

Assessment of pancreatic blood flow with positron emission tomography and oxygen-15 water

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Dynamic positron emission tomography (PET) was performed following an intravenous bolus injection of ^{15}O -water for the assessment of regional pancreatic blood flow in 4 normal volunteers and 11 patients with pancreatic cancer. The regional pancreatic blood flow index (PFI) was calculated by the autoradiographic method assuming the time-activity curves of the aorta as an input function. The mean PFI value was 0.514 ± 0.098 in the normal pancreas but it was decreased in pancreatic cancer (0.249 ± 0.076) ($p < 0.01$), with a concomitant decrease in the pancreatic region distal to the tumor. On the other hand, in cases with body or tail cancer, the part proximal to the tumor (nontumorous head region) had a similar PFI value (0.554 ± 0.211) to that of normal cases. Thus, a PET study with ^{15}O -water permits quantitative assessment of pancreatic blood flow which decreased in both pancreatic cancer and concomitant obstructive pancreatitis distal to the tumor.

Key words: blood flow, pancreatic cancer, positron emission tomography, ^{15}O -water