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EVALUATION OF PERFORMANCES IN THE SCINTILLATION CAMERA.

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For getting high quality scintigrams continuously, it is required to keep performances of the scintillation camera in best condition by periodical evaluation.

However, it is hard for general users to perform the periodical evaluation, because special measuring equipments, for instance multi-channel analyzer, and many efforts are required for the evaluation.

Therefore, we have developed evaluation programs for our digital scintillation camera (GAMMA VIEW-D), by which the evaluation is performed in short time relatively, and without special measuring equipments.

The developed programs are:

- (1) Intrinsic spatial resolution
- (2) Intrinsic spatial linearity
- (3) Intrinsic flood field uniformity
- (4) Intrinsic energy resolution
- (5) Detection and correction of revolution center deviation in ECT imaging.

Especially, programs (1)-(4) are based on NEMA standard, and have generality. A report will be made on results of the evaluation by these programs.

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ZLC-DIGITRAC GAMMA CAMERA AND ITS WHOLE BODY ACCESSORY IRIS. I.Saka. Shimadzu Corp. Medical Systems Div., Kyoto.

ZLC-energy and linearity correction system has been adopted to Anger type scintillation cameras. Long term deviation of characteristics of PMTs, however, have needed manual adjustment of amplification factor of each PMT once in several months or so. Or, correction table should be rewritten to fit the new condition after adjusting or changing the PMTs.

The new technology DIGITRAC executes adjustment of all PMTs automatically and more accurately than was done by a man.

The whole procedure requires approximately 20 min., after the operator pushes START key. This simple operation requires no field service engineers for adjustment. More accurate adjustment leads to better uniformity and spatial resolution than former models.

IRIS-improved resolution and improved sensitivity-adopts much wider aperture for whole body imaging to obtain higher sensitivity. Former WBA adopted 23 x 30 cm aperture for example, and IRIS adopts 34.5 x 34.5 octagonal aperture, which approximately doubles the sensitivity.

Higher sensitivity shortens scanning time and/or obtains better spatial resolution.

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A WHOLE-BODY SPECT SET-030W. J. Ohi, Y. Hirose, O. Sekiguchi and T. Nagata. Shimadzu Corporation, Kyoto.

We have developed a new whole-body multislice single photon emission computed tomograph (SPECT). The scanner consists of three detector rings with 128 NaI crystals (14 x 26 x 30 mm) each, providing three tomographic slices of 30mm separation. The detectors are equally arranged with circular geometry of 660mm diameter. The patient aperture and the field of view are 500mm and 350mm respectively. Two types of collimators, of high resolution (HR) and high sensitivity (HS), are equipped. Linear scan and transmission scan can also be performed using the HS collimator. ECLIPSE S/140(512KB) is used as a central processing unit and an array processor and a back projector are installed for the fast data processing. Magnetic disk is a winchester type and has a capability of 147MB data storage.

A single external scintillation detector and a pulse height analyzer are also equipped for the purpose of monitoring activities in the organ located out of the scanning field. Monitored counts are stored in the magnetic disk at the software-selected intervals. ECG gated scan can also be performed.

Disk operating system is the MRDOS (Data General) and FORTRAN 5 and ASSEMBLER software languages are used. Reconstruction of images is done by filtered backprojection method and several kinds of convolution filters are installed.

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PICKER INTERNATIONAL'S SQUARE DETECTOR GAMMA CAMERA WITH SX-300 STANDS AND PCS-512 DATA PROCESSING SYSTEMS. S. Ohashi, M. Kagami, Toray Fuji Picker International, Inc.

Picker International has introduced a new square detector for nuclear medicine imaging. This detector is majoring 20 inches diagonally and improved optimum data efficiency and sensitivity. This is equipped with 60 photomultiplier tubes with 3/8 inch(9.4mm) thick crystal. To compare current round type gamma camera, the imaging field increased 30% and anatomical access is much easier for cerebral and cardiac imaging. The gamma stand SX-300 has micro processor base control which provides maximum versatility for high resolution planar imaging, single base whole body scan and tomographic imaging. This SX-300 stand has 3 orbital movement for circular, elliptical, contouring. This 3 orbital movement provide easy operation and better imaging.

In addition, Picker introduced PCS-512 nuclear processing system which most advanced nuclear computer system available today. This system is a dedicated computer for acquisition for quantification of nuclear studies including CARDIAC and SPECT application. With DEC PDP11/23(16bit), it can be capable to display 4 images of 256x256 matrix simultaneously at CRT. It is very good for myocardial infarction, wall motion abnormalities.