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THE TECHNICAL REVIEW OF MULTI-DETECTOR TYPE RADIOMETER FOR RIA, M. Kumamoto, H. Saimura and K. Sakamoto. Hitachi Medical Corporation.

RIA plays a great role in diagnosis for endocrine diseases and various other diseases as well, but it has been required of the RIA to have the ability of examining many human serums in a short time. To meet this requirement, we developed a 4-detector type radiometer for RIA.

The greatest problem in use of plural detectors is the variation in count among the detectors. More particularly, the difference in sensitivity among the detectors due to ambient temperature, power voltage fluctuation and deterioration of scintillators have a great mal-influence on the measurements by the detectors.

To cope with this problem, we have developed a multi-channel counter circuit using a microprocessor and high-speed LSI.

Our system is different from the conventional radiometry in that the peak value of pulses from the detector is subject to A/D conversion to form an energy spectrum in the memory circuit. Next, a pattern corresponding to an isotope used is analyzed from the spectrum to effect the quadrature of effective region. With our system, each serum is automatically checked for any variation in count, thus permitting a stable measurement.

The RIA equipment employing this system was clinically tested; the test results proves that the system is practically usable and effective.

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EXPERIENCES OF QUALITY CONTROL IN AN In Vitro NUCLEAR MEDICINE LABORATORY:EVALUATION OF REJECTION CRITERIA. A.Harada, K.Tabushi, Y.Watanabe, K.Mishio, T.Nakajima, Y. Sasaki and T.Nagai. Saitama Cancer Center, St.Marianna University and Gunma University Ina, Kawasaki and Maebashi.

The rejection of a sample or a whole assay based on certain criteria for evaluation of precision and bias is one of the main purpose of quality control (QC). After two years experiences in QC of RIA using the method recommended by WHO, we have evaluated different rejection criteria. The response error relationship(RER) and precision profile(PP) were used for the evaluation of precision. For the evaluation of bias QC charts based on the measurement of QC samples were used.

On the basis of reexamination of 20 to 40 assays including 1000 to 2500 samples we have made new rejection criteria to be used in future.

1. Evaluation of precision: a) rejction of a sample; when the error(SD of duplicate measurement) is over 3 times the expected value from RER constructed by the accumulation of the past assays. b) rejection of a whole assay; when the slope of RER for that assay is bigger than $\bar{m}$+2SD of the past assays and precision profile of that assay is out of the range($\bar{m}$+2SD) of the past assays.
2. Evaluation of bias: when more than 2 QC samples are out of 95% confident limit on the QC chart.

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A NEW COMPUTER SYSTEM(GMS-90) USING TWO CPUs FOR NUCLEAR MEDICINE. H.Maeda,T.Nakagawa M.Taguchi,I.Fujumoto,M.Suda and S.Matsui. Department of Radiology, Mie Univ. Tsu, Mie and Toshiba Co., Nasu, Tochigi.

A new computer system(GMS-90) for nuclear medicine was developed. The basic component of the GMS-80 computer system consist of the following;two CPUs(NOVA 3/D 256KB, Eclipse S/250 256KB with array processor), two magnetic disks(CDC-9762 67.4MB for NOVA, DG-5957 48MB for Eclipse), a magnetic tape, a printer-plotter, two Dasher printer, two colour display devices, a paper tape reader and puncher and card reader. This computer system is connected with a GCA-202 gamma-camera, a GCA-401-5 gamma-camera, a 4cH probe device, a TV-camera and a single photon ECT using two opposed large field gamma-camera(GCA-401-5). The computer system has high performances as follows. (1) It is possible to process the various data at high speed because of the shorter cycle time of the CPUs and the array processor of the Eclipse s/250. (2) The acquisition from the imaging devices or the probe device and data-processing can be carried out simultaneously. (3) It is possible to acquire the projection data from the ECT and the data from the gamma-camera for conventional use simultaneously. (4) It is possible to acquire the medical image data such as X-ray image using the TV-camera and to process the data. In conclusion, it would be considered that the GMS-90 computer system is very useful in routine clinical study.

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IMAGING OF SCINTIGRAMS BY ON-LINE DISPLAY DEVICE. Y.Akiyama,N.Yui,F.Kinoshita, M.Koakutsu. Phisics Division, Division of Nuclear Medicine, Chiba Cancer Center Hospital. Chiba.

Medium size electronic computer FACOM M 130 F (1Mbyte) for multiporposes was introdused in Chiba Cancer Center Hospital. This computer , which is used mainly for batch process , has two on-line terminal and one of these is installed in the Division of Nuclear Medicine. Softwere for character display is called as OS 4/F2 AIM (Advanced Information Maneger) and programs are developed by using COBOL, PL/I, RPG, ASSEMBLER language. The output device of this on-line system is character display of tricolor (red, green and white) CRT, holizontal 80 characters and vertial 24 characters. We tried to display the scintigrams by using this on-line display device.

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