and BMIPP may provide information about the severity of myocarditis.

Key words: myocarditis, BMIPP, Tl-201, inflammation