

## G<sub>1</sub>. Heart

### Noninvasive Determination of Left Ventricular Ejection Fraction by RI-Angiocardigraphy

M. NARITA, M. USAMI, H. KAWARADANI, T. KURIHARA

*Sumitomo Hospital Department of Internal Medicine*

K. KANAO, M. HONDA

*Department of Nuclear Medicine*

We assessed left ventricular ejection fraction (EF) by analysis of time activity curve generated during the passage of radionuclide bolus through left ventricle.

The image data were recorded during 60 seconds with Pho-Gamma HP scintillation camera fitted with 15000 parallel hole high resolution low energy collimator which was interfaced to mini-computer (Scintipac-200), together with ECG data.

Tc-HSA, 10-15 mCi in 1-2 ml saline, was rapidly introduced into right ante cubital vein or into pulmonary artery (PA) via Swan-Ganz catheter by flushing with 10-15 ml of saline.

These two studies were performed in 4 normals and 9 heart diseases within one week.

In PA injection, catheter tip was introduced into right upper PA for minimizing background activity of left ventricle.

Catheter tip balloon was inflated by Tc-<sup>99m</sup>per-technetate in order to recognize the site of catheter tip under gamma camera. (radioactive-flow-directed-catheter)

Gamma camera was placed 45-degree-LAO in peripheral injection and anterior or 40-degree-RAP in right upper PA injection.

With the use of ECG-gating-device, six consecutive beats at end-diastole and end-systole were summed and displayed, then time activity curves at end-diastole and end-systole within left ventricle were obtained in consecutive 30 beats.

EF in PA injection was computed by counting method:  $1 - (\text{endsystolic counts} / \text{enddiastolic counts})$ , and by area-length-method.

The results of these two methods correlated well. ( $r=0.96$ )

In peripheral injection, EF computed:  $1 - (\text{endsystolic counts} - \text{background} / \text{enddiastolic counts} - \text{background})$ .

EF in peripheral injection which was corrected for background as determined within semiannular ROI (2 matrix-points in width and surrounding left ventricular free wall) correlated best with EF in PA injection. ( $r=0.96$ )