

### XIII. Pancreas

#### Approaches to the Differential Diagnosis of the Pancreatic Disease, Based on the Up-Take Curve of the $^{75}\text{Se}$ -Selenomethionine

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This study, which provides some diagnosis, is mostly an attempt to evaluate the function of the pancreas using  $^{75}\text{Se}$ -selenomethionine.

The up-take curve of  $^{75}\text{Se}$ -selenomethionine for the pancreas is studied through 26 patients, including 5 cases with normal pancreases, 6 with histologically confirmed carcinoma, one with insulinoma, 7 with clinically diagnosed pancreatitis, 2 with diabetes mellitus, and 5 with hepatic or biliary tract diseases.

Fifty  $\mu\text{Ci}$  of  $^{198}\text{Au}$ -colloid was injected intravenously without premedication. After the up-take curve of the  $^{198}\text{Au}$ -colloid on the liver reached plateau, 250  $\mu\text{Ci}$  of  $^{75}\text{Se}$ -selenomethionine was injected intravenously.

An on line computer system, in which the  $\gamma$ -camera, the videotaperecorder and the computer are connected directly, was used to store information on each patient. Information from the  $\gamma$ -camera, with the detector inclined at 15 degrees and fitted with a 1000 hole collimator, was recorded on the videotape as digitalized memory.

The information, recorded on the videotape, was first led to the computer and 'leveling' and 'subtraction' were performed in order to

enhance the contrast of the image. Secondly, the information was sent to the  $\gamma$ -camera which showed the pancreas image as a split area with special focus on the pancreas head. The up-take curve in this split area was represented as the histogram with the accumulation coefficient (Kc) provided as follows:

$$\text{Kc} = (\text{counts at 45 minutes after the injection-natural background}) \div (\text{counts at 5 minutes after the injection-natural background}).$$

The Kc value and the pattern of the up-take curve on the pancreas head were studied for each patient.

In the case of pancreas carcinoma and pancreatitis the Kc values showed a low level compared with normal cases. A moderately low number of Kc values were noted in the case of insulinoma or diabetes mellitus. For liver disease the Kc values were within normal range or slightly higher.

The normal pattern of the up-take curve was demonstrated through this technique. Concerning pancreas carcinoma and pancreatitis, the patterns were different from those of the normal cases.