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THE INFLUENCE OF INFARCT LOCATION AND SIZE ON CARDIAC FUNCTION BY RADIONUCLIDE METHOD. M. Shimizu, C. Noro, T. Mochizuki, K. Niizuma, S. Hirano, T. Tsuyusaki, R. Kikawada, K. Nakazawa and K. Ishii. Kitasato University School of Medicine, Kanagawa.

To elucidate the importance of infarct location and size on cardiac function, 48 pt. (G-B, anterior, n=29; G-C, inferior, n=19) were studied 4 wks. after the first attack of myocardial infarction (MI) comparing with 16 pt. of ischemic heart disease without MI (G-A). MI groups were further divided into 2 groups by peak CPK (peak CPK  $\geq 3000$  u, G-B<sub>L</sub> or G-C<sub>L</sub>; <3000, G-B<sub>S</sub> or G-C<sub>S</sub>). LVEF, regional LVEF (REF), peak filling rate (PFR) and SD of LV phase histogram (SD) were calculated by RI multigate method using full automatic program by Goris et al. MI groups had significantly lower LVEF, REF, and PRF and higher SD than G-A. Much effect on those parameters was seen in G-B<sub>L</sub>. In G-A, G-B, and G-C, good correlations were seen between LVEF and PFR, and between LVEF and SD ( $r=0.88$ ,  $r=-0.66$ ). In G-B, LVEF, PFR, and SD were correlated with peak CPK ( $r=-0.66$ ,  $r=-0.55$ ,  $r=0.67$ ), while no significant correlations were obtained in G-C.

Cardiac function was not influenced by the location in small MI size. However, cardiac pumping and diastolic functions, and asynchronous movement were much affected by infarct size only in G-B. This may suggest the important role of LV anterior wall on cardiac function.

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THE RADIONUCLIDE ASSESSMENT OF CLINICAL SIGNIFICANCE OF APICAL REGION IN MYOCARDIAL INFARCTION.

H. Mizuno, N. Aoki, T. Toyofuku, Y. Tahara, A. Ono, M. Okada and K. Ishikawa. The Second Department of Internal Medicine, Kyorin University School of Medicine, Tokyo.

We performed the gated radionuclide blood pool scan in 12 normal subjects and 50 patients with myocardial infarction (MI), to assess the clinical significance of apical region in MI (apical MI).

Patients with MI were divided into 4 groups. Group A: anteroapical MI with apical MI (17 patients), group B: anteroapical MI without apical MI (8 patients), group C: inferior MI with apical MI (8 patients), group D: inferior MI without apical MI (17 patients), respectively.

In normal subjects, regional ejection fraction in apical region (82.8±8.4%) was significantly higher than septal region (55.7±10.3%) and posterolateral region (68.8±11.4%).

Left ventricular ejection fraction was significantly lower in patients with apical MI compared with patients without apical MI in both anterior and posterior MI (group A vs group B, 38.9±15.3% vs 52.1±16.7%,  $p<0.05$ ; group C vs group D, 50.4±15.2% vs 64.8±9.2%,  $p<0.05$ ).

It was concluded that apical MI was one of the important determinant factors in cardiac function in MI.

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RADIONUCLIDE EVALUATION OF TREADMILL EXERCISE TEST IN PATIENTS WITH ANTERIOR AND INFERIOR MYOCARDIAL INFARCTION. C. Imaoka, N. Kanemoto, E. Kinoshita, M. Ide, Y. Goto and Y. Suzuki. Tokai University, Isehara.

We investigated the relation between radionuclide studies and the exercise tolerance soon after acute myocardial infarction (AMI). Subjects were 43 patients; 29 patients with anterior (ANT) and 14 with inferior myocardial infarction (INF); mean age 54 years. Radionuclide parameters were global EF (GEF), regional EF (MI site: MIEF, non-MI-site: NEF) obtained from Tc-99m-RNVG, total myocardial perfusion index (TMPI) from Tl-201 myocardial imaging and ECG score described by Palmeri et al. Treadmill exercise test (TEX) was firstly done from 10 days to 4 weeks using Naughton's protocol (N, heart rate limited) and secondly from 4 to 8 weeks using Bruce's protocol (B, submaximal) after AMI. Patients with ANT had significantly lower GEF, MIEF, TMPI higher ECG score than those with INF. And the positive incidence of Naughton's TEX was significantly higher in the former group ( $p<0.05$ ). However, as to the positive incidence of Bruce's TEX, no significant changes were noted between 2 groups. In both studies the patients with ST abnormalities showed larger infarct size and decreased left ventricular function.

Therefore we conclude that infarct size and left ventricular function show significant relationship with low grade TEX soon after AMI, but no correlation with submaximal TEX.

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DIFFERENT CARDIAC RESERVE TO EXERCISE STRESS BETWEEN ANTERIOR AND INFERIOR MYOCARDIAL INFARCTION. STUDY BY MULTIGRADE EXERCISE RADIONUCLIDE ANGIOGRAPHY.

K. Kodera, M. Uruma, K. Ojima, T. Tsuda, S. Hayashi, K. Watanabe, Y. Aizawa, Y. Arai, A. Shibata, M. Kimura\*, I. Odano\*, K. Sakai\*, H. Hama\*\*, T. Mitani\*\*. The First Department of Internal Medicine, \*The Department of Radiology, Niigata University School of Medicine, Niigata. \*\*Kido Hospital, Niigata.

Left ventricular responses to supine bicycle ergometer exercise were studied by gated radionuclide angiography, in 12 normal subjects, 11 patients with anterior myocardial infarction (anterior MI) and 9 patients with inferior myocardial infarction (inferior MI). Heart rate, blood pressure, double product, left ventricular ejection fraction (LVEF) and LV phase standard deviation (SD) were used as parameters which reflect cardiac reserve upon exercise. Changes of heart rate, blood pressure and double product occurred similarly in MI and control groups. But the changes in LVEF and SD were markedly different in three groups. Especially anterior MI group had lower LVEF and larger SD during exercise than inferior MI and control groups. This difference of exercise response must reflect cardiac reserve of each group.