Improvement of Pancreas Scintigraphy with Coerulein Stimulation —Second Report—

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(Purpose) In ordinal pancreas scintigraphy, accumulation of radio isotope is insufficient to analyze in detail. With stimulation of Coerulein, better scintigraphy of the pancreas could be obtained.

(Patients and methods) Pancreas scintigraphy with and without Coerulein was investigated in 74 cases, aged between 25–75. 51 cases were male and 23 female.

For control groop in 35 cases, 500 Ci of ^{75}Se-Methionine was given I.V. 15–30 min. before scintigraphy in early morning with fasting.

In 39 cases, 10 μgm of Coerulein was given I.M. 15–20 min. before ^{75}Se-Methionine injection.

Pancreas scintigraphy were taken with 270 KeV$\pm$20% using Scinti-camera model PHO-GAMMA 4A, Searl-Graphic Co.

In diagnosis, scintigraphy was compared with ERCP and clinical findings.

(Results) Scintigraphy was divided into 4 categories with its condition of accumulation of RI and its picture from (++) to non-accumulation (−).

In control groop, (++) was observed in 1 case, (+) was in 12, (±) was in 10 and (−) was observed in 12 cases. On the other hand, (++) was in 21, (+) was in 11, (±) was in 5 and (−) was observed in cases. Positive ratio (+ and ++) between 2 group is statistically significant (less than 1%).

In comparison of uptake ratio of R.I. by computed image between pancreatic area and background, (++) group showed 1.81 and (−) group was 1.37. On the other hand, uptake ratio between the pancreas and the liver showed 0.64 in (++) group and 0.32 in (−) group.

In 6 cases in which ERCP were normal, (++) cases were incountered in 5 cases with Coerulein stimulation group. On the other hand, without Coerulein group shoed (±).

In diabetes patients, (++) was observed in 5 cases, (+) was in 1 case, (±) was in 2 cases and (−) was observed in 2 cases in without Coelrulein group. On the other hand, (++) was observed in 5 cases and (+) was observed in 5 cases in Coerulein stimulation group.

In patients who had high LAP in serum, all 4 cases in control group showed (−) scintigraphy but 8 cases out of 9 Coerulein stimulated cases showed (+) or (++) scintigraphy.

In conclusion, Coerulein I.M. injection before pancreas scintigraphy brings good condition of pancreas scintigraphy not only in normal patients but also diabetic patients or patients with pancreatic disorders.

Evaluation of the Serial Imaging for Chronic Pancreatitis Using 75-Selenomethyonine

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Since the application of 75-selenomethyonine for pancreatic diagnosis, its usefulness is widely reconginized due to not only the propaties of pancreatic secration but also external imgaing. Therefore, the static and serial evaluation of pancreas imaging is observed by these advantages.

The comparative study of the pancreas imaging and P.S. test (pancreas-secration) and amylase values were performed in the chronic pancreatitis.

In general, only one imaging was faithfully showed for the pancreatic function. Although the imaging has slight low appraisal for the clinical evaluation only in the static image, still its serial imaging lay the usefullness for the follow up study in the inflammeted diseases especially in the acute and chronic pancreatitis.

More than, one problem should be expected more affinitic radiophamaceutical for pancreatic tissue.

Detection of Bacterial Deconjugation of Bile Salts Using ^{13}C-Breath Test

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^{14}C-breath test consisting of monitoring $^{14}CO_2$ in the breath after oral administration of glycine-1-^{14}C-colate (5μCi) has been known as a useful clinical test for the detection of bacterial deconjugation of bile salts. The use of stable isotope ^{13}C in place of ^{14}C-compounds can extend the applicability of the test.

With the purpose to validate the use of ^{13}C-compounds for the clinical breath test, animal experiments were carried out. Carbon dioxide in the exhaled breath was collected by neutralization of alkaline solution in a vial connected to the outlet of a respirator being applied to anesthetized rats. Isotope ratio of $^{13}CO_2/^{12}CO_2$ (45/44) was measured in a mass spectrometer. Direct continuous measurement of the isotope ratio was also performed using a quadrapole mass filter mass spectrometer and infrared spectrometer desinged for breath test. Radioactivity of $^{14}CO_2$ was measured in a liquid scintillation counter.

Rats were operated to form jejuno-colostomy to induce ileal bypass and/or bacterial overgrowth in the small bowels.

Curves of $^{14}CO_2$ after oral administration of ^{13}C- and ^{14}C-glycine-cholate showed prominent peaks at 1–2 hours in rats with jejuno-colostomy. Excretion of $^{14}CO_2$ in five hours was 49.8$\pm$5.6% ad. dose (n=7) in contrast to control rats which showed flat curves and low $^{14}CO_2$ excretion (5.5$\pm$1.6, n=4). Curves of $^{13}CO_2$ showed identical pattern to $^{14}CO_2$ curves. When trace dose of ^{14}C-glycine alone was administrated, $^{14}CO_2$ curves showed earlier and lower peaks than those obtained after loading dose of glycine. Our results suggest that ^{13}C-glycine-cholate can be used as clinical breath test for the detection of bacterial deconjugation of bile salt. The animal model should prove useful for the preliminary comparative studies of various ^{14}C- and ^{13}C-breath tests prior to their clinical application. Direct continuous measurement of $^{13}CO_2/^{12}CO_2$ isotope ratio enable easy access to clinical application of the test.