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## ISCHAEMIC HEART DISEASE

**NT-proBNP predicts long term mortality** ▶ N terminal pro-B-type natriuretic peptide (NT-proBNP) was measured in baseline serum samples from 1034 patients referred for angiography because of symptoms or signs of coronary heart disease. The rate of death from all causes was determined after a median follow up of nine years. At follow up, 288 patients had died. The median NT-proBNP concentration was significantly lower among patients who survived than among those who died (120 pg/ml, interquartile range (IQR) 50–318 pg/ml, v 386 pg/ml, IQR 146–897 pg/ml;  $p < 0.001$ ). Patients with NT-proBNP concentrations in the highest quartile were older, had a lower left ventricular ejection fraction (LVEF) and a lower creatinine clearance rate, and were more likely to have a history of myocardial infarction, clinically significant coronary artery disease, and diabetes than patients with NT-proBNP concentrations in the lowest quartile. In a multivariable Cox regression model, the hazard ratio for death from any cause for the patients with NT-proBNP concentrations in the fourth quartile as compared with those in the first quartile was 2.4 (95% confidence interval (CI) 1.5 to 4.0;  $p < 0.001$ ); the NT-proBNP concentration added prognostic information beyond that provided by conventional risk factors, including the patient's age, LVEF, and the presence or absence of clinically significant coronary artery disease on angiography.

▲ Kragelund C, Grønning B, Køber L, *et al.* N-terminal pro-B-type natriuretic peptide and long-term mortality in stable coronary heart disease. *N Engl J Med* 2005;352:666–75.

### Distal protection does not protect in primary angioplasty

▶ In 501 patients treated with primary angioplasty for ST elevation myocardial infarction (STEMI), 252 patients were assigned to distal protection with the Percusurge system, and the rest to conventional treatment. Co-primary end points were ST segment resolution (STR) measured 30 minutes after percutaneous coronary intervention (PCI) by continuous Holter monitoring and infarct size measured by technetium Tc99m sestamibi imaging between days 5 and 14. Secondary end points included major adverse cardiac events. Among the 252 patients assigned to distal protection, aspiration was performed in 97% (242/251), all angioplasty balloon inflations were fully protected in 79% (193/245), and visible debris was retrieved from 73% (182/250). Complete STR was achieved in a similar proportion perfused with versus without distal protection (63.3% v 61.9%, respectively, absolute difference 1.4%;  $p = 0.78$ ), and left ventricular infarct size was similar in both groups (median 12.0% v 9.5%, respectively;  $p = 0.15$ ). Major adverse cardiac events at six months occurred with similar frequency in the distal protection and control groups (10.0% v 11.0%, respectively;  $p = 0.66$ ). Therefore, there was no difference in clinical outcomes despite retrieval of some debris.

▲ Stone GW, Webb J, Cox DA, *et al.* for the Enhanced Myocardial Efficacy and Recovery by Aspiration of Liberated Debris (EMERALD) Investigators. Distal microcirculatory protection during percutaneous coronary intervention in acute ST-segment elevation myocardial infarction: a randomized controlled trial. *JAMA* 2005;293:1063–72.

**Publish first or someone might do it for you** ▶ The Freedom of Information Act allows access to all sorts of data from hospital systems. One type of data is about individual surgeon statistics for cardiac surgery. No system risk adjusts for the clinical risk of the patient fully, but EuroScore is widely used. One group of surgeons has published data on this basis. A total of 10 163 patients underwent surgery under the care of 25 surgeons. The average number of patients per surgeon was 363 for coronary artery

surgery and 44 for aortic valve replacement. Seventeen per cent of the patients undergoing coronary artery surgery and half of those undergoing aortic valve surgery were considered high risk. The average mortality was 1.8% (range 0–3.8%) for coronary surgery and 1.9% (0–12.5%) for aortic valve surgery. Mortality for all surgeons fell below 99% control limits of the national mean for both operations.

▲ Bridgewater B, on behalf of the Adult Cardiac Surgeons of North West England. Mortality data in adult cardiac surgery for named surgeons: retrospective examination of prospectively collected data on coronary artery surgery and aortic valve replacement. *BMJ* 2005;330:506–10.

### Who receives intervention or surgery with ACS, and is it worth it?

▶ Use of PCI or coronary artery bypass graft surgery, death, infarction after discharge, stroke, or major bleeding was assessed in 28 825 patients across the world in the GRACE registry. Most patients (77%) across all regions (USA, Europe, Argentina, Brazil, Australia, New Zealand, Canada) were admitted to hospitals with catheterisation facilities. As expected, the availability of a catheterisation laboratory was associated with more frequent use of PCI (41% v 3.9%;  $p < 0.001$ ) and coronary artery bypass graft (7.1% v 0.7%;  $p < 0.001$ ). After adjustment for baseline characteristics, medical history, and geographical region there were no significant differences in the risk of early death between patients in hospitals with or without catheterisation facilities (odds ratio (OR) 1.13, 95% CI 0.98 to 1.30, for death in hospital; hazard ratio (HR) 1.05, 95% CI 0.93 to 1.18, for death at 30 days). The risk of death at six months was significantly higher in patients first admitted to hospitals with catheterisation facilities (HR 1.14, 95% CI 1.03 to 1.26), as was the risk of bleeding complications in hospital (OR 1.94, 95% CI 1.57 to 2.39) and stroke (OR 1.53, 95% CI 1.10 to 2.14). The data appeared consistent in STEMI and non-STEMI, and is not in accord with recent randomised trials. The cause of this is not clear, but these results suggest that immediate angiography for all may not be the answer.

▲ Van de Werf F, Gore JM, Avezum A, *et al.* for the GRACE Investigators. Access to catheterisation facilities in patients admitted with acute coronary syndrome: multinational registry study. *BMJ* 2005;330:441.

## GENERAL CARDIOLOGY

### If you have a prosthetic valve, *S aureus* bacteraemia causes endocarditis in 50% of cases

▶ Incidence of endocarditis in prosthetic valves is 0.4% per annum. During a 94 month study period, 1123 patients were diagnosed with *Staphylococcus aureus* bacteraemia. A prosthetic mitral valve or ring was present in 51 of these patients (4%). The overall rate of definite prosthetic valve endocarditis among the study patients was 26/51 (51%). The risk of endocarditis was similar in patients with late ( $\geq 12$  months after valve implantation) versus early *S aureus* bacteraemia ( $< 12$  months after prosthetic valve implantation) (50% v 52%,  $p = 1.0$ ), mitral versus aortic prostheses (62% v 48%,  $p = 0.24$ ), and mechanical versus bioprosthetic valves (62% v 44%,  $p = 0.29$ ). The 12 week mortality was higher among patients with definite versus possible endocarditis (62% v 28%,  $p = 0.019$ ). In addition, 10% of those with definite endocarditis had negative transoesophageal echocardiograms.

▲ El-Ahdab F, Benjamin DK, Wang A, *et al.* Risk of endocarditis among patients with prosthetic valves and *Staphylococcus aureus* bacteremia. *Am J Med* 2005;118:225–9.

**Fish and disease prevention** ▶ During 19 years of follow up of a Japanese cohort of patients, there were 1745 deaths. Subjects were divided into five groups according to fish consumption frequency. The multivariate Cox analyses showed that relative risks for subjects who ate fish more than twice daily compared with those of subjects who ate 1–2 times weekly were 0.99 (95% CI 0.77 to 1.27) for all cause, 1.26 (95% CI 0.70 to 2.29) for stroke, 0.92 (95% CI 0.20 to 4.23) for cerebral haemorrhage, 1.09 (95% CI 0.48 to 2.43) for cerebral infarction, and 0.91 (95% CI 0.35 to

2.35) for coronary heart disease mortality. These results did not provide evidence in support of the fish hypothesis, perhaps because the majority of the Japanese subjects in the study ate fish more than the threshold level shown to be beneficial in the previous studies.

▲ Nakamura Y, Ueshima H, Okamura T, *et al* for the NIPPON DATA80 Research Group. Association between fish consumption and all-cause and cause-specific mortality in Japan: NIPPON DATA80, 1980–99. *Am J Med* 2005;**118**:239–45.

**Should we treat asymptomatic mitral regurgitation surgically?** ► This study enrolled 456 asymptomatic patients (mean (SD) age 63 (14) years; 63% men; ejection fraction 70 (8)% with asymptomatic organic mitral regurgitation, quantified according to current recommendations (regurgitant volume 66 (40) ml/beat; effective regurgitant orifice 40 (27) mm<sup>2</sup>). The estimated five year rates (SE) of death from any cause, death from cardiac causes, and cardiac events (death from cardiac causes, heart failure, or new atrial fibrillation) with medical management were 22 (3)%, 14 (3)%, and 33 (3)%, respectively. Independent determinants of survival were increasing age, the presence of diabetes, and increasing effective regurgitant orifice. As compared with patients with a regurgitant orifice of < 20 mm<sup>2</sup>, those with an orifice of at least 40 mm<sup>2</sup> had an increased risk of death from any cause (adjusted risk ratio (ARR) 2.90, 95% CI 1.33 to 6.32; *p* < 0.01), death from cardiac causes (ARR 5.21, 95% CI 1.98 to 14.40; *p* < 0.01), and cardiac events (ARR 5.66, 95% CI 3.07 to 10.56; *p* < 0.01). Cardiac surgery was ultimately performed in 232 patients and was independently associated with improved survival (ARR 0.28, 95% CI 0.14 to 0.55; *p* < 0.01). The importance of these findings and their significance as far as clinical practice is concerned are discussed critically in an excellent accompanying editorial.

▲ Enriquez-Sarano M, Avierinos J-F, Messika-Zeitoun D, *et al*. Quantitative determinants of the outcome of asymptomatic mitral regurgitation. *N Engl J Med* 2005;**352**:875–83.

▲ Otto CM, Salerno CT. Timing of surgery in asymptomatic mitral regurgitation. *N Engl J Med* 2005;**352**:928–9.

**Ximelagatran is equivalent to warfarin in stroke prevention** ► Adjusted dose warfarin (aiming for an international normalised ratio (INR) 2.0–3.0) or fixed dose oral ximelagatran, 36 mg twice daily, were used in patients with non-rheumatic atrial fibrillation. During 6405 patient-years (mean 20 months) of follow up, 88 patients experienced primary events. The mean (SD) INR with warfarin (2.4 (0.8)) was within target during 68% of the treatment period. The primary event rate with ximelagatran was 1.6% per year and with warfarin was 1.2% per year (absolute difference 0.45% per year, 95% CI –0.13% to 1.03% per year; *p* < 0.001 for the predefined non-inferiority hypothesis). When all cause mortality was included in addition to stroke and systemic embolic events, the rate difference was 0.10% per year (95% CI –0.97% to 1.2% per year; *p* = 0.86). There was no difference between treatment groups in rates of major bleeding, but total bleeding (major and minor) was lower with ximelagatran (37% v 47% per year, 95% CI for the difference –1.4% to –6.0% per year; *p* < 0.001). Serum alanine aminotransferase concentrations rose to more than three times the upper limit of normal in 6.0% of patients treated with ximelagatran, usually within six months, and typically declined whether or not treatment continued; however, one case of documented fatal liver disease and one other suggestive case occurred. This last part means that this drug may not be the one that breaks the market, but its successors are likely to. The paper by O'Brien and Gage suggest that it will not be cost effective in any case. Warfarin lives on, at least for the time being.

▲ SPORTIF Executive Steering Committee for the SPORTIF V Investigators. Ximelagatran vs warfarin for stroke prevention in patients with nonvalvular atrial fibrillation: a randomized trial. *JAMA* 2005;**293**:690–8.

▲ O'Brien CL, Gage BF. Costs and effectiveness of ximelagatran for stroke prophylaxis in chronic atrial fibrillation. *JAMA* 2005;**293**:699–706.

#### Journals scanned

American Journal of Medicine; American Journal of Physiology: Heart and Circulatory Physiology; Annals of Emergency Medicine; Annals of Thoracic Surgery; Archives of Internal Medicine; BMJ; Chest; European Journal of Cardiothoracic Surgery; Lancet; JAMA; Journal of Clinical Investigation; Journal of Diabetes and its Complications; Journal of Immunology; Journal of Thoracic and Cardiovascular Surgery; Nature

Medicine; New England Journal of Medicine; Pharmacoeconomics; Thorax

#### Reviewers

Dr Diana Gorog, Dr Akhil Kapur, Dr Masood Khan, Dr Alistair Lindsay, Dr Andrew Sharp

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I Janszky, M Ericson, M Blom, A Georgiades, J-O Magnusson, H Alinagizadeh, S Ahnve  
March 2005;**91**:314–8. (Cardiovascular medicine)

#### 2 New insights into the pathology of inherited cardiomyopathy

S E Hughes, W J McKenna  
February 2005;**91**:257–64.

#### 3 Non-invasive multislice CT coronary imaging

N R Mollet, F Cademartiri, P J de Feyter  
March 2005;**91**:401–7. (Education in Heart)

#### 4 Diagnosis and management of sudden cardiac death

P S Spector  
March 2005;**91**:408–13. (Education in Heart)

#### 5 Investigation and management of chest pain

K F Fox  
January 2005;**91**:105–10. (Education in Heart)

#### 6 Human stress cardiomyopathy mimicking acute myocardial syndrome

D Pavin, H Le Breton, C Daubert  
November 1997;**78**:509–11. (Case report)

#### 7 Tissue Doppler, strain, and strain rate echocardiography for the assessment of left and right systolic ventricular function

D Pellerin, R Sharma, P Elliott, C Veyrat  
November 2003;**89**(suppl III):iii9–17. (Supplement)

#### 8 Left ventricular hypertrophy in hypertension: its arrhythmogenic potential

T Kahan, L Bergfeldt  
February 2005;**91**:250–6. (Education in Heart)

#### 9 Management of hypertension before, during, and after pregnancy

P R James, C Nelson-Piercy  
December 2004;**90**:1499–504. (Education in Heart)

#### 10 Contemporary management of acute coronary syndromes: does the practice match the evidence? The global registry of acute coronary events (GRACE)

K F Carruthers, O H Dabbous, M D Flather, I Starkey, A Jacob, D MacLeod, K A A Fox, on behalf of the GRACE Investigators  
March 2005;**91**:290–8. (Education in Heart)

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