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DEVELOPMENT OF TOTAL IMAGE PROCESSOR (FIRST REPORT). Y. Suto, I. Obayashi, K. Saito, T. Nagai and A. Heshiki, Toshiba Nasu Works and Gunma University, Otawara and Maebashi

In order to realize systematic total body imaging, we developed the Total Image Processor. Basic specification are as follows;

(1) Hardware Configuration
A. Mini-computer TOSBAC-7/40 system
B. High-resolution color display
C. Image memory system including micro-computer
D. Magnetic disc and floppy disc

(2) System Functions
A. Generation and registration of decision tree
B. Automatic retrieval of decision tree
C. All-round image processing
D. Central filing of diagnostic infomation
E. Statistic analysis of diagnostic infomation

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DEVELOPMENT OF MECHANISM FOR MOVING THE GAMMACAMERA. H. Watanabe, K. Kimura, T. Iwasaki, K. Kataoka and H. Iwao. Toshiba Corporation, Nasu Works Japan.

Lately, in the field of nuclear medical examination, more complex radiographing methods are becoming necessary. Simultaneous two-direction radiographing of the heart is one of the examples, and such complex radiographing operations cannot always be performed by means of the conventional stationary Gammacamera.
We have developed a mechanism which can be used to move the Gammacamera without difficulty in the examination room. This mechanism unit can be mounted to the stationary Gammacamera easily and the movement of the Gammacamera can be operated manually or can be motor-driven.
This mechanism unit has the following features: (1) when the camera (to which this mechanism unit is attached) and the stationary Gammacamera are used together, simultaneous image examinations are possible from above and below or from both horizontal sides; (2) the narrow space of the examination room can be used most efficiently; (3) the positioning of the patient is made easier. Also, complex examinations involving X-rays, CT or supersonic waves may be possible without moving the patient. Unlike the Mobile Gammacamera developed by Toshiba last year, this mechanism unit is not suitable for moving the camera from one patient's room to another, but it can be used most effectively in one particular examination room.

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QUALITY CONTROL OF A RADIOIMMUNOASSAY SYSTEM WITH A DESK TOP COMPUTER. Y. Tokuhara, K. Horio and H. Hattori. R/D Engineering Department, Medical Systems Division, Shimadzu Corporation. Kyoto.

The quality control in the field of radioimmunoassay has been regarded more and more important.

We have finished the development of a new on-line data processing and quality control system for radioimmunoassay.

The system utilizes the quality control formulae recommended by the World Health Organization (WHO) as listed below.

(1) Calculation and Evaluation of Response Error Relationship (RER).
(2) Print out the Precision Profile. (PP)
(3) Evaluation of $\bar{X}$–R control chart.

This system can calculate the RER value after measuring the standard, quality control and unknown samples. The obtained RER value is compared with the preset value and the result is printed out. If the RER value is smaller, the precision of assay is regarded to be good. If each datum doesn't have a good precision, the asterisk is printed out beside it and the datum is eliminated from the RER calculation.

Diagram of PP shows the relationship between error and dose. We can evaluate the precision of each assay from RER and PP.

Quality control data in each assay are stored into the floppy disk, and the storage capacity is enough for 60 assays for each item. The 95% confidence limits, the within-assay error and the between-assay error are calculated from the stored quality control data. When the new quality control samples are measured, the data are evaluated whether they are in the 95% confidence limits or not, and these results are printed out automatically.

These quality control methods are able to not only calculate the quality control parameter but also to point out and eliminate the bad data.

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FUNDAMENTAL AND CLINICAL EVALUATION OF SERUM FREE THYROXINE CONCENTRATION WITH MICROENCAPSULATION SYSTEM RADIOIMMUNOASSAY. Y. Kazahaya, K. Izaka and I. Watase. Radioisotope Division, The Green Cross Corporation. Tokyo.

Damon Free T_4 Radioimmunoassay Kit which utilizes the microencapsulation system was evaluated for the method and clinical usefulness. Microcapsules in the system acted accurately as separation vehicle between free T_4 and that T_4 which was bound to serum protein. Standard curve obtained after 2-hr incubation at 37°C covered the range between 0.3 and 7.7 ng%. The coefficients of variation for two control sera for intraassay were from 6.2 to 8.8% and those for interassay were from 3.4 and 5.9%. Cross reactivity for T_4 and T_3 were 100% and 4.4% respectively. Permeability of microcapsules was demonstrated by addition of either I-125-T_4 or I-125-TBG. I-125-T_4 added entered into the microcapsules and its radioactivity increased. However, increase of radioactivity in microcapsules was not observed by an addition of I-125-TBG. Clinically, the mean serum FT_4 concentration (mean ± SD) was 1.6 ± 0.4 ng% for normal subject (200 cases) and 1.7 ± 0.4 ng% for normal pregnant women (71 cases) respectively. Measured free T_4 showed a good correlation (r=0.91) with the calcuated free T_4 index.