Localization of colorectal carcinoma by rhenium-188-labeled B72.3 antibody in xenografted mice

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In order to evaluate the feasibility of $^{188}$Re-labeled antibodies for radioimmunotargeting, monoclonal antibody B72.3, recognizing TAG-72, expressed on the surface membranes of colorectal cancer cells, was directly labeled with $^{188}$Re, obtained from a $^{188}$W/$^{188}$Re generator, using stannous tartrate and compared with $^{125}$I-labeled B72.3. As a control, a human IgG was also radioiodinated with $^{188}$Re and $^{125}$I. Prepared antibodies for $^{188}$Re labeling could be stored as kits. Biodistribution was determined in nude mice inoculated with human colorectal carcinoma LoVo. Labeling efficiency and immunoreactivity of $^{188}$Re-B72.3 were 80.3% and 64.7%, respectively. $^{188}$Re-B72.3 localized specifically in the LoVo tumors. Although the absolute tumor accumulation level of $^{188}$Re-B72.3 was lower than $^{125}$I-B72.3, $^{188}$Re-B72.3 demonstrated higher tumor-to-blood contrast than the $^{125}$I-labeled counterpart. 2.04 ± 0.44 vs. 1.05 ± 0.28 at 96 hours, because of fast clearance from the blood. $^{188}$Re-B72.3 seemed efficient for the imaging and therapy of colorectal carcinoma.

Key words: rhenium-188, xenograft, B72.3, colorectal carcinoma