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EVALUATION OF LEFT VENTRICULAR WALL MOTION
WITH FUNCTIONAL IMAGES. K.Nakajima,H.Bunko
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Functional images of left ventricular
wall motion, stroke volume(SV) image, ejec-
tion fraction(EF) image and paradox image
were generated in fifty patients and com-
pared with contrast left ventriculography in
twenty patients. Biplane contrast angio-
grams were assessed based on the reporting
system of American Heart Association grading
committee. Left ventriculogram was divided
into seven segments and severity of asynergy
was classified into four grades. Multi-gated
blood pool data were acquired using a
scintillation camera and a minicomputer
system in modified left anterior oblique
projection. Processing of functional images
were:SV image=ED image-ES image, EF image=
SV image/ED image, paradox image=ES image-
ED image(ED;end-diastolic, ES;end-systolic).
Detectability of EF image was better than SV
image, and paradox image was useful for the
detection of dyskinesis. As to location and
severity of asynergy, EF image and Segmental
wall motion of left ventriculography were
compared and had good correlations. The mean
value of ejection fraction image of left
ventricle was well correlated with ejection
fraction determined from left ventriculo-
graphy(n=50, r=0,94).

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COMPARISON OF LV WALL MOTION ANALYSIS AND
Tl MYOCARDIAL IMAGE IN MYOCARDIAL INFARCTION.
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As the most simple method, Tl myocardial
image (Tl) is performed to detect myocardial
infarction (MI) or ischemia.On the contrary,
gated LV wall motion analysis (WMA) was need
the expensive computer systems. But, recent
microprocessor controled γ-camera with image
memory can perform WMA very easily. The det-
ection of regional LV WM abnormalities prov-
ides strong evidence for the presence of
coronary heart disease. This study undertak-
en to determine which study is sensitive to
detect small MI. 39 pts. with clinically and
ECG, VCG prooved old MI were studied both
rest Tl and rest equilibrium WMA. Tl was
obtained by Searle Pho/Gamma V in Ant., LAO
20°,45°,70° and L.lat. views. WM image was
made using cardiac analysis program of
Searle Scintiview system in MLAO view. WMA
evaluated both cine display and extended
cardiac analysis program. This program makes
stroke volume (SV),ejection fraction (EF),
paradox SV and paradox EF images in 30 sec.
Tl failed to detect 9 of 27 small MI. WMA
missed only 5 of same MI. Number of abnor-
mal WM segments in 9 normal Tl pts. was 15.
And abnormal Tl segments in 5 normal WMA
pts. was 4. We conclude WMA is is usefull
method to detect small MI than Tl.

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REST-EXERCISE RADIONUCLIDE ANGIOCARDIOGRAPHY
AND REST-EXERCISE THALLIUM IMAGES IN THE
DETECTION OF EXERTIONAL ANGINA. M.Oshima,
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sity of Tsukuba, Ibaraki, Japan.

Supine rest-exercise (R-Ex) first-pass
radionuclide angiocardiogram (RNAC) using
by Baird-Atomic System 77 gamma camera and
R-Ex thallium-201 myocardial images (201-Tl)
were performed in 18 patients (pts) of exer-
tional angina and no pts had a history of
old infarction. Ex RNAC and Ex 201-Tl
images were acquired using the bicycle ergo-
meter in a supine position. All pts had an
appearance of typical anginal pain and hori-
zontal depression of ST segment during Ex.
Pts were divided into 2 groups (Gp). Twelve
(67%) Gp I pts demonstrated abnormal (abnl)
Ex LVEF (a fall or within +5% of resting
value) and 6 (33%) Gp II pts had normal (nl)
Ex LVEF (increase LVEF by 5%). In Gp I,
all (12/12) pts had abnl regional WM and 9
(9/12) pts had abnl 201-Tl defects. In Gp
II, 4 (4/6) pts had abnl regional WM and 5
(5/6) pts had abnl 201-Tl defects. Both
studies were abnl in 10 (10/12) Gp I pts,
in 4 (4/6) Gp II pts and were nl in 1 (1/18)
pt. More than 2 segmental abnormalities
were detected in 9 (9/18) pts by Ex WM,
while in 6 (6/18) pts by Ex 201-Tl. In
conclusion regional WM and 201-Tl during Ex
were closely related to myocardial perfusion
and the combination of both studies is an
useful method for the detection of exer-
tional angina.

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QUANTITATIV EVALUATION OF SERIAL TL-201 MYO-
CARDIAL SINTIGRAMS AFTER STRESS TESTING IN
ISCHEMIC HEART DISEASE. Y.WATANABE,A.SAKAI,
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Five normal subjects and 31 patients with
IHD were studied by stress test, and Tl-201
was injected 1 min before the end of the te-
st. Myocardial scintigrams in the three vi-
ews were recorded 10 min, 1 and 2 hours(pha-
se 0, 1 and 2) after the injection. The my-
ocardial wall was geometrically divided into
5 segments. At the area where the count rate
(Cts) was highest in phase 0 scintigrams,
the washout rate from phase i to j was de-
fined as $WR_{ij}=(maxCts_i-maxCts_j)/maxCts_i$
where Cts_i denoted Cts at phase i in the rel-
evant area. The redistribution index(Rd_{ij})
in each segment was defined as $Rd_{ij}=Cts_i \times
WR_{ij}+(Cts_i-Cts_j)/Cts_i$, where Cts_i denoted Cts
at phase i in the segment. The ischemic seg-
ment was identified as 70% or less of maxCts
0, while the infarcted segment by VCG in
phase 0 scintigram. Mean values of Rd_{02} in
the normal, ischemic and infarcted segments
were -6.1±5.6, 9.7±7.0 and 3.5±7.2%, respec-
tivly, and the differences were statistical-
ly significant(P<0.001). All the 26 anginal
patients except one showed WR_{12}/WR_{01} greater
than 1.0. When the peak pressure-rate prod-
uct that attained at the test was 200 or
more, it was significantly correlated with
WR_{02}(r=0.80). IN summary, the redistribution
index was helpful in quantitative assessment
of the ischemic segments. The finding of
$WR_{12}>WR_{01}$ after the stress was reliable in
suggesting myocardial ischemia.