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ISCHAEMIC HEART DISEASE

Off-pump CABG is quicker and safer? In nine experienced US hospitals, 680 off-pump coronary artery bypass graft (CABG) procedures were compared to 1733 standard procedures. After adjusting for patient characteristics and risk factors, including severity of coronary artery disease, left ventricular function, functional status, diabetes, renal function, peripheral vascular disease, age, and priority of surgery (elective, urgent, emergent), off-pump surgery was found to be associated with a highly significant reduction in complications (multivariable odds ratio (OR) 0.52, 95% confidence interval (CI) 0.38 to 0.70; \( p = 0.0001 \)) and operative death (OR 0.56, 95% CI 0.32 to 0.93; \( p = 0.033 \)). Off-pump surgery was also associated with significant reductions in operating theatre time and length of hospitalisation. The study was not powered to detect differences in individual complications.

Evidence supporting an invasive approach to treatment of acute coronary syndromes: In 2220 patients with unstable angina or non-ST elevation myocardial infarction an invasive strategy (routine catheterisation within 4–48 hours and revascularisation as appropriate) was compared to a more conservative strategy (catheterisation performed only if the patient had objective evidence of recurrent ischaemia or an abnormal stress test). All patients were treated with aspirin, heparin, and the glycoprotein Iib/IIIa inhibitor tirofiban. The primary end point was a composite of death, non-fatal myocardial infarction, and rehospitalisation for an acute coronary syndrome at six months. At six months, the rate of the primary end point was 15.9% with the early invasive strategy versus 19.4% with the conservative strategy (OR 0.78; \( p = 0.025 \)). The rate of death or non-fatal myocardial infarction at six months was similarly reduced (7.3% vs 9.5%, OR 0.74; \( p < 0.05 \)). This was despite the conservative arm having a 36% in-hospital revascularisation rate versus 60% for the invasive arm. The benefits were only seen in patients with troponin T > 0.1 ng/ml.

Is abciximab better than tirofiban? Seven large, randomised, placebo controlled trials involving a total of 16 770 patients who received pravastatin 40 mg once daily for 24 weeks and there was a median fall in CRP by 16.9% (\( p < 0.001 \)). These changes were related to more patients getting normal (TIMI III) flow (catheterisation performed only if the patient had objective evidence of recurrent ischaemia or an abnormal stress test). All patients were treated with aspirin, heparin, and the glycoprotein Iib/IIIa inhibitor tirofiban. The primary end point was a composite of death, non-fatal myocardial infarction, and rehospitalisation for an acute coronary syndrome at six months. At six months, the rate of the primary end point was 15.9% with the early invasive strategy versus 19.4% with the conservative strategy (OR 0.78; \( p = 0.025 \)). The rate of death or non-fatal myocardial infarction at six months was similarly reduced (7.3% vs 9.5%, OR 0.74; \( p < 0.05 \)). This was despite the conservative arm having a 36% in-hospital revascularisation rate versus 60% for the invasive arm. The benefits were only seen in patients with troponin T > 0.1 ng/ml.

In primary angioplasty with stenting, use abciximab as well: Primary angioplasty has an increasing body of evidence to support it as the optimal strategy in many cases of acute MI. Stenting reduces restenosis rates with angioplasty, while abciximab reduces acute complications. The ADMIRAL investigators showed that at six months, the use of abciximab before angiography in primary angioplasty with stenting for acute MI reduced the composite end point of death/MI/urgent target vessel revascularisation from 15.9% to 7.4% (\( p = 0.02 \)). The improvement was related to more patients getting normal (TIMI III) flow in the infarct related artery.

rTPA (reteplase) plus abciximab in acute MI confers no benefit over rTPA alone: A total of 16 588 patients in the first six hours of evolving ST segment elevation MI were randomised assigned standard dose reteplase (n = 8260) or half dose reteplase and full dose abciximab (n = 8328). There was no difference in death rates at 30 days, as the small reduction in death/MI rates with dual treatment was balanced by increased bleeding related complications.

Abciximab without intervention in acute coronary syndromes does not work? A multicentre trial to study the effect of the glycoprotein Iib/IIIa blocker abciximab on patients (n = 7800) with acute coronary syndromes who were not undergoing early revascularisation showed no benefit from treatment with abciximab (30 day death/MI rate 8.1% on placebo, 8.2% on abciximab for 24 hours, and 9.1% if treated for 48 hours, \( p = ns \)). Revascularisation was performed in 30% of cases, but in only 2% while on study medication (< 48 hours). No subgroup analysis (including troponin T positive patients) benefited. Does this indicate that abciximab without intervention is not beneficial as first line medical treatment in patients admitted with acute coronary syndrome? There is no explanation for why these results are at odds with the trials of eptifibatide (PURSUIT), tirofiban (PRISM, PRISM-PLUS) or lamifiban (PARAGON-B) in acute coronary syndrome.

Statins reduce C-reactive protein concentrations after 12 weeks: Pravastatin has anti-inflammatory effects as evidenced by a fall in C-reactive protein (CRP) in patients with hyperlipidaemia and coronary disease. Primary prevention patients (n > 1000) received pravastatin 40 mg once daily for 24 weeks and there was a median fall in CRP by 16.9% (\( p < 0.001 \)). These changes were first observed at 12 weeks. Similar reductions were achieved in secondary prevention. Fall in CRP was independent of low density lipoprotein cholesterol and it was concluded that statins may have anti-inflammatory effects.

How to choose patients for statin treatment: The concentration of CRP was measured at baseline and after one year in 5742 participants in the AP/TexCAPS primary prevention study of lovastatin treatment in patients with normal cholesterol. Lovastatin

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7 Albert MA, Danielson E, Rifai N, Ridker PM, for the PRINCE Investigators. Effect of statin therapy on C-reactive protein. The pravastatin inflammation/CRP evaluation (PRINCE): a randomized trial and a cohort study. JAMA 2001;286:64–70.
reduced the CRP concentration by 14.8% (p < 0.001), independently of the lipid lowering effect. Lovastatin reduced major cardiovascular events in those with high total cholesterol: high density lipoprotein (HDL) cholesterol ratios, but also in those with raised CRP. In contrast, lovastatin was ineffective among participants with a total cholesterol: HDL cholesterol ratio and a CRP concentration that were both low. So statins may help even if the lipids are classified as normal if the CRP is raised.


How to choose your physician? Does the average annual volume of acute MI cases treated by admitting physicians affect mortality? In a retrospective cohort of 98,194 patients by 5374 physicians, there was a strong inverse relation between number of acute MI patients treated by the physician and mortality at both 30 days and one year. At one year, mortality was 19.6% if the physician treated > 24 MI/year v 24.2% if he treated < 5/year.


The cure for in-stent restenosis: not antibiotics. The chlamidia story rolls on. Large scale trials on the use of antibiotic treatment to reduce coronary event rates have been inconclusive. This study of 10,010 patients looked for a reduction in in-stent restenosis (31% vs 29%, p = 0.43) or death/MI rates at one year (7% vs 6%, p = 0.45) with azithromycin versus placebo. None were seen, although a subanalysis suggested treating those with high chlamidia titres might be of benefit. More studies are needed.


HYPERTENSION

Blood pressure readings down the phone line: Hypertension control is often tricky, with frequent clinic visits needed to monitor progress. With telephonic transmission of blood pressure data to the physician and the patient, more rapid alterations in medication were made in the active management group (blood pressure drop of 5 mm Hg systolic and 2.9 mm Hg diastolic) versus the standard care group.


GENERAL CARDIOLOGY

If you survive the arterial switch operation as a neonate, you will get to age 10: The arterial switch operation is judged the best palliative operation for neonates with transposed great arteries. This paper reports a large series (432 neonates) of unselected cases undergoing this technically demanding operation and formulates a realistic prognosis. Survival probability and freedom from reoperation was 94% and 78% at 10 years, respectively. Obstruction of the translocated coronary arteries was responsible for most deaths and a substantial number of reoperations.


A gene for Wolf-Parkinson-White syndrome: Wolf-Parkinson-White (WPW) syndrome affects 1 in 1500 people. There is an affected first degree relative in 3.5%, and an autosomal dominant inheritance in familial forms. The gene defect in such cases has now been mapped in two families to chromosome 7, coding for an AMP activated protein kinase. Two separate mutations were found, and perhaps sporadic WPW may also be caused by defects in this enzyme.


We need to do more: A survey of GP practices showed that 25% of male patients with known coronary heart disease (CHD) still smoked, and 50% had a cholesterol concentration > 5 mmol/l. However, only 18% were on statin treatment, and perhaps even more disturbingly, only 50% were taking aspirin. Of course, we need to look for patients with CHD more aggressively (with chest pain clinics, etc), but we also need to treat the ones we have spotted more effectively.


Faster ambulances save lives: The ambulances in Scotland aim to be at a cardiac arrest in < 14 minutes in 905 of cases. Survival to discharge is 6%, and is closely related to response time. If the 90th centile of response time was reduced to five minutes, survival might improve to 10–11%. The alternative is to train the public in the use of automated defibrillators...and then provide easy access to these machines.


Fruit and vegetables are good for you: In the search for recent literature to back up the healthy lifestyle advice that needs to be given to CHD patients, this paper confirms the obvious: that the more fruit and vegetables you eat, the lower your risk of CHD. Those in the highest quintile of intake had a 20% lower risk of CHD than those who ate least. Fruit containing vitamin C appeared to be most beneficial.


No test can say you are risk-free: If the pre-test likelihood of coronary disease is < 25%, then even stress echocardiography is not good at predicting events. In a study of 571 men and 1047 women followed for three years, there were 19 cardiac events (six cardiac deaths and 13 non-fatal myocardial infarctions); an additional 37 patients underwent coronary revascularisation. In a multivariate analysis of clinical, exercise electrocardiographic, and echocardiographic parameters, exercise wall motion score index (hazard ratio (HR) 2.1 per 0.5 units, 95% CI 1.3 to 3.4), and age (HR 2.0 per decade, 95% CI 1.2 to 2.8) were independently associated with the risk of cardiac events. Although abnormalities on stress echo contributed to a model of the risk of adverse events, only 50% of patients with cardiac events were identified in this way. The risk is so low that it makes no economic (or clinical) sense to perform stress echos in this group.


BASIC RESEARCH

Nicotine, not just the tar, accelerates atherosclerosis: With a combination of in vitro and murine in vivo experiments these investigators showed that nicotine induces angiogenesis and accelerates the progression of tumours and atherosclerosis at pathophysiologically relevant concentrations. These findings are
relevant for the therapeutic use of nicotine in tobacco cessation and potential neurological indications—for example, Alzheimer's disease and chronic pain relief.


HDL is protective, but how? The risk of atherosclerosis is inversely proportional to the concentration of HDL cholesterol but the mechanism by which HDL is protective is not well understood. HDL down regulates adhesion molecule expression. This report shows that HDL stimulates endothelial nitric oxide synthase and enhances endothelium and nitric oxide dependent aortic relaxation. This mechanism may also be important to the atheroprotective properties of HDL.


IMAGES IN CARDIOLOGY

Isolated halo sign in the middle of the left atrium

A 67 year old woman was successfully operated on for rheumatoid mitral stenosis, and a St Jude prosthetic mitral valve was replaced. Severe mitral stenosis, mild mitral regurgitation, and moderate tricuspid regurgitation was observed on transthoracic echocardiography before the operation. Transthoracic echocardiography on the fourth postoperative day revealed a colour flow convergence and Doppler flow; at first these findings were considered suspicious for prosthetic paravalvar regurgitation. Transoesophageal echocardiography was subsequently undertaken. At a scanning plane 115–125°, a strange halo sign was found in the middle of the left atrium on the proximal view. Colour Doppler imaging showed a isolated coloured halo image, and there was no connection between this image and left atrial wall or prosthetic mitral valve (below left; LA, left atrium). This coloured halo image disappeared at diastole and then reappeared at systole. Decremental rotation of the probe angle revealed a large interatrial aneurysm type II (below right, RA, right atrium; IAS, interatrial septum; TR, tricuspid regurgitation) and moderate tricuspid regurgitation, which was eccentrically positioned towards the aneurysmatic pouch. None of the paravalvar prosthetic mitral regurgitation was detected.

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