299

MOVING IMAGES OF THREE DIMENSIONAL EXPRESSION OF LEFT VENTRICLE. A.Asahara, H.Ueda, S.Wakabavashi and M.Kiri. Central Hosipital of J.N. R., Shimadzu Corporation. Tokyo and Kyoto.

Three dimensional multigated left ventricle images were taken in 16mm movies to observe their movements. Some clinical studies are shown here and their evaluations are discussed. The method to reconstruct three dimensional images was reported in our "Synchronous Dual-Camera Recording and analysis Technique" in the last anual meeting of JSNM. In the case of normal healthy ventricles, it can be observed that whole left ventricle walls are regularly constricted and dilatated between apex and valve entrance, and axis of left ventricles is twisted little. Though in the case of hypertension, there are no special findings in constriction movements, in the case of myocardial infraction, deformity, akinesis or diskinesis could be clearly observed in conformity with the portions of foci, and twisting of long axis is often seen. According to our moving image studies, the twisting of long axis, the constriction waves from apex to entrance valve and the portions of diskinesis or akinesis are remarkably observed just like in the beating heart. Three dimensional image expression is a new technique to observe left ventricle and displays not only the shape in three dimensions but also the spacial relations in the chest cavity. In addition, this moving image technique will be sure to increase the abilities of diagnosis.

300

EMISSION CT USING GAMMA CAMERA(5)---CINE MODE DISPLAY OF ECG-GATED ECT. Takao MUKAI, Kazutaka YAMAMOTO,Toru FUJITA,Yoshiharu YONEKURA,Yasushi ISHII,Rikushi MORITA and Kanji TORIZUKA. Dept. of Radiol. and Nuclear Medicine,Kyoto University Medical School, Kyoto.

We have attempted to reconstruct single photon ECT using conventional gamma camera and rotating chiar, and found to be useful to observe an ordinary scintigraphy in a form of transaxial tomographic section. Present study is concerned with reconstruction of a dynamic ECT image displayed in a cine mode which is derived from ECG-gated cardiac blood pool images. Data were collected by frame mode of 6-10 frame per RR intervals,100 cardiac cycles per view at every 36 directions. Back projection algorithms using filter by Hanning window of ramp function was used. Slice thickness of these ECT was about 1 cm and resolution was 1-1.5 cm in phantom study. Data aquisition of 1 hour provided an image with 40,000 cts/frame/slice.
The studies found to be more illustrative than conventional gated blood pool image to delineate combinational motions between various part of central circuration such as right and left side ventricle and atrium of heart,or even between heart and lung. However,to make it in routine use more detection sensitivity seems to be necessary.

301

NEW MOVING IMAGING SYSTEM (MIS). M.Hosoba*, S. Takahashi*, K.Ohmura*, M.Kiri*, H.Toyama**, H.Murata** and M.Iio**. Shimadzu Corporation* and Tokyo Metropolitan Geriatric Hospital**. Kyoto* and Tokyo**.

We have newly developed the Moving Imaging System for the clinical nuclear medicine. The system includes NOVA3 minicomputer, 24 MW disk, magnetic tape and reflesh type 14 inch variable color CRT with color encorder for VTR recording.
Characteristics of MIS are as follows:
1) Cine mode display in real time, compressed time and expanded time. 2) Variable color display. 3) Colored contour display of selected level. 4) Superimposing fixed edge of end diastole image on colored contour display of gated image. By this method, ventricular wall motion abnormalities could be accurately detected. 5) Simultaneous ventricular volume curve display. 6) ROI setting on moving image. 7) Direct VTR color recording for clinical and educational use. All the data manipulations are easily performed using only one letter command.

302

EVALUATION OF GLOBAL VENTRICULAR FUNCTION AND REGIONAL WALL MOTION IN THE PATIENTS WITH CORONARY HEART DISEASE. H.Murata,M.Iio, H.Toyama,S.Kawaguchi,M.Noguchi,K.Chiba,H.Yamada,S.Yonamine,S.Chiba,K.Kumagai,K.Ueda and M.Hosoba. Tokyo Metropolitan Geriatric Hosp. and Shimadzu Co. Tokyo and Kyoto.

The moving image system was developed and used to evaluate the global function and regional wall motion of the ventricle. ECG gate method was applied to the first pass study in RAO projection and the equilibrium study in LAO projection. Using moving image system, sequential images of the cardiac motion were constructed to the real time moving image and were displayed on color CRT. On the moving image obtained by first pass study in RAO position, asynergy of anterobasal segment, anterior wall, apex, inferior wall and posterobasal segment of LV was detected easily. Right ventricular ejection fraction and RV wall motion were also detectable on the image in RAO position . On the other hand, the equilibrium study had an advantage of capability of repeat studies. Therefore, comparison of left ventricular functions at rest and during stress was possible on the moving image in the equilibrium study. On the moving image of the myocardium obtained with thallium and the gate method, detection of ischemic lesion was more sensitive than the conventional static myocardial image.