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DEVELOPMENT OF EMISSION CT UTILISING THE BODY CONTOURED ORBIT. Y. Fujiki, S. Matsui (Toshiba Corp. Nasu), A. Kinda(Toshiba Medical Systems Engineering Corp.)

The conventional single photon emission CT (SPECT) performs data acquisition while rotating the photon detectors through 360° around the patient in a circular orbit. However this circular rotation causes the acquired data from the chest or abdomen to decrease in resolution, since the detectors are distant from the body surface. Accordingly, for Toshiba digital gamma-cameras, models GCA-601E and GCA-90A/B, an emission CT utilizing a body contoured orbit method has been developed in order to acquire data close to the patient. This is achieved by forming an almost elliptical orbit by combining a movement of the stand with the circular movement. Improvement in resolution brought about by this body contoured orbit has been demonstrated based on a comparative study, using phantom data, on both emission CT systems, with one moving in the body contoured orbit and the other in a circular orbit. Among the main features of this new development are: 1) that it requires only the addition of software. 2) that a contact safety switch is incorporated to protect the patient.

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DEVELOPMENT OF A SLANT HOLE COLLIMATOR FOR USE WITH I-123. T. Kurakake, T. Ichihara, K. Iwakoshi(Toshiba Corp. Nasu.), K. Suzuki, M. Murozumi, T. Kondo, S. Nogami(Tokyo Metropolitan Komagome Hospital), K. Ogawa (School of Medicine, Keio Univ., Tokyo)

To replace the conventional medium-energy parallel hole collimator for use in brain single photon emission CT (SPECT), a slant hole collimator has now been developed, dedicated to use with I-123. In conventional brain SPECT examinations using the parallel hole collimator, it was not possible to approach sufficiently close to the patient because the shoulder prevented correct positioning of the camera head. The new I-123 slant hole collimator avoids this problem by permitting the head to be tilted, which makes it possible to bring the collimator sufficiently close to the patient. The adjustment of the slant angle is made without difficulty by means of a special tool with level indicator. The slant hole collimator can be brought to within 11 cm of the patient. A comparative study with the conventional medium-energy parallel hole collimator has demonstrated a remarkable increase in resolution.

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PROGRAMMABLE BODY CONTOUR (PBC) TABLE SYSTEM. T.Nakayama,H.Kurihara,H.Takano and T.Tatsuike. Yokogawa Medical Systems,Tokyo.

In most SPECT body scannings,the body widths limit the minimum radius of rotation because of elliptical body contour. Then the patient-camera distance degrades image resolusion. PBC table system,however,provides the new patient table which moves along the X/Y axis (up and down,right to left) with the circular detector orbit,so as to keep the minimized patient-detector distance and to move the patient into the camera's field of view at each detector position. This method allows the improvement of body ECT image resolusion. The computer control which is added to the patient table measures the distance between the detector and the patient at its front,back,left and right of positions and calculates the best orbit. Thus,the optimum scanning for each patient (Programmable Body Contour scan) is available. The existing GE ECT systems both camera and data processing are upgradeable to this configuration with no software corrections.

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STARCAM 400AC/T INTEGRATED NUCLEAR IMAGING SYSTEN.
T.Nakayama,H.Kurihara,H.Takano,T.Tatsuike. Yokogawa Medical Systems,LTD.

The GE Starcam400AC/T Data Acquisition and image Processing System is a totally integrated camera/computer system designed for clinical imaging of Nuclear Medicine studies. The Starcam400AC/T Detector is engineered specifically for close proximity tomographic brain imaging. The Detector incorporates GE Autotune ZS electronics. This highly sophisticated circuitry automatically adjusts photomultiplier tube gain for exceptionally stable detector performance and performs "on-the-fly" correction of both energy response and spatial non-linearities. 390mm UFOV is suited general purpose imaging techniques include ECT and single pass whole body scan. The heart of Starcam System consists of five,high speed micro processor which work together to provide exceptional computing power. Designed to accommodate all level of users,the Starcam System performs the most sophisticated procedures with the ease. For optimum productivity,set-up, acquisition,and processing steps can be predefined through our protocol language,it permitting users to design and customize protocols to meet specific departmental requirement.