Evaluation of Peripheral Circulation by Intraarterial Injection of ^{131}I-MAA, ^{131}I Microsphere and ^{198}Au colloid

I. Ohara and M. Nakamura

Second Department of Surgery & Radiology, Tohoku University School of Medicine

H. Shida

Radiology Department of Kinugawa Silicosis Hospital

Intraarterial injection of radioactive substances was carried out to study the peripheral circulation. Two collimeters were placed on the leg and foot, which were connected to rate meter and the radioactivity curve was recorded. ^{131}I-MAA, ^{131}I microsphere & ^{198}Au colloid, 100–250 Ci were used.

The radioactivity by ^{131}I-MAA showed a transient peak following injection and remained at a stabilized level at the leg and foot. Scintigram of the leg and foot was taken. In those with disturbed peripheral circulation, 90% of 20 cases of the leg and all 22 cases of the foot showed uneven distrifution of the scintigram, while in those with normal circulation, the percentage of uneven distribution was high.

As for ^{198}Au colloid, and ^{131}I microsphere, initial peak of the leg was followed with gradual declint. The peak of foot was very low in those with normal circulation. When the leg arteries were all occluded, a characteristic curve was obtained in 80% of the cases.

From these results, curve and scintigram obtained by intraarterial injection of radioactive substance may be used to tell difference of abnormal peripheral circulation from those with normal circulation.

The Scintiphotos of Left Ventricular Cavity of Human Heart at End-Diastole and End-Systole

H. Ochi, K. Abe, T. Furukawa, K. Minaguchi, H. Mitsuta, A. Yamashita, N. Yasuda and M. Tamaki

Department of Radiology, Osaka City University Medical School

A. Kasahara

Department of Internal Medicine, Osaka Red Cross Hospital

J. Iwasaki

Developmental Section of Toshiba Medical Systems Company

Zaret and his co-workers have reported a method of depicting the left ventricular cavity of human heart in end-diastole and end-systole, using a scintillation camera and an electronic gate triggered by ECG. Below the detector the patient has to remain in the same position long time (15–20 minutes), while counts at a certain cardiac phase are summed up after the radionuclide has equilibrated the the intravascular space.

In our modified method, scintiphoto images are stored on videotape and at the same time ECG is recorded into the audiotrack of the tape through the "FM-modulator" made earlier by H. Kudo, one of our colleagues. In replay of this tape, scintiphotos of the image of the left ven-

tricular cavity are depicted by summing up the counts which are limited to end-diastolic or end-systolic phase (30–50 milliseconds). This is done through an "electronic timer" which was earlier made by us for the purpose of repeated short X-ray exposures at a preset phase of cardiac cycle.

The scintiphotos of the left ventricular cavity thus obtained are of fairly satisfactory density and sharpness.

Heart Pool Scanning in the Diagnosis of the Pericardial Effusion

Y. Yamagishi, S. Watanabe, N. Komata, M. Hasegawa, H. Watanabe,
J. Yukutake, S. Shiiba and M. Karasawa
Department of Radiology (Director, T. Saitoh)
K. Yahata, Y. Haria and F. Takano
Department of Internal Medicine (Director, E. Kimura)
Nippon Medical School, Tokyo

In the diagnosis of the pericardial effusion, overlapping of the chest X-ray film and the heart scintigram as correct as possible is very important.

For this purpose, we tried four quadrant exposure technic as follows.

Method:

1.5–2.5 mCi of ^{99m}Tc-albumine or 300 μCi–500 μCi of RIHSA was used 15 minutes before the scanning.

After scanning, a patient was laid down of one's back and a quadrant of the chest was exposured shielding the other three quadrants by lead plate.

In this series, central beam of the X-ray was set at a point of the margin of the heart and the other quadrants were exposured by turns.

Then the following numerical values were measured.

1. Distance of the transverse length of the heart between the X-ray film and the scintigram in the right.
2. The same in the left.
3. Distance from the heart and the liver in the scintigrams.
4. The ratio of the transverse length of the heart on the scintigram to the X-ray film.

21 cases of pericardial effusion including 3 suspected patients and 27 negative cases as control were measured.

Result

	1	2	3	4
Pericardial Effusion	12–44	18–62	10–40	0.83–0.54
Control	3–15	5–30	0– 5	0.93–0.82

in mm