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SHIMADZU POSITRON EMISSION COMPUTED TOMOGRAPH SET-130W (HEADTOME-III).Y.Hirose, S.Yamamoto,M.Amano,T.Nagata and O.Sekiguchi. Shimadzu Corporation,Kyoto.

The positron emission computed tomograph SET-130W has been developed under the tight cooperation with Research Institute of Brain Blood Vessels Akita in Akita. The SET-130W is constructed as a commercial machine for the clinical routine use. It has built-in interfaces to receive data from peripheral devices such as a well scintillation counter for highly quantitative measurement, and also features a high counting performance for a dynamic measurement with a bolus inhalation or injection of a radioactive material. Detectors are BGO crystals, each coupled to a photomultiplier. 160 detectors are arranged on a circle of 750 mm in dia. and forms a detector ring. Three detector rings at the maximum are arrayed with 30 mm spacing, and five slices with 15 mm intervals are simultaneously imaged. Behind the scanning gantry, a cart is adapted and three slice shields are mounted. These are easily selected by manual operation for the purpose of the study. A counting dead time correction soft ware is bult in and corrects counting loss up to less than 1% at the count rate of 50 Kcps. Spatial resolution is 8.2 mm FWHM at the center of the F.O.V. by the standard slice shield and 6.5 mm FWHM by the slice shield with beam mask.

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DEVELOPMENT OF ECT TYPE GENERAL PURPOSE DIGITAL GAMMA CAMERA GCA-601E
T.Iwasaki, N.Sasaki, T.Kihara, K.Iwakoshi, H.Yoshizawa and T.Ruike. Toshiba Nasu works.

Regarding nuclear medicine diagnostic system, Toshiba has deveroped digital gamma camera series that are provided with a gamma camera and a data processor incorporated in a body. Recentry, Toshiba has completed the development of ECT Type Digital Gamma Camera GCA-601E that will be the nucleus of the series, and a report will be made on it as follow. The GCA-601E is a general purpose gamma camera with a large circular field detector, and has various uses such as functional diagnosis by not only static images but also by image processings as cardiac kinetic function analysis, regional cerebral blood flow analysis, etc., whole body imaging and SPECT. The data acquisition section and the data processing section are designed to attain high-speed operations by special hardware.As a result, a reduction of ECT image reconstruction time and correction of energy and linearity without causing a counting rate drop are realized. The mechanical section is greatly reduced in size and weight, and so this facilitates hand replacement of the low energy collimators. The operability can be performed by hand, and the time necessary for patient positioning has been greatly
reduced.

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DEVELOPMENT OF A DIGITAL GAMERA USING A RECTANGULAR DETECTOR.
T.Yamakawa, M.Tsutsumi, NASU works TOSHIBA CORPORATION

This system is a whole body digital gamma camera having a largefield rectanglar detector with an effective field of view 50 cm x 35 cm.
Its principal features are as follows:
(1) Whole body scanning can be performed by one pass, so that the data acquisition time is reduced to 1/3 - 1/4 as compared with the conventional large circular-field type.
(2) The system is designed so as to facilitate patient positioning.
(3) The gamma camera and the CPU are incorporated in a body.
So all operations can be performed from the operator console, and image analysis, filing operations and analysis through abundant clinical programs can be performed with ease.
(4) Adoption of a special CEL (correction of energy and linearity) mechanism permitting calibration in the field alllows compensated images to be obtained in real time.
Consequently, the quality of whole body images has been considerably improved. It is also possible to obtain satisfactory images of small organs such as the heart.

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USEFULNESS OF SLANT HOLE COLLIMATOR FOR THE HEAD IMAGING WITH ROTATING-CAMERA SPECT. K.Suzuki,K.Kawamura,S.Kimura, T.Tamegai and M.Mori. Aloka Co.,Ltd.,Tokyo.

Rotating-camera single photon emission computed tomography(SPECT) has been used increasingly for clinical applications. Recentry,a brain SPECT imaging with I-123-IMP has been attempted very activery. However,spatial resolution in tomographic images of head with rotating-camera SPECT is decreased by the large collimator-to-patient distances necessary to clear the patient's shoulders.
One of the solution of this problem is to use a slant hole collimator. The distance between collimator surface and patient's head can be reduced by the positioning of the detector head with slant hole collimator tilted to the axis of rotation.
We manufactured the prototype slant hole collimator angled at 30 deg. for the rectangular field camera OMEGA 500 and tried the experiments to measur the performance of our slant hole collimator and the medium energy parallel hole collimator in SPECT images with I-123 and the SPECT phantom.
The result was that spatial resolution in SPECT image using our slant hole collimator was increased approximatery from 9% to 30% compared with the medium energy parallel hole collimator.
It was cleared that our slant hole collimator was very useful for the head imaging, especially the brain imaging with I-123-IMP using the rotating-camera SPECT system.