Clinical Study of Pulmonary Hemodynamics by Radionuclide Angiocardiography
(Analysis of Regional Time-Activity Curve)

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Right ventricular-pulmonary mean transit time in the upper and lower area of the right lung was calculated from the time-activity curve obtained by radionuclide angiocardiography in 29 patients.

The patients included 13 with mitral stenosis (MS), 6 with mitral insufficiency and 10 without mitral lesion. All patients with heart diseases underwent cardiac catheterization.

The patient was placed in supine position and 10 mCi of ⁹⁹ᵐTc-albumin was rapidly injected into an antecubital vein. Sequential radionuclide angionuclide angiographic images of anterior view were recorded on a TOSHIBA GCA-202 gamma-camera coupled with DAP 5000N computer-system. Regions of interest were selected at upper, middle and lower part of the right lung and the right ventricle respectively, and time-activity curve was obtained of each region. Descending limb of each curve was fitted to the exponential function and mean transit time from the right ventricle to each area of the right lung (RV-lung MTT) was calculated. Severity of MS was graded into three, i.e., mild, moderate and severe, on the basis of the pulmonary wedge pressure.

Mean RV-Lung MTT value was 2.1 sec. in upper lung and 3.4 sec. in lower lung in patients without mitral lesion. In MS, the value in lower lung showed prolongation, which resulted in difference of the value in lower and upper lung. This difference increased with advancing severity of the disease except 3 patients with history longer than 15 years, in whom the difference was less marked because upper lung also showed markedly prolonged value.

It is suggested that the estimation of the severity of MS may be possible by routine radionuclide angiocardiography.