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ESTIMATION OF RI REPORTING SYSTEM USING MICRO-COMPUTOR.

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The micro-computor is becomming to be popular to us in recent years. We developed the reporting system using the micro-computor for the nuclear mecicine. The micro-computor which we used was TRS-80 personal computor (Tandy Corp.) and had two mini-floppy disks. The printer had the capacity of 80 characters per a line. The machine cycle was longer than mini-computor and had a limitation of a mass storage size, but otherwise the microcomputor system was cheaper and easy to handle. It took 30 minutes to write 10 reports by this system,but on the other hand it took only 20 minutes to write 10 reports by the mini-computor. This system had only 2 mini-floppy disks and the storage size was about 80 kbites per one floppy disk. So, one floppy disk could store about 300 reports. At the small hospital, the reporting system by micro-computor is thought to be very useful. The merit is that this system will decrease the ununiformity of reports between the observers and this system will be able to retrieve the imformation of reports later.

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AN EVALUATION OF AN IMAGE PROCESSING SYSTEM VIEWED FROM FIDELITY

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It is well known that the characteristics of an Imaging system can be theoretically described by an MTF. However it seems to be difficult to directly express image quality by means of an MTF. In this study a graphical representation termed fidelogram and LMSE(level mean-squared error), an extension of MSE, are proposed so as to directly express characteristics of an image processing system from the view-point of fidelity. Using the graphical representation, not only the consistency between standard and processed images but also a contrast change from one image to the other can be illustrated. LMSE is a one number index which has eight modes of weighting. Comparisons between LMSE and the existing fidelity measures have been made by experiments using example images. As a result it has been shown that LMSE is considerably effective in the sense that it can represent discrepancies between two images which the existing fidelity measures fail to represent.

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A STUDY OF AN INTEROBSERVER VARIABILITY OF LESION DETECTABILITY.

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The purpose of this study is to investigate an interobserver variability of lesion detectability. 12 collimators for 67Ga having the different geometr-ic resolution and sensitivity were designed. Using a digital computer, a process of imaging by the gamma camera system with above each collimator was simulated. A simulated image have from 0 to 4 defects in the background area. About 100 simulated images were generated and displayed on a X-ray film with the microdot imager-computer system. 20 observer were asked to see the X-ray films of simulated image and to judge whether or not there were defects in the image. The observer also were asked to rate the defect with 5 category scale. The ratio of the peak count obtained in imaging the square lesion to statis-tical fluctuations of the uniform background surrounding the lesion was defined as the signal-to-noise ratio(SN). The relation between the SN(t) and the score(y) which correspond to the 5 confidence levels given by several observers was represented by the logistic model; $y=1/(1+\exp(a-1/A))$. From the assumption which dy/dt is equal to the interobserver variations of several observers for the defect with a SN, the relation between the interobserver variations and the SN or the score of 5 confidence level was derived. This analysis was applied to the data of layman(10),paramedical(5) and medical stuff(5). We obtained the results that the average score(y)of the layman and paramedical group was equal to that of the medical stuff,but the interobserver variations of the score of the former was larger than that of the latter.

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SPATIAL DOSE AT DEPARTMENT OF NUCLEAR MEDICINE.

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This is to report the results measured Spatial Dose at Department of Nuclear Medicine. TLD calibrated with Co-60 gamma-ray were employed. The terms when measurement was made are 1 week and 2 weeks. The term of measurement of B.K.G. is from Dec. 29,1980 to Jan.3, 1981.

There were 11 places, at which upper values of B.K.G. were detected. The place where the maximam value was detected was 55.3mR/2w, where the patients who were administered radionuclides were waiting to receive the inspection. In the RI preparation room that the doctors stayed and administered radionuclides, there is about 67mR/2w. At the same time, Area Monitors and Film Badges were used, too.

The results with the above dosimsters suggested that the radiation exposure was less than the permissible dose provided by law. Therefore, it was confirmed that at Department of Nuclear Medicine, the radiation control for medical staffs was properly performed.