CARDiAC POSITRON COMPUTED TOMOGRAPHY (PCT) WITH N-13 AMMONIA IN MAN AND ITS USEFULNESS OF FAST DYNAMIC STUDY. K.Yoshida†, N.Pukuda, H.Ikemitsu, T.Yamagaki, Y.Tateno, T.Himis, M.Shukuy†, Y.Masuda†, Y.Inagaki†. The National Institute of Radiological Sciences. The Third Department of Internal Medicine, Chiba University School of Medicine, Chiba.

The present study was performed to evaluate the myocardial uptake of N-13 ammonia in man. Eight subjects including 2 normals, 3 patients with old myocardial infarction and 3 with hypertrophic cardiomyopathy was selected for the study. Serial 6-seconds PCT scans for 2 minutes (fast dynamic study) were performed after a bolus venous injection of N-13 ammonia. The results are summarized as follows:

1. High quality cross-sectional images were obtained from these serial PCT scans.
2. Myocardial time-activity curves were obtained from these PCT images and correction for cross-contamination from blood to myocardium were performed.
3. Sum of the two gamma variates could be fitted to measured blood pool time-activity curves very good agreement.
4. Assuming a two compartment model in a myocardial segment, a computer simulation was carried out to assess the myocardial uptake of N-13 ammonia. These preliminary results suggest the usefulness of fast dynamic PCT with N-13 ammonia for the evaluation of myocardial perfusion.

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 used for the imaging of the pancreas. Biodistribution of N-13 ammonia was studied in 8 normal mice. Percent injected dose per gram in liver and pancreas were 3.56 and 7.30 respectively at 30 seconds after isotope injection. The pancreas-to-liver ratio was 2.30 at that time.

Two normal volunteers and two patients with pancreatic tumors were studied using dynamic PET with N-13 ammonia. After injection of 10-20mCi of N-13 ammonia, dynamic PET scans were performed every 150 seconds for 30 minutes. Normal pancreas was clearly visualized from the earliest scan, whereas the accumulation of the radionuclides in the liver was much less in the early period.

This dynamic PET study with N-13 ammonia may be useful for the evaluation of various pancreatic diseases.