

ANALYSIS OF PANCREAS SCINTIPHOTOS

The excellent report by Hatchette, et al, "Scintiphotos of the Pancreas: Analysis of 134 Studies" (*J Nucl Med* 13: 51-57, 1972) detailed a pancreas study protocol including preliminary imaging of the liver with ^{99m}Tc -sulfur colloid, pancreas imaging in six sequential 10-min scintiphotos after the intravenous administration of 175 μCi ^{75}Se -selenomethionine, and a final aortic flow study of intravenously administered ^{99m}Tc -pertechnetate to display the constant anatomic relationship of the aorta to the thin portion of the neck of the pancreas. This anatomical landmark would seemingly have alerted them to suspect the presence of the adenocarcinoma in the head of the pancreas of a patient (their Case 5) who had an apparently normal pancreas by ^{75}Se -selenomethionine scintiphotography alone.

A similar case in this institution in 1966 prompted attempts to obviate such diagnostic errors. Several changes of protocol culminated in the current method which has been in use with minor modifications since early 1968. The results obtained in the first year of its use were reported to the Northern California Chapter of the Society of Nuclear Medicine at a regular meeting on March 20, 1969.

Briefly, the fasting patient drinks one-half pint of milk containing approximately 300 μCi of ^{99m}Tc -pertechnetate. A modified "upper gastrointestinal series" is obtained by watching this isotope progressing into the stomach and duodenum on the persistence oscilloscope. This portion of the study may be performed with the patient upright or sitting or lying. After the isotope has entered the duodenum, the patient is placed supine under the collimator which is tilted 12 deg anteriorly. The patient is positioned so that the duodenum is in its optimal position for the study, near 8 o'clock on the scintiphotos. When a properly placed and properly exposed 1-min scintiphoto of ^{99m}Tc -pertechnetate in the duodenum is available, the patient is maintained in that position, and 100 μCi of ^{75}Se -selenomethionine is injected intravenously. The photpeak of the machine is switched to that of ^{75}Se and from two to four sequential 15-min scintiphotos are taken of the pancreas. The placement of the head of the pancreas with respect to the duodenal loop is checked by means of a marked plastic overlay as shown in Fig. 1.

In all cases in which the pancreatic head was normally visualized, the placement of the head with respect to the duodenal loop has been uniform according to conventional anatomical precepts. Those patients with carcinoma of the pancreatic head have

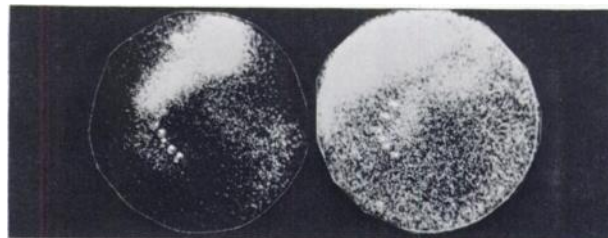


FIG. 1. Left: 1-min scintiphoto (^{99m}Tc setting) taken 14-15 min after oral administration of ^{99m}Tc -pertechnetate. Larger upper midline spot is xiphoid marker. Stomach is shown. White dots define medial portion of duodenal loop. Activity in lower half of abdomen is in jejunum. Right: 15-min scintiphoto (^{75}Se setting) taken immediately after intravenous administration of ^{75}Se -selenomethionine. Liver is shown in upper right abdomen. Dots along right border of head of normal pancreas were transferred by plastic overlay from scintiphoto on left.

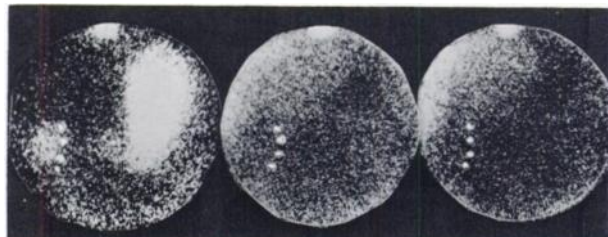


FIG. 2. Left: 1-min scintiphoto (^{99m}Tc setting) taken 9-10 min after oral administration of ^{99m}Tc -pertechnetate. White dots define medial border of duodenal loop. High midline activity is xiphoid marker seen in all three of these photos. Middle: Scintiphoto (^{75}Se setting) first 10 min after intravenous administration of ^{75}Se -selenomethionine. Right: Scintiphoto is same taken during second 10 min. Duodenal loop site has been marked with white dots on each of these by transparent plastic overlay. There is no visualization of pancreas. Left lobe of liver is seen in each but medial border of right lobe of liver is seen more prominently. Faint activity in left lower portion of abdomen is probably jejunal.

shown no visualization of any portion of the pancreas (Fig. 2). Tumors of the body and tail show no visualization of the involved part but the head is often shown in its usual position. We have not had the opportunity to examine another case of a seemingly normal pancreas scintiphoto with presence of a tumor of the head, but such a case should show a zone of separation between border of head and duodenal loop by this method.

One of the conclusions of the paper by Hatchette, et al is that "camera images of the pancreas appear to be more useful for lesions of the body and tail". This statement deserves reevaluation in view of the protocol described in this letter.

A complete presentation of the method and results is in preparation at this time.

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