Use of the NIRS On-line Computer System for Acquisition and Processing Image Data with a Conventional Scanner

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Techniques of clinical application of the NIRS on-line computer system for acquisition, processing and display data obtained with a conventional rectilinear scanner were described.

The on-line program is divided into two parts of job:

I. pulse height analyzing for gain control of the scanner.

II. data acquistion and display.

The latter consists of four procedures and is performed by command of a terminal typewriter;

1) setting of initial parameters.

2) start of the sequential data acquisition synchronized with the scanning motion.

—Each pulse from the detector consists of three informations, i.e. time(T), position on the scanning line(X) and gamma ray energy (E). The position information, X, is generated with a specially designed 'position signal generator' attached to the scanning arm and gives a number of 1 to 512, corresponding to the X-position. A program was made to distinguish each line and to eliminate noises from this generator or limit switches. The informations are stored in a word (24 bits) and transfered into a disk through two buffer memories.

3) unpack and sort.

—After the completion of scanning, the identification cords are typed on two magnetic tapes followed raw data transfer into one of them for future use. The unpacked 2-dimensional image is transfered into the other tape.

4) monitor.

—The unpacked and sorted image is displayed on a CRT in the form of 45×45 points. Four levels of brightness are used. Further procedures of data processing are done in off-line mode, including smoothing, filtering and focussing. Details of these procedures will be discussed elsewhere.

Data Acquisition and Processing for an Anger Camera by NIRS On-line Computer System

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This paper describes software for data acquisition for an Anger camera by NIRS on-line computer system.

(1) Digital data acquisition: Three kinds of programs have been developed (a) X and Y pulses from the camera are converted into digital clock pulses by means of analog-to digital converter, and then the digitized pulses are connected to the increment unit (INC) in such a way that two-dimensional counts digital image are stored in corresponding memory words of the computer. After the digital image is stored for a pre-determined period of time, the image is punched out onto a paper tape so that post-processing may be possible. (b) similar digital images are stored by means of INC unit in one of the two buffer regions of core memory. Two buffer regions are switched alternatively by an interrupt signal from the timer, and the stored