

B. Measurement A (Information Processing)

Depiction of Radio Isotope Images by On-line Digital Color (2)

H. TOYAMA, Y. OHISHI, K. MATSUI, M. IIO,

Tokyo Metropolitan Geriatric Hospital,

J. IISAKA,

Japan IBM Ltd.,

T. ISHIDO

Hirosaki University

Functional images of the heart and the kidney are generated in colors by a computer system which consists of the IBM 1130 computer system and a digital color display device (Phosdac).

As the first trial, functional images were made against simple parameters such as peak time, peak counts or appearance time of radio isotope angiograms of the heart and kidney.

Gamma camera images were obtained with rapid injection of 5 mCi of Tc-99m albumin for the heart study and with 10 mCi of Tc-99m DTPA for the kidney study. Twenty or thirty frames of data in 64×64 matrix form was recorded on a magnetic tape at the intervals of 0.9 sec. for the heart and 3.3 sec. for the kidney, respectively. A map was made depending on peak time, peak counts or appearance time which were searched at each matrix point. The functional images of the organs thus obtained were displayed as color images with maximally 16 steps of color.

Thus, the subclavicular vein (SCV), right ventricle (RV), pulmonary artery (PA), lung and left ventricle (LV) were displayed with various colors in the peak time map. Comparison with appearance time maps of three patients, which has normal, moderately delayed and delayed circulation time respectively, the number of color steps between RV and LV were 0, 2, and 4 respectively. In this case, each color corresponded with 1.8 sec. time interval.

We could point out several advantages of this method.

1. Regional functions of organ can be obtained without arbitrary selection of ROI, which is sometimes difficult.
2. Display of computer processed images by digital color is much superior to that of character out put by a line printer or those of other display devices of the computer system.