ORIGINAL ARTICLE

Annals of Nuclear Medicine Vol. 14, No. 5, 347–352, 2000

Estimation of the area at risk in myocardial infarction of rats by means of I-123 β-methyliodophenyl pentadecanoic acid imaging

Shinji HASEGAWA,* Hideo KUSUOKA,*** Kazuki FUKUCHI,****
Masatsugu HORI** and Tsunehiko NISHIMURA*

**Division of Tracer Kinetics, and **Department of Internal Medicine and Therapeutics, Osaka University Graduate School of Medicine*
****Osaka National Hospital*
*****National Cardio-Vascular Center*

Clinical investigations have suggested that the defects in SPECT images of a free fatty acid analog, I-123 β-methyliodophenyl pentadecanoic acid (BMIPP) may indicate the ischemic risk area. To elucidate whether I-123 BMIPP can indicate the area at risk of ischemia, *ex-vivo* autoradiography was performed in rats whose left coronary artery was occluded for 60 min and then reperfused. I-123 BMIPP was injected at the acute stage (n = 10), or the subacute stage (7 days after reperfusion; n = 9). Infarction and the area at risk were identified by triphenyl tetrazolium chloride staining and injection of methylene blue during religation just before sacrifice, respectively. The BMIPP uptake in the risk area was significantly lower than that in the remote area at the acute (risk, 53.7 ± 23.3% of the uptake at right ventricle, mean ± SD; remote, 109.3 ± 11.8%; $p < 0.01$) and subacute (risk, 52.5 ± 11.5%; remote, 97.9 ± 14.3%; $p < 0.01$) stages. In addition, the area with reduced uptake of I-123 BMIPP showed a significant correlation with the area at risk both at the acute ($r = 0.98$, $p < 0.01$) and subacute ($r = 0.92$, $p < 0.01$) stages. In conclusion, the area at risk can be evaluated by I-123 BMIPP both at the acute and subacute stages.

Key words: BMIPP, area at risk, myocardial infarction, reperfusion