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PANCREAS ACCUMULATION OF RADIOIODINATED HIPDM - STUDIES IN THE RATS WITH PANCREAS CELL DAMAGE.

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I-123 HIPDM has been developed as the brain perfusion imaging agent by Kung et al. and its clinical application has been already started. Significant accumulation of radioactivity in the pancreas was abserved in mice and rats. The pancreas to liver(P/L) ratio was 5.15±0.65 at 2 hr after injection, which is higher than that obtained with Se-75 selenomethionine.

It is wellknown that dl-ethionine has the toxic action against pancreas acinar cells. We studied the tissue distribution of I-125 HIPDM and Se-75 selenomethionine in the rats with pancreas cell damages experimentally induced by dl-ethionine.

P/L ratio of I-125 HIPDM in the rats given dl-ethionine 0.2g/kg.BW, 2 times per week for 4 weeks was 3.61±0.52, which is significantly lower than that of control group, and higher than P/L ratio (1.37± 0.13) of Se-75 selenomethionine in the rats with same treatment.

In conclusion, I-123 HIPDM is expected to be a promising pancreas imaging agent.

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N-13-AMMONIA AS A RADIOPHARMACEUTICAL FOR PANCREAS STUDY.

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In recent years, ^{11}C and ^{13}N-amino acids have been developed as pancreas radiopharmaceutical based on its large requirement of amino acids. Thus, being aware of the role of ammonia as an amino acid precursor , a readily available $^{13}NH_3$ was considered as a appropriate candidate as for pancreas study. In biodistribution studies in mice and rats, very high ^{13}N radioactivity accumulation in the pancreas was reached shortly after i.v. injection, while the liver, a competing organ, presented very low uptake. Thus, proper target/non-target ratio for good imaging of pancreas was obtained. Then, for the study on its metabolic fate in pancreas, this agent was incubated with rat pancreas slices : a very rapid radioactivity uptake was detected, unaltered by the addition of ouabain, a Na-K membrane pump inhibitor. On the other hand, the analysis of pancreatic homogenate from $^{13}NH_3$ injected rat, indicated the relative ^{13}N radioactivity distribution in the $^{13}NH_3$ fraction decreased rapidly, while in the metabolite fraction, mainly the gultamine fraction, increased with time. Thus, gathered results showed passive transport of $^{13}NH_3$ into pancreas cells and rapid incorpolation into gultamine pool, the animo acid pool, providing good basis for the use of this agent in pancreas studies.

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IMAGING OF THE PANCREAS USING DYNAMIC POSITRON EMISSION TOMOGRAPHY WITH N-13 AMMONIA.

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Dynamic positron emission tomography (PET) with N-13 ammonia was performed in 3 normal volunteers, 7 pancreatic cancer, 1 acute pancreatitis and 2 chronic pancreatitis. After intravenous injection of 10-20mCi of N-13 ammonia, dynamic PET scans were performed every 150 seconds for 20-30 minutes.

Normal pancreas was clearly visualized from the earliest scan, as we had reported previously. Accumulation of N-13 ammonia was low in cases with pancreatic damage because of chronic pancreatitis or duct obstruction due to the tumor. In one case with acute pancreatitis, there was remarkable accumulation of N-13 ammonia in the swollen head of the pancreas. In 4 cases with pancreatic cancer, the tumors themselves were visualized because there was marked accumulation of N-13 ammonia in the tumors. This PET study might be a very promising tool for positive imaging of the pancreatic cancer together with assessment of the pancreatic damage.