Ischaemic heart disease

“High take off” ST segments do not carry an adverse prognosis. First described in 1936, this study confirms that early repolarisation (high take-off) is more common in men, blacks (48% vs 26% with a normal ECG), and in people who take more exercise (10.4 hours per week of activity vs 6.4 hours). It is not associated with any increase in mortality, and patients with this pattern appear to have fewer arrhythmias. The danger lies in this normal variant being interpreted as acute myocardial infarction in the era of 30 minute door-to-door thrombolysis targets.

Primary angioplasty is better than thrombolysis. A total of 1572 patients with acute myocardial infarction were randomised with angioplasty or accelerated treatment with intravenous alteplase. Among patients who underwent randomisation at referral hospitals, the primary end point of death/myocardial infarction was 26% with a normal ECG), and in people who take more exercise (10.4 hours per week of activity vs 6.4 hours). It is not associated with any increase in mortality, and patients with this pattern appear to have fewer arrhythmias. The danger lies in this normal variant being interpreted as acute myocardial infarction in the era of 30 minute door-to-door thrombolysis targets.

Combination of low dose aspirin and ACE inhibitor treatment is not harmful. In patients on angiotensin converting enzyme (ACE) inhibitors for heart failure, treatment included no aspirin in 235 (group 1), a low dose (< 160 mg) in 45 (group 2), and a high dose (> 325 mg) in 64 (group 3). During a mean follow up of 37.6 months, there were 84 (36%) deaths in group 1, 15 (33%) in group 2, and 35 (55%) in group 3. Survival was similar in groups 1 and 2, and significantly (p = 0.009) worse in group 3 compared with groups 1 and 2. After adjusting for potential confounding factors (including treatment, cause of heart disease, age, smoking, and diabetes mellitus), a time dependent multivariable Cox proportional hazards regression analysis showed that the combination of high dose aspirin with an ACE inhibitor was independently associated with the risk of death (hazard ratio (HR) 1.03; p = 0.01) and that the combination of low dose aspirin with an ACE inhibitor was not (HR 1.02; p = 0.18).

Eplerenone is better tolerated than amldipidine. A total of 269 patients older than 50 years with systolic hypertension were randomised to either eplerenone 50 mg once daily (an aldosterone antagonist), or amldipidine 2.5 mg once daily, and titrated to a maximum 200 mg eplerenone or 10 mg amldipidine. Patients were followed up for 24 weeks. Quality of life questionnaires (SF-36 health survey) and a symptom distress index were administered at randomisation and 24 weeks after starting treatment. The systolic blood pressure response to eplerenone and amldipidine did not differ (eplerenone − 20.5 mm Hg and amldipidine − 20.1 mm Hg). There was an overall significant treatment effect on symptom distress in favour of eplerenone (p = 0.03). Indeed, the symptom distress index showed significant worsening distress in 36 of 71 symptoms in the amldipine arm and none in the eplerenone arm.

Heart failure

The CHARM offensive begins. ACE inhibitors have become standard treatment for patients with left ventricular systolic dysfunction. Angiotensin II receptor blockers (ARBs) may be an alternative or a useful additive treatment. Overall, 7601 patients (7599 with data) were randomly assigned candesartan (n = 3803, titrated to 32 mg once daily) or matching placebo (n = 3796), and followed up for at least two years. After an average of > 3 years follow up, 23% patients in the candesartan and 25% in the placebo group died (unadjusted HR 0.91, p = 0.055; covariate adjusted HR 0.90, p = 0.03), with fewer cardiovascular deaths (18% vs 20%, unadjusted HR 0.88, p = 0.012; covariate adjusted HR 0.87, p = 0.006) and hospital admissions for chronic heart failure (20% vs 24%, p < 0.0001) in the candesartan group. It did not matter if the ejection fraction was < 40% or not, nor if they were already on ACE inhibitors.

Hypertension

High dose simvastatin reduces arterial wall thickness in more than two thirds of the patients. After a washout period of six weeks, all patients with familial hypercholesterolaemia (FH) started monotherapy with simvastatin, 80 mg/day, for two years. The primary end point was the change (in mm) of the mean combined far wall intima/media thickness (IMT) of pre-defined carotid and femoral arterial segments at two years. Mean (SD) combined baseline IMT was 1.07 (0.23) mm. After treatment with simvastatin for two years, this IMT decreased by a mean of 0.081 mm (95% confidence interval (CI) − 0.109 to − 0.053; p < 0.001), with its largest reduction in the femoral artery (− 0.283 mm; p < 0.001). An actual decrease of combined IMT was seen in 69.8% of all patients. Furthermore, patients with FH who were treated with both statin and antihypertensive medication experienced a significantly greater benefit in terms of IMT reduction.

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Stroke risk in AF can be quantified. Previous calculations for stroke risk in atrial fibrillation (AF) have been developed from the Framingham Heart Study, of 868 eligible individuals with new onset AF, 705 were not treated with warfarin at baseline and were used in the derivation of the risk scores. During a mean follow up of 4.0 years free of warfarin use, stroke alone occurred in 83 participants and stroke or death occurred in 382 participants. A risk score for stroke was derived that included the following risk predictors: advancing age, female sex, increasing systolic blood pressure, prior stroke or transient ischemic attack, and diabetes. With the risk score, 14.3% of the cohort had a predicted five year stroke rate < 7.5% and 30.6% of the cohort had a predicted five year stroke rate < 10%. Actual stroke rates in these low risk groups were 1.1 and 1.5 per 100 person-years, respectively.

Basic science

Amlodipine in haemochromatosis? Iron overload cardiomyopathy, resulting from secondary iron overload disorders and in primary haemochromatosis, is responsible for considerable cardiovascular morbidity and mortality on a global scale. Myocardial injury is the major determinant of survival in patients with secondary iron overload, and also occurs in patients with primary haemochromatosis. A common feature of cells susceptible to iron overload, such as cardiac myocytes, pancreatic β cells, and anterior pituitary cells, is the large number and activity of L type voltage dependent Ca²⁺ channel (LVDCCs). To assess the role of LVDCCs in cardiac iron uptake, these investigators studied the impact of specific LVDCC blockers (amlodipine and verapamil) and cardiac specific overexpression of LVDCCs on iron overload cardiomyopathy in a mouse. Treatment with amlodipine and verapamil at therapeutic levels inhibited the LVDCC current in cardiomyocytes, attenuated myocardial iron accumulation and oxidative stress, improved survival, prevented hypotension, and preserved heart structure and function.

Journals scanned


Reviewers

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