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DEVELOPMENT OF LARGE FIELD RECTANGULAR GAMMA CAMERA, SNC-500R. T. Matsuyama, K. Kume, N. Shibahara and H. Kishi. Shimadzu Corp., Kyoto.

The new rectangular gamma camera, SNC-500R, is an integrated nuclear medicine imaging system. It consists of 36 X 51 cm detector, gantry, couch, camera control and data processing system.

The detector has a large field of view of 36 X 51cm with a 9.5mm thick crystal. The intrinsic resolution is as good as 3.7mm FWHM in spite of its big field. The electronics enables the system to be used up to 400 KeV gamma-rays.

The collimators are equipped with a "touch sensor" on its front surface. The sensor detects contact of the detector to the patient or the table, and stops the motion of the gantry.

The short (9.5cm) insensible space between the effective field and the front fringe of the detector makes the brain ECT study very convenient and effective.

The gantry is capable of executing circular and non-circular orbit ECT, keeping detector surface parallel to the axis of rotation. Lateral motion of the gantry is used for one-pass whole body imaging.

The data aquisition is controlled by an operator terminal and a data processor, which has been improved during a long experience of developing the SCINTIPAC series data processing system.

Several jobs up to eight (8) can be executed simultaneously. For example, the operator can write his own program while the system collects patient image data and execute the preset work-sheet.

Image matrices are selected according to the purpose of the study. 64 X 64 and 128 X 128 matrices are used for dynamic study, 256 X 256 and 512 X 512 for static imaging, and 64 X 64 or 128 X 128 for SPECT study. A 512 X 2048 matrix is used for whole body imaging.

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IMPROVEMENT OF DIGITAL GAMMACAMERA DETECTOR. Tomohiko Kihara, Keisei Shutoh, Kazuhiro Tsuda, Takashi Kataoka, Toshiro Iwasaki and Yutaka Fujiki. Toshiba Nasu.

To meet a wide range of nuclear medicine diagnostic need, Toshiba Corporation has developed a digital gammacamera incorporating its own data processor. This is a report of a recent improvement in detector performance.

In order to improve the high-count-rate characteristics, a higher-speed position calculation circuit is developed. The maximum count rate has been increased from 200 kcps to 300 kcps.

For easier positioning and better maneuverability, smaller photomultiplier tubes are employed to reduce the detector size. Minuturization of the detector is desirable for cranial SPECT. The rotation radius of this new model is much smaller than the previous system.

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THE EXAMINE OF BRAIN-ZOOM SPECT BY DIGITAL CAMERA. H.Kurihara, T.Nakayama, H.Takano, T.Tatsuike. Yokogawa Medical Systems. H.Yamagishi, S.Morisaki, K.Satoh. Nakayama Memorial Hospital.

Starcam 400AC/T is available for closed proximity brain-SPECT imaging, easily can SPECT by modified zoom ratio and position of coordinates. In case of acquisition by 64x64 matrix (390mm UFOV), it is anxious that improvement of spatial resolution is limited because sampling distance is about 6mm. But in case of 1.6 zoomed acquisition by 64x64 matrix is equivalent to about 100x100 matrix, sampling distance become about 4mm, an advantage of closed prosimity brain-SPECT is fully available. Moreover, as compare with 128x128 acquisition matrix, 64x64 acquisition matrix (1.6 zoomed) is very useful because it is decreased ECT reconstruction time, disk capacity and is omitted zoom display processing. This time, we report on the examine of spatial resolution, contrast, and the detectability for phantom (cold spot, hot spot) by using Tc-99m and I-123.

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DEVELOPMENT OF SINGLE PHOTON EMISSION CT WITH BODY CONTOURING ORBIT.
M.Ohike, T.Kawaguchi, Y.Ohie, M.Tanaka,
(Hitachi Medical Corp.)

The distance from collimator to patient body surface cause degradation of spatial resolution. The detector of conventional single photon emission CT does not make the collimator-patient distance minimize, because the detector rotates around patient in a circular orbit. Therefore we have developed a new body contouring orbit system to improve spatial resolution by keeping minimized distance from collimator to patient. The body contoured scanning is performed by combining the lateral movement of detector stand and the vertical movement of patient table with the circular rotation of the detector so as to coincide the center of rotation with that of FOV. The main CPU calculates approximate elliptical orbit optimized for patient body and controls the body contoured scanning.

The main features of this system are as follows.

(1) Conventional software for ECT reconstruction is applicable.
(2) No decrease of UFOV.
(3) No need for correction of field center shift.
(4) Upgradable for existing ECT system.