DETERMINING OF CARDIAC OUTPUT BY RADIO-
NUCLEIDE ANGIOCARDIOGRAPHY WITH COMPUTER
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Because conventional method of determining
cardiac output with radionuclide tracer is
time consuming, we made use of computer
processing of radionuclide image in 56 pa-
patients and compared with the thermodilution
method. With the scintillation camera angl-
ed 30° to 60° to the left, a bolus of 15 to
20 mCi Tc-99m HSA was injected. Image was
obtained 2 frame per second for a minute
followed by 1/60 frame per second for 9 min-
utes. The data were processed by the com-
puter. The region of interest was set up
manually over RV and LV. Cardiac output was
calculated from activity of each ROI. Car-
diac output of RV and LV correlated each
other well (r=0.83). Cardiac output of RV
correlated well with that from thermodilu-
tion method in most patients (r=0.43). Dis-
crepancy in a small number of patients could
be explained by poor positioning of the de-
tector. We have proved with the artificial
heart that each component of the great ves-
sels upon ROI causes elevation of the satu-
rating level resulting in apparent increase in
cardiac output. Radionuclide angiocardi-
ography with computer processing was proved
to be a simple and reliable method of meas-
uring cardiac output with the detector prop-
erly positioned.

EVALUATION FOR ACCURACY OF Qp/Qs RATIOS
DETERMINED BY RADIONUCLIDE METHOD USING
SIMULATED PULMONARY TIME-ACTIVITY CURVES
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This study was aimed to evaluate the
accuracy of pulmonary-to-systemic flow
ratios (Qp/Qs) in patients with left-to-
right (L-to-R) shunts determined by radio-
uclide (RN) method using simulated pulmo-

nary time-activity curve (simulated PTAC).
It was assumed that each component due to
initial passage, shunt flow and recircu-
alation in a PTAC could be expressed as
gamma functions respectively. Simulation
was performed as follows; 1) separation of
an original PTAC with L-to-R shunt into
two components using a gamma function, 2)
Variation of the Qp/Qs, appearance time of
shunt flow and recirculation, 3) Summation of
three components, 4) generation of noise
for the summed curve.

Thus obtained various simulated PTACs were
analyzed using the gamma function method
(GFM) and the deconvolution analysis (DA).
Linear regression analysis of the Qp/Qs
determined by GFM with those given in 24
simulated PTACs was r=0.89 (Y=0.84x + 0.28)
and DA showed higher correlation more than
GFM (r=0.97, Y=0.96x + 0.03).

It is considered that the evaluation for the
analytical accuracy which various RN
methods have for detection of the Qp/Qs is
possible without comparison with the Qp/Qs
by other methods with errors of measurement.

DETECTION OF TRANSIENT ISCHEMIC ATTACK OF
VARIANT ANGINA USING TI-201 MYOCARDIAL PER-
FUSION IMAGING. K. Fujita, K. Abe, N. Horayama,
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Fifteen patients with variant angina
undergoing coronary arteriography performed
TI-201 myocardial perfusion imaging (MPI).
In 11 out of 15 patients, MPI showed perfu-
sion defect transiently during attacks pro-
vided by methacholine (6/8), ergonovine
maleate (1/1) and treadmill or Master's two
step exercise (4/6). In a 28 y/o case with
old myocardial infarction, methacholine-
induced defect of TI-201 uptake suggested
transient coronary arterial spasm as a
cause of preceding myocardial infarction.
The site of perfusion defect induced by pro-
vocative methods was fairly concordant with
that of ST-segment elevation and coronary
arterial spasm. Therefore, MPI had a cli-
nic usefulness in detection of abnormal per-
fusion on attacks of variant angina.