evaluated on the images displayed on teletypewriter, CRT and color CRT. The following five conditions for data handling were compared.

1) Data without uniformity correction.
2) 9 points smoothing of 1).
3) Correction of 1) using computer program and original data.
4) Correction of 2) using computer program and original data.
5) 9 points smoothing of 3).

The best image resolving cold and hot spots was obtained in the data processing 5). Effective field of view was significantly expanded by the correction of non-uniformity. The better images were obtained as the total counts were increased.

We concluded that scan images obtained from patients may be significantly improved by the correction of non-uniformity, provided that enough counts can be collected. Clinical evaluation of uniformity correction is now under study.

Rapid Data Processing for Whole body Gamma Camera Images

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A computer program for the rapid processing of whole body gamma camera images was developed in order to answer the clinical needs for speeding up the conventional data handling. Whole body gamma camera (LFOV, Searl Co.), scintipac 201 minicomputer (Nova model 01) and color display unit were used. The program allows simultaneous data collection from whole body gamma camera in list mode and image reconstruction on core memory both performed in the CPU of the minicomputer.

Data processing such as image transfer, 9 points smoothing and back ground cut off can be done in high speed, which takes less than 10 seconds. The processed whole body image (128×128 matrix) or half body image (256×256 matrix) is displayed in color. The pre- or post-processed data can be transmitted to a magnetic tape for later replay, which takes about 30 seconds. Representative ^{67}Ga tumor scans processed with this program were demonstrated.

Characteristics of this program as compared with the one inherent to scintipac 201 are as follows; 1) rapid data collection, processing and display, 2) color display, 3) easy procedures through conversation on CRT and 4) free from limitation caused by total counts when magnetic disk is used.

Development of Two Screen Polaroid Camera and Its Clinical Application

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Radioisotopic distribution of the organs were recorded by the Polaroid camera attached to the Anger scintillation camera. Three eye Polaroid camera is widely used to obtain different density images at the same time.

In this study, we tried to develop a two screen Polaroid camera using a filter (ralf mirror) and a surface mirror.

This Polaroid camera is consisted of a lens (EL NIKKOR f=80 mm), a Polaroid film holder and a 60×70 mm roll film holder. The advantages of this camera are to be able to obtain two images of different density or one Polaroid and one translucent negative images.

The basic characteristics, such as visual fields, blur etc. of this two screen camera has been examined and reported at the 33th annual meeting of society of radiological technology. (1977).

As a result, this Polaroid camera would be available to routine work. Namely, in static studies, to obtain two images of different density is to make up of a weak point of narrow latitude of Polaroid film. In dynamic studies, the number of Polaroid film increased than conventional one screen camera and the roll film is more suitable for this purpose.

In conclusion, two screen Polaroid camera is useful for routine works.

γ-Camera Used the Super Resolution Method

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The optical image system can not pass the spatial frequency over the maximum frequency of its system. In γ-camera there is not wide frequency band, its image quality is bad at the resolving power.

We used the method of super resolution for the improvement of γ-camera resolution. We provided 1050 parallel holes collimator (2.0 mm hole diameter, 0.2 mm septer thickness) for the optical system. 2.5 lines/cm frequency grid object was overlaped with 1.6 lines/cm frequency grid. The object image overlaped passed through the optical system and its image was overlaped with 1.6 lines/cm grid for the second time. Two 1.6 lines/cm grids moved continuously for one frequency. We could observed 2.5 lines/cm object image.

Reduction of Compton Scattered Rays by Using Pb-filters in Positron Imaging

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This paper presents an evaluation on the use of Pb-filters in NIRS positron camera to improve the operation performance, although the effect of Pb-filters on Anger type positron camera has already been reported by G. Muehllehner. This approach is to increase the detection efficiency by lowering the discrimination level, keeping the image quality by removing scattered rays from a a patient body with Pb-filters.

Evaluation were made on the scattered rays from energy spectra measured with one of the detectors under various conditions. When a ^{68}Ge-^{68}Ga point source was positioned at the center of the detectors separated by 50 cm, and when the source was sandwitched with 10 cm thick Lucite plates, the photo fraction in the spectrum was measured to be 0.1, and the component of scattered ray was measured to be 2.8 times that of the unscattered rays. The use of a 1mm thick Pb-filter reduced the scattered rays by a faxtor of 3.3, with 15% loss of unscattered rays.

From these results, it is estimated that the scattered-unscattered and the scattered-scattered coincidence rates are, respectively, reduced by factors of 4 and 10, with 28% loss of the true coincidence rate. Besides, the accidental coincidence rate is also expected to be reduced by a factor of about 5, since the singles rate decreases by a factor of 2.3.