(25) U. Work in progress

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DEVELOPMENT OF THE HIGH SENSITIVITY POSITRON COMPUTED TOMOGRAPH SYSTEM FOR BRAIN. M.Oochi and M.Kumamoto, Hitachi Medical Corp.,Chiba.

We have developed a high sensitivity positron computed tomograph(PCT) system, which is designed to be used for dynamic study for brain.
This system has a good equipment operability and attained high sensitivity with high spatial resolution.It has 4 detector rings so that the images of seven slices can be obtained simultanneously.
The scanner patient aperture is 280mm dia. and the effective field-of-view is 250mm dia.x120mm depth, the images of the cranial region above the OM line can be obtained with a single scan.
The gantry can be tilted ± 20deg. and also be set horizontal for convenience of animal study.
Detector calibration and attenuation-correction are very easy due to a strip source to be rotated about the patiend aperture.
Each detector ring is composet of 128 BGO crystals (12 x 12 x 24mm), and packing-factor is 0.9 which realizes high sensitivity.

Specification and performance (actually measured values)
No. of detector rings : 4
Scanning : wobbling
Space resolution(at the center of FOV) : 7mmFWHM
Sensitivity(slice within ring) : 55kcps/μCi/ml
(slice between rings) :80kcps/μCi/ml

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DEVELOPMENT OF THE IMAGE PROCESSOR FOR POSITRON COMPUTED TOMOGRAPH. M.Kumamoto and M.Oochi. Hitachi Medical Corp.,Chiba.

We have developed a new image processor for positron computed tomograph based upon clinical experiences.
1. Basic like high-level language BIPOLA is adopted to facilitate the user to cope with the various requirement of clinical analysis programing.
2. A file structure has been made so as to permit image processing of X-ray CT and other madalities.
3. Because of dynamic study for the big number of pixels, system is provided with the image reconstruction unit for high speed processing. For example, the reconstruction time for filtered backprojection is less than 10 sec when image size is 256x256pixels and 256 projections.
4. An exclusive microprocessor for data acquisition use is incorporated to conduct fine control for thereby.
5. The continuously variable gray-scall window has been made possible, so that the images for for clinical purposes can be obtained easily.
6. This system is equipped with a 20MW magunetic disc(image use only) to store as much as 300 images.

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RECENT SOFTWARE FOR TOSHIBA NUCLEAR MEDICINE DATA PROCESSING UNIT. S.Matsui, S.Nishijima,M.Kakegawa,M.Nishikawa. (Nasu, Toshiba Corp.)

Software for the nuclear medicine data processing unit for routine inspection is required to exhibit high operability and reproducibility. As for the software for research purposes, flexibility is an important factor, and it is necessary to provide a program developing environment allowing the user to cope with various new analytic methods. Software recently developed to satisfy this need is reported herein.
1) Software for calculating regional cerebral blood flow by 133Xe gas inhalation method.
2) Software for creating a cardiac functional image by Fourier analysis (functional images obtained by high order approximation, such as basic wave phase amplitude image, and local EF image).
3) Software for ECT high-speed reconstruction (about 2 sec./slice for 64x64).
4) Development of a program using high-grade language FORTRAN, in addition to development of a program using the conventional language GPL (BASIC) for nuclear medicine purposes.

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DEVELOPMENT OF PROTOCOL GENERATOR. S.Kitagawa, K.Koike,T.Nakamura,T.Maruyama,F.Arai and Y.Oie Hitachi Medical Corp., Chiba

A Key-Input-Simulator (KIS) as a simple protocol generation support function to be used with the HARP series nuclear medicine data processors has been developed.
The HARP series has a variety of protocols available for improvement in operability, examination efficiency and reproducibility of examination results.
The KIS has been developed to easily realize
(1) Generation of the protocols inherent to individual facilities, and
(2) Experiments and analyses using novel techniques by organically connecting the independent programs for data collection, processing, display, etc.
which are prepared as the general functions of the HARP series.
The KIS is provided with twomodes. One is a learning mode to register the operations for combining independent programs, and the other is an execution mode to reproduce the processes automatically as a flow according to the registered processing conditions and procedures. The KIS also has the functions to automatically produce, and display a procedure flowchart from the details of the learned operations and to allow process addition and deletion on the color display so that maintenance of the generated protocols can easily be carried out. The KIS with above-mentioned functions will be introduced by using an example of protocol generation.