

Determination of Left Ventricular Ejection Fraction by Using R. I Angiographic Study Without ECG

K. NAKAZAWA*, K. ISHII*, K. SAKURAI*, S. YAMADA*, S. MIMOTO*, T. KOBAYASHI*,
K. YODA*, T. MATSUBAYASHI*, H. NAKAJIMA**, S. HIRAISHI** and J. DUBOIS***

*Department of Radiology, **Department of Pediatrics School of Medicine,
Kitasato University, ***Informathek Co., Ltd.

The ejection fraction was determined by R.I angiographic study without ECG.

Method: ^{99m}Tc -pertechnetate was flushed with saline solution as a bolus into the cubital vein of the patient with 30° or 40° of LAO. At the same time, images obtained by scintillation camera were collected for 30 seconds into the magnetic disk of SIMIS-3 mini-computer produced by Informathek Co., Ltd. with list mode in which time signals were inscribed every 10 msec.

Data processing ROI was determined at left ventricle, the R.I transition curve at intervals of 1 sec. was calculated, and the time when the left ventricular activity was at its maximum was measured. Hereafter, the time activity curve at intervals of 20–40 msec. was made, and it found that the top and bottom of the curve corresponded to end-

diastole and end-systole. By adding each frame corresponding to the top and bottom for five cycles, images of end-diastole and end-systole were formed. Proper ROI of the left ventricle was determined based on these images, the radio-activity of the left ventricle and background activity at end-diastole and end-systole were counted and the ejection fraction was calculated by following formula:

$$\text{E.F.} = (C_a - C_s) / (C_a - \text{B.G.})$$

The background ROI is set up with the area of 2 matrix outside of the left ventricle at end-diastole. Result: The ejection fraction obtained by the abovementioned method was compared with the values obtained by cineangiography and echocardiography. A favorite result was obtained.