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DEVELOPMENT OF THE NUCLEAR MEDICINE DATA SYSTEM:THE MCS-1060.  
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A data system is indispensable for recent nuclear medicine imaging. The MCS-560, the nuclear medicine data system we are currently supplying, has capabilities of acquisition and processing for nuclear cardiology, general nuclear medicine and SPECT. Now, the MCS-1060 has been developed to provide more computer power than the MCS-560. The MCS-1060's features are as follows.

1. Enables to attach up to four radio-isotope cameras and to acquire the data from two cameras simultaneously.
  2. Built-in two dual channel ADCs which enable high count rate acquisition up to 250 kcps.
  3. Provides versatile data acquisition mode: static, dynamic, wholebody, dual isotope, list mode, ECG multi gated, SPECT and video input.
  4. Built-in the Array Processor and the floating point Arithmetic Processing Unit, they enable high-speed image reconstruction, image processing and data analysis.
  5. Built-in the 30M byte winchester hard disk (optional second and third winchesters available) and 40M byte streaming magnetic tape, they enable large-capacity data storage and high-speed data transfer.
  6. Has compatibility of the image data and utility programs with the MCS-560.
- We believe that the MCS-1060 will be very helpful for the diagnostics of present nuclear medicine.

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DEVELOPMENT OF DATA COMMUNICATION IN THE DIGITAL GAMMACAMERA SERIES. A. Habara, S. Matsui, Y. Tani (Toshiba Corp. Nasu)

Medical image data communication has been developed using the special interface, type PIM, with the medical image processor, model GMS-55U, and the digital gammacamera series. This technique is intended for bidirectional communication between two data-bases, in conformity with the protocol on telex formulated by the Consultative Committee on International Telegraph and Telephone (CCITT). The following modes are available for the data communication:

- (1) Active reception  
For retrieving the data-base of the party concerned and receiving the images.
- (2) Active transmission  
For retrieving one's own data-base and transmitting the images.
- (3) Passive reception  
For receiving the images transmitted from the party concerned.
- (4) Passive transmission  
For transmitting the images at the request of the party concerned.

The data-base communication has a transmitting speed of one image in approximately six seconds for a matrix size of 512 x 512. On the other hand, communication with VAX-11/750 is performed based on the specifications for the interface DR-11W, conforming to the same protocol. This technological advance may present a prospect for wider application of the gammacamera series.

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DEVELOPMENT OF MULTI-MODALITY IMAGING (MMI) PROGRAM.

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Recently, the necessity has been greater for a multi-modality imaging diagnosis intended for supporting the medical diagnosis by organically integrating image data produced from various modalities.

Our report concerns a multi-modality imaging (MMI) program we developed as a support tool for overall image diagnosis for use with our HARP-series radionuclide image processor.

Since the MMI program includes a series of processes from the entry of various modality data to the display of them, we studied the following items:

- (1) Input of various image data (online input, and offline input by magnetic tape or floppy disk)
- (2) Image size and positional adjustments
- (3) Extraction of necessary portions from image
- (4) Multi-modality display
  - Parallel display
  - Shifted display
  - Integrated display (in 4 kinds)

Each of the above-mentioned functions will be explained using various image data.

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DEVELOPMENT OF MULTI-PURPOSE DATABASE SYSTEM FOR NUCLEAR-MEDICAL STUDY (2ND REPORT). - IMAGE FILING BY OPTICAL DISK -

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The image data used in the nuclear-medical studies have been more and more diversified and increasing in number, including data obtained from the data processor, data acquired by digital camera, data from various modality for MMI (multi-modality imaging), etc. These data are recorded in magnetic tapes, but it takes a much time and labor to retrieve the necessary data. For storage of image data and efficient access to any necessary data, we developed, by adopting optical disk, a database system which can be used for our HARP-series radionuclide data processor. We report here this database system.

Since the data management using optical disk needs a system suitable for storage, compression, retrieval, etc. of image data, we studied the following items:

- (1) Functions to store image data reserved in the magnetic disk and to store image data directly under the HARP protocols
- (2) Function to select data for compression
- (3) Function to designate plural data retrieval keys
- (4) Interchangeability with optical disk for PACS