

458

FUNDAMENTAL STUDIES AND CLINICAL APPLICATIONS OF Th-232 FOR PORTABLE WHOLE BODY COUNTER. M.Kudoh, C.Kido. Aichi Cancer Center. Nagoya. M.Takai. Hamamatsu Medical College. Hamamatsu.

Last year the Aichi Cancer Center Hospital was equipped with a portable whole body counter. We decided the conversion factor and sensitivity distribution to compare with those of the whole body counter at the Nagasaki University Medical College. For measurement sensitivity, we used standard source ^{232}Th -4g and polystyrene phantom. To decide the conversion factor, we used thorotrast in the liver and spleen phantom. We also studied the statistical distribution of geometrical sensitivity for the portable whole body counter. From the above results, we estimated and reported the quantity of thorium uptake in thorotrast patients.

459

EVALUATION OF THE GAMMA CAMERA COLLIMATOR USED FOR REGIONAL CEREBRAL BLOOD FLOW (rCBF) MEASUREMENT. K.Saegusa, N.Arimizu, and S. Uematsu. Chiba University Hospital, Chiba.

In the measurement of rCBF with a gamma camera, especially in inhalation method, it is desirable to use a high sensitive collimator, because of lower radioactivity (^{133}Xe) in target regions compared with other examinations. Two kinds of collimators were used for this study. The one collimator (A), which was designed for rCBF measurement, was provided by the manufacturer, and the other collimator (B) was handmade. The sizes of each collimator are as follows: hole length of 5 and 1.5 cm, hole diameter of 12 and 6 mm ϕ , septal thickness of 2 and 1 mm lead for the collimator (A) and (B), respectively. The collimator (A) was used with an additional skirt collimator (hole length of 10 cm, square hole of 4x4 cm, and septal thickness of 1 mm lead). The sensitivity of (B) was about 4.8 times of (A), and the resolutions of (A) and (B) were 52 and 14 mm in FWHM at the collimator face, respectively. From the above results and the calculation, we can propose the hole diameter of 4 or 6 mm ϕ , and the hole length of 1.0 or 1.5 cm, as the size of the suitable collimator for rCBF measurement. The problem of using the short length collimator is that a patient's lateral head can't be positioned closely to the collimator face. However, this may be achieved by moving his head from the center field of view toward the peripheral field of view, without the significant disadvantage in his local positioning.

460

DEVELOPMENT OF GAMMA CAMERA SYSTEM WITH TWO LARGE SQUARE DETECTORS. Y.Fujiki, D.Oikawa, A.Habara, N.Sasaki and N.Kumano. Toshiba Nasu Factory. H.Noguchi, T.Abe, M.Nishino, Y.Kameyama, Y.Obata, H.Saito and S.Sakuma. Nagoya University. Nagoya.

This universal gamma camera has two opposing square detectors with a large field of view. It can effectively perform ordinary scintigraphy, whole body scintigraphy and single photon ECT scintigraphy by simultaneously using these detectors opposed to each other. This unit uses a data processing function as the basic composition, and can quickly and efficiently acquire, process, record and store large amounts of data. The unit has two square detectors with a large effective field of view (50cmx35cm); each detector has a exclusive mechanism for correcting the energy level and linearity. Therefore, the unit exhibits uniformity of $\pm 5\%$, linearity of $\pm 1\%$, and intrinsic resolution of 2.4mm (^{99m}Tc). The two detectors exhibiting a large field of view have a feature that a 50cmx200cm area can be recorded by one scanning of the front and rear planes in whole body scintigraphy, in addition to ordinary scintigraphy. In ECT scintigraphy, the acquiring time is reduced to half for simultaneous data gathering by two detectors, and so the total diagnosis time is shorten in combination with high-speed reconstruction by the special-purpose arithmetic unit. The basic performance of the universal gamma camera system is reported herein.

461

REPORT OF TOSHIBA'S SUPER JUMBO DIGITAL GAMMA CAMERA, MODEL GCA-90A. T. Shinohara. Radiology Department of The National Mito Hospital. Mito.

We report Toshiba's Universal Digital Gamma Camera (Model GCA-90A) with jumbo-size rectangular detector and high-capacity memory as follows. Quality of UFOV 50cm x 35cm, intrinsic resolution 2.4mm, max. countrate 200kcps (20% window width), uniformity $\pm 5\%$ and linearity $\pm 0.5\%$ is provided and patient positioning is easy considering jumbosize detector. Whole body scanning by one pass is possible and we obtain clearer image in short time than two or three pass type. Using the bed, we can study conventional image, dynamic image, wholebody image and ECT image without moving a patient. Since this model can gain wide viewing field at one scan, ECT (single-photon Emission C.T.) can gain min. slice thickness 2.7mm, max. slice number 64. So that we can gain a reconstruction of sagittal, coronal and oblique tomograph image. And ECT reconstruction time is very short, under only 2 second/slice. Exchange of collimators has a little problem. However every functionkey operation is easy and this equipment is good for a routine study as a jumbo high performance gamma camera. Our clinical data is as per the attached sheets.