Comparison of cationic myocardial perfusion agents: Characteristics of accumulation in cultured smooth muscle cells

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The uptake and washout kinetics of two cationic lipophilic Tc-labeled myocardial perfusion agents, Tc-methoxyisobutylisonitrile (Tc-MIBI) and Tc-1,2-bis(2-ethoxyethyl)-phosphinojethane (Tc-Tetrofosmin), were studied in cultured smooth muscle cells and compared to the conventional myocardial perfusion agent, Tl. Both Tc-MIBI and Tc-Tetrofosmin had a 4-fold greater uptake than Tl, and they were washed out of cells through similar kinetics which had slower rates than Tl. Incubation with metabolism inhibitors had a modest influence on the uptake of these two Tc-labeled agents, although their extent and inhibited sites were slightly different. Ion transport inhibitors did not affect the uptake of Tc-MIBI, although the Tc-Tetrofosmin uptake was slightly inhibited when the Ca channel was blocked. Our studies indicate that Tc-MIBI and Tc-Tetrofosmin were taken up by smooth muscle cells in similar pharmacokinetic patterns, but their accumulation reflected a different meaning for cell viability.

Key words: Tc-MIBI; Tc-tetrofosmin; Tl, smooth muscle cells