Improved imaging of orthotopic BxPC3 pancreatic adenocarcinoma xenograft using animal PET/CT

Introduction

Pancreatic tumors may be removed surgically if found early. However, their location is often unknown. We studied the effects of enzyme inhibitors on the uptake of 6-[18F]fluoro-L-3,4-dihydroxyphenylalanine, [18F]FDOPA, in pancreas, aiming at improved non-invasive imaging of pancreatic adenocarcinoma.

Materials and Methods

Mice bearing orthotopic BxPC3 pancreatic adenocarcinoma were injected with 2-deoxy-2-[18F]fluoro-D-glucose, [18F]FDG, and scanned with positron emission tomography-computed tomography (PET/CT). For [18F]FDOPA studies, tumor-bearing mice and sham-operated controls were pre-treated with enzyme inhibitors of aromatic amino acid decarboxylases (ADCs). catechol-O-methyl transferase (COMT), monoamine oxidase A (MAO-A) or combination of COMT and MAO-A. Mice were injected with [18F]FDOPA and scanned with PET/CT. The absolute [18F]FDOPA uptake was determined from selected tissues using a gamma counter. The intratumoral biodistribution of [18F]FDOPA was recorded using autoradiography. The main [18F]FDOPA metabolites present in pancreas were determined with radioHPLC.

Biodistribution

Autoradiography

PET/CT

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Conclusions

Dual-tracer approach

References


