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CLINICAL EVALUATION OF PANCREATIC IMAGING WITH SPECT TECHNIQUE. K.Tachibana, J.Ishimura, Y.Maeda, K.Hamada, M.Suehiro, M.Fukuchi and K.Nagai. Division of Nuclear Medicine, RI Center, Hyogo College of Medicine. Nishinomiya.

Pancreatic imaging had been noninvasive and safe technique for evaluating the pancreas status in clinical cases. In order to improve the diagnostic capability of pancreas, pancreatic imaging with single photon emission computed tomography (SPECT) technique was applied.

Instrument used was a autotune ZS gamma camera (Maxi Camera 400A/T) with computer (MaxiStar) on-line system.

Three  $\mu\text{Ci/Kg}$  of body weight of Se-75-selenomethionine was injected intravenously and pancreas imaging with SPECT technique was started from 30 min after injection. The plain and subtraction images were also examined to compare with the images of SPECT technique.

Our results obtained in this series were as follows; it was possible in transaxial and sagittal images with SPECT technique to distinguish the pancreas image from the liver image. In addition, it was possible to obtain the whole pancreas image clearly in oblique images.

Our data suggest that pancreas imaging with SPECT technique are valuable in evaluating the pancreas status in clinical cases.

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CLINICAL EVALUATION OF PANCREATIC FUNCTIONAL IMAGE. F.Nakanishi, T.Kasuga, Y.Okazaki, T.Kobayashi, K.Yano and H.Hirano. Shinshu University School of Medicine. Matsumoto.

An image processing technique for functional image of the pancreas was developed and reported. Clinical efficacy of the technique for detecting pancreatic abnormality was evaluated comparing with conventional pancreas scintigraphy. For quantitative evaluation, functional rate, rate of normal functioning pancreatic area was calculated from the functional image and subtraction image. Two hundred ninety five cases were studied using this technique. Conventional image had a sensitivity of 65% and a specificity of 78%, while the use of functional imaging improved sensitivity to 88% and specificity to 88% respectively. The mean functional rate in patients with pancreatic disease was significantly lower ( $33.3 \pm 24.5$  in patients with chronic pancreatitis,  $28.1 \pm 26.9$  in patients with acute pancreatitis,  $43.4 \pm 22.3$  in patients with diabetes mellitus,  $20.4 \pm 23.8$  in patients with pancreatic cancer) than the mean functional rate in cases without pancreatic disease ( $86.4 \pm 14.2$ ). It was suggested that functional image reflected pancreatic exocrine function and functional rate was an useful indicator for pancreatic exocrine function.

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Zn-62 RADIOPHARMACEUTICAL FOR PANCREATIC DIAGNOSIS (6) PANCREATIC FUNCTIONAL PCT IMAGING USING Zn-62-EDDA. Y.Fujibayashi, I.Yomoda, K.Horiuchi, A.Yokoyama, H.Saji, R.Morita, K.Torizuka. Kyoto Univ. Faculty of Pharm.Sci. & School of Med. Kyoto.

In previous work, the great potential of Zn-62-EDDA as a radiopharmaceutical for pancreas anatomical and functional diagnosis has been reported in in vitro and in vivo studies. In our further pursuit for a diagnostic methodology, the effect of hormonal stimulation on the pancreatic response in a dog was considered as for functional studies using positron computed tomography (PCT) image.

Male Beagle dog (10 kg) was injected with Zn-62-EDDA and "Pre-stim" image was obtained. Two hrs. later, stimulation with CEARULEIN + SECRETIN was performed followed by a second transaxial image of Zn-62 (Post-stim.) Pancreatic exocrine function was obtained by subtraction from "Pre-stim", the "Post-stim". First, Zn-62-EDDA visualized the pancreas as a hot image, but hindered by its activity accumulated also in the liver and kidney. Then, after GI-hormone stimulation the images obtained were computer processed for the obtention of regional exocrine function of pancreas.

Thus, Zn-62-EDDA hold great potential as a radiopharmaceutical labelled with suitable positron-emitted nuclide for diagnosis of pancreas pathology, namely as an agent for a non-invasive, and easy to perform PCT methodology.

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POSITRON EMISSION TOMOGRAPHY OF PANCREAS USING C-11 METHIONINE. K.Kubota, M.Ito, H.Fukuda, Y.Abe, J.Hatazawa, K.Ito, S.Yoshioka, T.Matsuzawa. Res. Inst. Tb. & Cancer, Tohoku Univ. R.Iwata, S.Watanuki, T.Ido. Cyclo. R.I., Tohoku Univ. Sendai.

Pancreas accumulation of C-11 Methionine (Met) was evaluated experimentally with Donryu rats and clinically with volunteer and patient using positron computer tomography (PCT). In the experimental study, C-11-Met accumulated in rats pancreas with high concentration and its peak ( $7.5 \sim 8.0$  % dose/g) was appeared 20 min after injection. C-11-Met was also taken up by liver and kidney ( $4.9$  and  $2.0$  % dose/g at 20 min), but pancreas-to-liver ratio was 1.8 at 10 min, 1.6 at 20 min after injection. Blood, heart and brain exhibited low amount of uptake. In the human volunteer, 12 mCi of C-11-Met was injected and clear pancreas images which were easily distinguishable from surrounding structures were obtained. Pancreas activity by PCT was gradually increasing after injection and pancreas/liver ratio came up to its peak 1.8 at 30 min. kidney showed excretion pattern and its activity was low. In the patient with pancreas carcinoma, C-11-Met accumulated only in the liver and a cold lesion was observed at the site of pancreas. C-11-Met considered to be a good physiological marker for amino acid incorporation into the tissue. In this study, we concluded that C-11-Met is quite useful in positron imaging of pancreas.