SERUM TOTAL HOMOCYSTEINE LEVEL IS POSITIVELY RELATED TO THE PREVALENCE OF ISCHEMIC HEART DISEASE: THE MOHORN STUDY. E.K. Hoogeveen, P.J. Beeks, P.J. Kostense, C. Jakobs, L.M. Bouter and C.D.A. Stehouwer. Institute for Research in Extramural Medicine, Department of Internal Medicine, Department of Epidemiology and Biostatistics, Department of Clinical Chemistry, Vrije Universiteit Amsterdam

An elevated serum total homocysteine level is recognized as an important risk factor for atherosclerosis and thrombosis. The aim of this study was to evaluate the cross-sectional relationship between serum total homocysteine level and the prevalence of ischemic heart disease.

We studied an age-, sex- and glucose tolerance-stratified random sample (n = 631) from a 50-74 year-old Caucasian population. Any ischemic heart disease was defined as angina pectoris, a history of myocardial infarction, a history of coronary artery bypass grafting, (a) Minnesota Code(s) indicative of possible ischemic heart disease and/or a Cardiac Injury Score > 20.

After adjustment for age, sex, diabetes, hypertension, smoking and total cholesterol-HDL ratio, the odds ratio for any ischemic heart disease was 1.20 (95% CI, 1.01 to 1.43) per 3 µmol/L increase of serum total homocysteine level. Additional adjustment for serum creatinine did not change the odds ratio.

We conclude that an increase of the serum total homocysteine level is a risk factor for ischemic heart disease independent of the classic risk factors.

Impaired Age-Adjusted Peak VO2 in Patients with Mild Left Ventricular Dysfunction and Coronary Artery Disease. Wybe Nieuwland, Marlke A. Berkhuyzen, Dirk J. van Veldhuisen, Piet Rispens, K.I. Lie. University of Groningen, the Netherlands.

Most studies in patients with chronic heart failure (CHF) include only subjects with marked left ventricular (LV) dysfunction (i.e. LV ejection fraction [EF] ≤0.35). As a consequence, patients with mild systolic LV dysfunction are usually excluded from CHF trials. Whether exercise tolerance is impaired in these patients, and to what extent, is not clear.

We examined 56 male patients, post myocardial infarction, with LVEF 0.35-0.55, who either had no symptoms of CHF (NYHA I; 76%) or mild symptoms (NYHA II; 24%); mean age 52 ±10 and mean LVEF 0.46 ±0.06. Peak VO2 was adjusted for age and gender by relating it to predicted values. Mean peak VO2 was 2.3 ml/kg/min (range 10.9-43.9) for the whole group, and NYHA II did not differ from NYHA I with respect to peak VO2, while anaerobic threshold was significant lower in NYHA II (p < 0.01). In 70% of patients (n=42) age-adjusted peak VO2 was decreased (i.e. ≤ predicted peak VO2-1×SD or ≤81% of predicted peak VO2) (NYHA I: n=29/37) and in 31% (n=11; NYHA III: n=6/4) of them peak VO2 was severely decreased (i.e. ≤ predicted peak VO2-2×SD or ≤62% of predicted peak VO2). In patients with mild LV dysfunction, who have either no or only mild symptoms of CHF, a substantial proportion has a severely decreased age-adjusted peak VO2. This patient group is probably undiagnosed, which may have clinical and therapeutic implications.

INCREASE OF STRAIN IN NON-INFARCTED REMOTE REGIONS EARLY AFTER HUMAN MYOCARDIAL INFARCTION: ASSESSMENT BY MAGNETIC RESONANCE TAGGING AND 2-DIMENSIONAL STRAIN ANALYSIS. J.T. Van Rossum; J.M.W. Giebel; A.C. Van Rossum; J.P.A. Kuijer; J.T. Keijzer; R.M. Heethaar; C.A. Visse. Dept of Medical Physics and Informatics, Dept of Cardiology, Institute for Cardiovascular Research, Radboud University, Nijmegen, The Netherlands.

The purpose of this study was to assess the status of remote noninfarcted myocardium early after infarction.

Methods. Ten patients (age 52 ±11 yrs, males) had an anterior infarction due to an angiographically proven culprit lesion in the left anterior descending coronary artery. Within 8 ±3 days after infarction, MRI with tagging (7 mm grid) was performed at three short-axis images (basal, mid, apical) and one long-axis image parallel to the septum. Two-dimensional strain analysis of triangular finite elements was performed between end-diastole and end-systole. Patient data were compared to a healthy control group (n=8, age 53 ±10 yrs, males).

Results. The estimated left ventricular end-diastolic volume index was larger in the patients (69±15 ml/m2 versus 56±4 ml/m2, p<0.05). In the infarcted region (antero-apical at the mid-ventricular level), the first principal strain (maximum lengthening) was smaller, on the short-axis image (1.10±0.06 versus 1.27±0.04, p<0.001) as well as the long-axis image (1.12±0.06 versus 1.26±0.06, p<0.05). In the remote region (postero-lateral at the basal level), the first principal strain was larger on the short-axis image (1.48±0.11 versus 1.36±0.07, p<0.025) as well as on the long-axis image (1.36±0.10 versus 1.24±0.06, p<0.025).

Conclusion. Early after anterior myocardial infarction, remote noninfarcted myocardium shows compensatory increased contraction. The elevated left ventricular end-diastolic volume index supports a role of the Frank-Starling mechanism.


Many studies on the efficacy of thrombolytic therapy and risk-stratification after acute myocardial infarction (AMI) exclude pts with a QRS > 120 msec. In a prospective study during a two year period from 1990 until 1992, 431 pts with an acute myocardial infarction were enrolled. 24 hours after admission pts were grouped as having either bundle branch block (BBB) or narrow QRS (< 120 msec).

Methods: BBB was defined by QRS duration > 120 msec on the 12 lead ECG. When possible the ECGs were compared to registrations obtained before admission. The left ventricular ejection fraction (LVEF) was measured by echocardiography.

Results: During admission 19/431 (4.4%) pts died. After discharge 9/412 (2.2%) pts suffered a cardiac death, during 12 months follow up (FU). BBB was present in 34 patients. The BBB was pre-existing in 18 pts, unknown in 6 while 10 pts developed a new BBB.

Thrombolysis: LVEF<40% in hospital death follow up

| QRS & 120 msec | 977 | 204 (21%) | 95 | 24% | 15 | 16% | 65% | 75% |
| BBB | 10 | 6 (60%) | 8 | 67% | 0 | 0% | 90% | 0% |
| Pre-exist BBB | 18 | 4 (22%) | 8 | 44% | 0 | 0% | 91% | 0% |
| Unknown | 61 | 2 (33%) | 1 | 17% | 0 | 0% | 96% | 0% |

p-value: NS <0.05 <0.05 <0.05

Conclusion: Pts showing BBB 24 hours after MI have more often impaired left ventricular function than pts with narrow QRS. The pts with a new BBB are at increased risk for in hospital death (10 vs 4%). Pts with a pre-exist BBB have a worse prognosis following discharge (17% vs 3%) and receive thrombolytic therapy less frequently.