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S-3. SPECT

DEVELOPMENT OF NEW COLLIMATOR FOR I-123 SPECT IMAGING - BASIC CHARACTERISTICS -
National Cancer Center, Tokyo, **National Institute of Radiological Sciences, Chiba, ***Shimizu Corp. Kyoto.

We developed a new collimator to obtain I-123 IMP SPECT images with high resolution, keeping the loss of sensitivity minimum. There are 4 units of slat type collimators, and they are called "ultra-high resolution (UHR)", "high resolution (HR)", "high sensitivity (HS)", and "ultra-high sensitivity (UHS)", respectively. When SPECT is performed, either one of UHR or HR is set to detector together with either one of HS or UHS at a right angle to each other. The former is always set to the detector side and the direction of the slits is always parallel to the rotation axis. From our basic experiments, we found that the combination of UHR and HS is the best suited for I-123 IMP imaging, and its sensitivity was calculated 123 cpm/Ci/ml/slice whereas medium energy collimator gave us 243. The spatial resolution was 15.9 mm in FWHM at the center of rotation. According to our calculation, if the medium energy collimator is designed to increase its resolution to the level of that of our collimator the sensitivity will drop to 1/6. We found that our new collimator was very useful for SPECT imaging of the brain with I-123 IMP.

S-4. SPECT

QUANTITATIVE MEASUREMENT OF RADIONUCLIDE WITHIN EACH ORGAN OF THE WHOLE BODY -
ESTIMATION OF THE COMPTON-SCATTER QUANTITY -
Y. Akiyama*, N. Yui, F. Kinoshita, M. Koakutsu and I. Ito.
Chiba Cancer Center Hospital, Chiba.

We are investigating a method to measure the whole body radionuclide distribution by using a gamma camera system which has ability of conventional localized imaging, whole body imaging and SPECT. The corre- lation of Compton-scatter is one of the most important problem for reconstruction of quantity of SPECT. But, the quantity of Compton-scatter is not found correctly yet. We estimate the quantity by using several method. Using these data, we will establish the method to eliminate the Compton-scatter factor in the near future.

S-5. SPECT

COMPARATIVE STUDY BETWEEN PLANAR IMAGES AND SPECT ON LIVER SCINTIGRAPHY -
Chiba University School of Medicine, Chiba.

It is important to understand normal variants of liver images in interpreting the information of SPECT images accurately. Because the specific structures of the liver such as falciform ligament, porta hepatitis and gallbladder fossa frequently produce the patterns of regional decreases of activity simulating various defects of normal tissues on images. These are sometime mistaken for space occupied lesions (SOLs).

The purpose of the study is at first to analyse patterns of normal variants of the liver on images. SPECT was taken on 32 cases of normal liver and 16 cases of liver cirrhosis with three different transverse planes which contained above mentioned specific structures.

Planar and SPECT images were compared. The results showed image patterns of normal variant were classified into three categories. Next, the detectability of SOLs was compared on 72 cases of various condition by using planar images with those of SPECT ones. The result showed that false positive cases brought by planar images alone was effectively corrected by adding SPECT. It was frequently possible to distinguish SOLs from normal hepatic structures by adding SPECT image to planar image.

S-6. SPECT

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The feature of single-photon emission computed tomography (SPECT) is the ability to detect sensitively and quantitatively the physiological change of an organ. Recently, a newly developed radiopharmaceutical, N-isopropyl-2-[11] I...