

as reference data. The same method was employed for processing the data by the computer.

As compared with the heart beat-linking

apparatus that have hitherto been reported, the apparatus devised by us featured in that it clinically gives the same data, but economically is less expensive.

Determination of Left Ventricular Volume and Ejection Fraction by ECG-Gated RI Angiocardiography

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Left ventricular volume and ejection fraction were determined in patients with various heart diseases using ECG-gated RI angiocardiography. The angiocardiography was performed by injecting 15mCi of pertechnetate-^{99m}Tc into peripheral vein, using an Anger scintillation camera with a high resolution collimator. Camera images were recorded in "real time" on magnetic tape using a Nuclear Chicago Data/Storage Accessory. Rectangular pulses obtained from R-wave of ECG were recorded simultaneously on the audio-track of the tape using a frequency modulator. With the use of the ECG gating device left ventricular images displayed on the persistence scope at either end-systole or at end-diastole during levophase of the angiocardiography were photographed on polaroid film, after the persistence scope was adjusted so as to

yield clear left ventricular contour. The area of the images was determined by planimetry. Phantom study with a simple syringe model showed good correlation ($r=0.99$) between known and calculated volume. The enddiastolic volume and ejection fraction of 11 patients obtained by this technic were in excellent correlation with those by a cineangiographic method ($r=0.98$ and 0.91 , respectively.). The peculiar appearance of left ventricular cavity in patients with idiopathic hypertrophic subaortic stenosis was demonstrated by the RI angiographic as well as a cineangiographic method. In addition dyskinesia of left ventricle was easily demonstrated in patients with myocard infarction by this technic.

The technic is noninvasive and was found to be very useful for evaluating left ventricular function in critically ill patients.