Sensitivity of pretargeted immunoPET using Ga-peptide to detect colonic carcinoma liver metastases in a murine xenograft model: Comparison with FDG PET-CT

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Résumé en anglais	Purpose: The aim of this study was to compare the performances pretargeted immunoPET Ga-PETimaging (Ga-pPET) with anti carcino-embryonic antigen (CEA) and anti-histamine-succinyl-glycine (HSG) recombinant humanized bispecific monoclonal antibody (TF2) and Ga-labeled HSG peptide (IMP288) to conventional FDG-PET in an orthotopic murine model of liver metastases of human colonic cancer. Methods: Hepatic tumor burden following intra-portal injection of luciferase-transfected LS174T cells in nude mice was confirmed using bioluminescence. One group of animals was injected intravenously with TF2 and with Ga-IMP288 24 hours later (n=8). Another group received FDG (n=8), and a third had both imaging modalities (n=7). PET acquisitions started 1 hour after injection of the radioconjugate. Biodistributions in tumors and normal tissues were assessed one hour after imaging. Results: Tumor/organ ratios were significantly higher with Ga-pPET compared to FDG-PET (<0.05) with both imaging and biodistribution data. Ga-pPET sensitivity for tumor detection was 67% vs. 31% with FDG PET (=0.049). For tumors less than 200 mg, the sensitivity was 44% with Ga-pPET vs. 0% for FDG PET (=0.031). A strong correlation was demonstrated between tumor uptakes measured on PET images and biodistribution analyses (r=0.85). Conclusion: Ga-pPET was more sensitive than FDG-PET for the detection of human colonic liver metastases in an orthotopic murine xenograft model. Improved tumor/organ ratios support the use of pretargeting method for imaging and therapy of CEA-expressing tumors.
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