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INFLUENCE OF WORK LOAD ON WASHOUT IN EXERCISE MYOCARDIAL SCINTIGRAPHY. T.Hiraoka,Y.Ishida BH.Kim,Y.Tsuneoka,M.Fukushima,M.Matsumoto, M.Inoue,H.Abe,Y.Nakamura*,H.Omori*,Y.Kusumi* and K.Kimura*. 1st Dept. of Med. and Div. of Nucl. Med*, Osaka Univ. Med. Sch. Osaka.

To evaluate the usefulness of regional washout in discrimination between normal and ischemic areas, exercise and redistribution myocardial LAO images were reviewed in 8 normals (Gp1), 16 pts with angina (Gp2), 21 pts with angina plus old myocardial infarction (Gp3) and 6 pts after coronary artery bypass grafting (Gp4). Percent decrease of Tl-201 counts(%W) was calculated in initial and delayed (2.5 hours after exercise) images. Images were divided into 3 areas. Apex was placed at 180°, then 3 ROIs of 60°-150°, 150°-210° and 210°-300° were assigned to LAD, RCA and LCX areas, respectively. %W in areas supplied by coronary arteries with less than 75% stenosis were higher than those with stenosis of more than 75% ($p < 0.001$). In Gp4, areas perfused by patent grafting vessels showed higher %W compared with those perfused by non-patent vessels. These results suggest that regional %W reflects coronary artery stenosis. However, regional %W in non ischemic areas which should be identical in Gp1, Gp2 and Gp3 were different as $37.7 \pm 8.6\%$, $23.4 \pm 10.5\%$ and $17.1 \pm 12.6\%$ and double products in these 3 groups were in the same descending order. Thus it is suggested that %W should be carefully interpreted in coronary artery disease to avoid overdiagnosis.

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MECHANISM OF EXERCISE INDUCED ST DEVIATION IN OLD MYOCARDIAL INFARCTION. H.Takahashi, M.Ifuku,R.Yamaguchi,M.Itaya,Y.Koga,F.Utsu, H.Toshima,M.Hirashima*,K.Kawakami*,M.Takagi*, Y.Shimokawa*, The 3rd Dept. of Int. Med., Kurume University, Kurume.*Yame Public Hospital, Yame.

To determine the mechanism of exercise induced ST deviation in old myocardial infarction, we performed exercise Tl-201 myocardial scintigraphy in 31 patients with old myocardial infarction. Each scintigram was divided circumferentially into 16 segments. And redistribution index (RDI) was calculated in each segment as: $RDI = URd - URi$ (URd and URi = uptake ratio in delayed and initial image). Transient perfusion defect was evaluated as abnormal RDI by comparing normal range (mean+2SD) obtained from 9 healthy volunteers. Abnormal RDI in non-infarcted area was observed in none of 7 patients without ST deviation, 6 of 9 with ST depression, one of 7 with ST elevation, and 5 of 8 with ST depression and elevation. These results were consistent to coronary arteriographic findings in non-infarcted area. To assess the transient ischemia in infarcted area, we compared RDI in infarcted area in ST deviation groups to those in no ST deviation group. And RDI in ST depression group and ST elevation group did not differ from those in no ST deviation group. Hence, the present study demonstrated that exercise induced ST depression shows the development of transient ischemia, but ST elevation does not indicate transient ischemia.

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EXERCISE THALLIUM-201 MYOCARDIAL IMAGING FOR DETECTION OF ADDITIONAL ISCHEMIA IN PATIENTS WITH PREVIOUS MYOCARDIAL INFARCTION. K.Yano, M.Sakai, H.Saito, H.Kubo, Y.Ohtsuka, H.Nomura, M.Matsui, H.Nishiwaki, Y.Saito, S.Ohnishi, M.Hoshino, H.Hirai, K.Ninomiya, K.Ebine, K.Ishida, S.Yabuki and K.Seki. Toho Univ. School of Med. Tokyo.

In 40 patients with previous myocardial infarction, exercise Tl-201 myocardial imaging (Tl-IM) was performed to detect additional myocardial ischemia. Patients were exercised in the upright position on a bicycle ergometer until the onset of limiting symptoms. Myocardial imaging was performed using Shimazu-LFOV scintillation camera and a high-sensitivity parallel-hole collimator. There was sensitivity for detecting infarcted area by Tl-IM in 37 of 40 patients (92%). However, it was difficult to detect ischemic lesion other than infarcted area in only 10 patients of 24 patients (41%) with multi-vessel disease. Conversely, 15 of 16 patients (94%) with single-vessel disease had no evidence of additional myocardial ischemia. These results suggest that in previous myocardial infarction, Tl-IM shows low sensitivity to predict multi-vessel disease, but high specificity.

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OBJECTIVE EVALUATION OF TRANSIENT PERFUSION DEFECT. M.Ifuku,H.Takahashi,R.Yamaguchi, M.Itaya,Y.Koga,F.Utsu,H.Toshima,M.Hirashima *K.Kawakami*,M.Takagi*,Y.Shimokawa* The 3rd Dept. of Int. Med, Kurume University, Kurume. *Yame Public Hospital, Yame.

This study assesses a new objective and quantitative evaluation of transient perfusion defect in Tl-201 myocardial scintigraphy. Myocardial images of 4 projection were divided into 8, 16 and 36 segments circumferentially and uptake ratio of each segment was calculated in the initial (URi) and 4 hour delayed (URd) images. Then, redistribution index (RDI) was calculated in each segment as: $RDI = URd - URi$ and was taken as transient ischemia when RDI exceeded its normal range (mean+2SD) obtained from 9 healthy controls. In the conventional uptake ratio method (UR), transient ischemia was defined when URi was below its normal range (mean-2SD). In the study subjects including 25 patients with significant CAD and 16 with chest pain syndrome, sensitivity (Sn), specificity (Sp) and diagnostic accuracy (Ac) were; 1) UR method, 8 seg. Sn=80%, Sp=62%, Ac=73%, 16 seg. Sn=88%, Sp=68%, Ac=80%, 36 seg. Sn=88%, Sp=43%, Ac=70%, 2) RDI method, 8 seg. Sn=64%, Sp=87%, Ac=73%, 16 seg. Sn=60%, Sp=87%, Ac=70%, 36 seg. Sn=76%, Sp=87%, Ac=80%. Thus the present RDI method proved to be valuable in assessing transient ischemia, being also applicable to evaluate it in the area of persistent defect in myocardial infarction.