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Ischaemic heart disease

Improving triage of chest pain: man and computer combined? ▶ In US studies, 2% of acute myocardial infarction (MI) and 2% of unstable angina patients are wrongly triaged as low risk and sent home. These patients suffer a 1.9× higher mortality than those treated appropriately. This study compared physicians to a computer model for 20 simulated scenarios. The experience level of physicians did not affect performance, and all were more cautious than the model, leading to lower sensitivity (85% v 96%, $p = 0.02$). However, physicians sent home 2.4% of patients when complications would have occurred versus 0.6% for the model. Physicians may be able to use the model, combined with biochemical markers, to improve their performance. Since the model requires a history to be properly taken, the physician has not (yet) become redundant.

▲ **Reilly BM**, Evans AT, Schaidler JJ, Wang Y. Triage of patients with chest pain in the emergency department: a comparative study of physicians' decisions. *Am J Med* 2002;**112**:95–103.

30% of patients with ST elevation MIs miss out on treatment ▶ A multinational registry found that, of 1763 patients with ST elevation MI (STEMI) presented within 12 hours of symptom onset, 30% did not receive appropriate reperfusion treatment. Mortality was 5% with treatment and 10% without. In hospitals with catheter labs, 19% of cases had angioplasty (these centres were almost all in the USA). This registry confirms that the older patient, the diabetic, and those with previous grafts miss out on thrombolysis.

▲ **Eagle KA**, Goodman SG, Avezum Á, Budaj A, Sullivan CM, López-Sendón J, for the GRACE Investigators. Practice variation and missed opportunities for reperfusion in ST-segment-elevation myocardial infarction: findings from the global registry of acute coronary events (GRACE). *Lancet* 2002;**359**:373–7.

Gp IIb/IIIa blockers reduce 30 day mortality by 1% in ACS

▶ This is a meta-analysis of the use of glycoprotein (Gp) IIb/IIIa blockers in over 30 000 patients with acute coronary syndromes (ACS). Overall 30 day mortality has been reduced from 11.8% to 10.8% by treatment (relative risk reduction 0.91, $p = 0.015$). The same risk reduction is present in most patient groups, with those at highest risk gaining most benefit. Bleeding was increased from 1.4% to 2.4% ($p < 0.0001$), but there was no rise in intracranial bleeds. The benefits of Gp IIb/IIIa blockers were additional to aspirin and unfractionated heparin. This analysis of the available data suggests that we should be treating the ACS patients with aspirin, heparin, and a Gp IIb/IIIa blocker for the first few days, performing an angioplasty, and then keeping them on clopidogrel for up to nine months. It is unclear if any UK hospital is achieving this goal.

▲ **Boersma E**, Harrington RA, Moliterno DJ, White H, Théroux P, Van de Werf F, de Torbal A, Armstrong PW, Wallentin LC, Wilcox RG, Simes J, Califf RM, Topol EJ, Simoons ML. Platelet glycoprotein IIb/IIIa inhibitors in acute coronary syndromes: a meta-analysis of all major randomised clinical trials. *Lancet* 2002;**359**:189–98

Use aspirin when CHD risk is > 1% per year ▶ Although aspirin is a relatively safe drug, the bleeding risk outweighs its cardiovascular benefits in some patients. The choice is most difficult in low coronary heart disease (CHD) risk groups. US guidelines have been published which review the evidence and suggest a 5% five year CHD risk as the cut off. The possible added benefits of clopidogrel are obviously counterbalanced by its much higher cost, making it less suitable for low risk patients.

▲ **Sox HC**, for the US Preventive Services Task Force. Aspirin for the primary prevention of cardiovascular events. *Ann Intern Med* 2002;**136**:157–60 (summary) and 161–72 (evidence).

Easier to take a pill than change the lifestyle, but not as effective as the combination ▶ Dietary treatment and HMG-CoA reductase inhibitors have been shown, in secondary prevention trials, to reduce cardiovascular morbidity and mortality. The effects of diet and simvastatin are independent and additive. Simvastatin increased insulin concentrations and reduced antioxidants compared to diet alone.

▲ **Jula A**, Marniemi J, Huupponen R, Virtanen A, Rastas M, Rönönen T. Effects of diet and simvastatin on serum lipids, insulin, and antioxidants in hypercholesterolemic men. *JAMA* 2002;**287**:598–605.

Viagra safety data in CHD patients ▶ Erectile dysfunction is common in the CHD population. Sildenafil (Viagra) is increasingly seen as the solution. This study assessed exercise performance on a supine bicycle with placebo or sildenafil 50–100 mg in 100 men with CHD. There was no difference in the extent of ischaemia on ECG or echocardiography, but blood pressure was 7 mm Hg lower ($p < 0.001$) in the sildenafil group. None were on nitrates.

▲ **Arruda-Olson AM**, Mahoney DW, Nehra A, Leckel M, Pellikka PA. Cardiovascular effects of sildenafil during exercise in men with known or probable coronary artery disease *JAMA* 2002;**287**:719–25.

CABG in the octogenarian is as safe as at 70 ▶ Coronary artery bypass graft (CABG) surgery is not usually offered for prognostic benefit in the over 70s, but if it is needed, can it be safely done? Most units now accept patients over the age of 70. Smith and colleagues looked at 1034 patients over a three year period and demonstrated equivalent rates for early death (3.3–5.7%) and total length of stay (12 days) in those aged 70–74, 75–79, and over 80 years. Only 71 patients over 80 years old were included. Rosengart and colleagues studied 100 consecutive cases over age 80 operated on in one institution. Mortality at 30 days was 7%, with an average stay of 17 days. Major complications occurred in 14%, but overall, median survival was about two years for CABG, three years for CABG plus valve surgery, and four years for patients with valve surgery alone. In particular, quality of life was improved in the majority of patients.

▲ **Smith KM**, Lamy A, Arthur HM, Gafni A, Kent R. *et al.* Outcomes and costs of coronary artery bypass grafting: comparison between octogenarians and septuagenarians at a tertiary care centre. *Can Med Assoc J* 2001;**165**:759–64.

▲ **Rosengart TK**, Finnin EB, Kim DY, Samy SA, Tanhehco Y, Ko W, Lang SJ, Krieger KH, Isom OW. Open heart surgery in the elderly: results from a consecutive series of 100 patients aged 85 years or older. *Am J Med* 2002;**112**:143–7.

Both PTCA and stenting in small diabetic vessels are bad

▶ Angioplasty in small vessels (2–2.9 mm diameter) is associated with high restenosis rates, especially after stenting. The 100 diabetic patients in a randomised trial of small vessel stenting versus coronary angioplasty (PTCA) has shown that both groups had a 44% restenosis rate at one year. Further, revascularisation was required in 20–25%. The new coated stents, which may drastically reduce in-stent restenosis rates, are eagerly awaited, particularly for this group of patients.

▲ **Mehilli J**, Kastrati A, Dirsching J, Dotzer F, Pache J, Hausleiter J, Kramer W, Schühlen H, Schömig A. Comparison of stenting with balloon angioplasty for lesions of small coronary vessels in patients with diabetes mellitus. *Am J Med* 2002;**112**:13–18.

Brachytherapy for in-stent restenosis ▶ Stents reduce restenosis rates, but once restenosis occurs (as it does in 10–30% of cases), treatment options are limited. Any percutaneous intervention will cause re-stenosis in up to 50% of cases. β Radiation delivered at the time of such treatment has been shown to reduce this recurrence rate. In a trial of 332 patients with diffuse in-stent restenosis, 24 (15%) patients in the irradiated group suffered

death, MI, or repeat target lesion revascularisation at nine months versus 15 (31%) in the placebo group (difference 16%, 95% confidence interval (CI) 7% to 25%, $p = 0.0006$). Angiographic restenosis rate was lower in the radiated group than the placebo group for the entire analysed segment (26% v 52%, $p < 0.0001$). Again the advent of coated stents may limit the use of this technology.

▲ **Waksman R**, Raizner AE, Yeung AC, Lansky AJ, Vandertie L, on behalf of the INHIBIT Investigators. Use of localised intracoronary β radiation in treatment of in stent restenosis: the INHIBIT randomised controlled trial. *Lancet* 2002;**359**:551–7.

Heart failure

Use of ACE inhibitors in dialysis patients ▶ Angiotensin converting enzyme (ACE) inhibitors can cause renal failure and hyperkalaemia in the patient with renal function of their own. It might be thought that this would not be a problem in anuric patients on haemodialysis; however, in such patients the risk of a potassium concentration greater than 5.5 mmol/l is 2.2 \times (95% CI 1.4 to 3.4) higher in those on ACE inhibitors.

▲ **Knoll GA**, Sahgal A, Nair RC, Graham J, van Walraven C, Burns KD. Renin-angiotensin system blockade and the risk of hyperkalemia in chronic hemodialysis patients. *Am J Med* 2002;**112**:110–14.

Moderate alcohol consumption and heart failure ▶ Data from the Framingham study suggest that moderate alcohol consumption reduces the risk of heart failure, presumably by protecting against CHD. Men taking > 15 drinks per week were still not at higher risk than non-drinkers. Once alcoholic cardiomyopathy has developed, abstinence (or < 4 drinks per day) improved cardiac function compared to continued heavy drinking.

▲ **Walsh CR**, Larson MG, Evans JC, Djousse L, Ellison RC, Vasan RS, Levy D. Alcohol consumption and risk for congestive heart failure in the Framingham heart study. *Ann Intern Med* 2002;**136**:181–91

▲ **Nicolás JM**, Fernández-Solà J, Estruch R, Paré JC, Sacanella E, Urbano-Márquez A, Rubin E. The effect of controlled drinking in alcoholic cardiomyopathy. *Ann Intern Med* 2002;**136**:191–200.

Hypertension

White coat hypertension may need treatment ▶ Normotensive (NT) (day time blood pressure (BP) < 130/80 mm Hg, clinic BP < 135/85 mm Hg), clinic only hypertensive (COHT), and always hypertensive (HT) (BP > 140/90 mm Hg always) patients were enrolled and the NT and COHT groups matched for daytime BP, while the COHT and HT groups were matched for clinic BP. COHT may not be benign as this group had significantly more left ventricular hypertrophy and more diastolic dysfunction than the NT group.

▲ **Grandi AM**, Broggi R, Colombo S, Santillo R, Imperiale D, Bertolini A, Guasti L, Venco A. Left ventricular changes in isolated office hypertension. A blood pressure-matched comparison with normotension and sustained hypertension. *Arch Intern Med* 2001;**161**:2677–81.

General cardiology

Internal or external cardioversion of AF? ▶ The left atrium remains stunned after cardioversion for atrial fibrillation (AF). External cardioversion uses up to 360 J, whereas internal cardioversion can be performed with as little as 3 J. Matching for aetiology and duration of AF, as well as left atrial size, 59 patients randomly assigned to either internal or external cardioversion showed no difference in the recovery of left atrial contraction. While the right atrium wakes up immediately, the left atrium only begins the recovery after one week. There is no difference in recovery rates between the two methods of cardioversion.

▲ **Lehmann G**, Horcher J, Dennig K, Plewan A, Ulm K, Alt E. Atrial mechanical performance after internal and external cardioversion of atrial fibrillation: an echocardiographic study. *Chest* 2002;**121**:13–18.

Chest pain, dyspnoea, and a positive troponin I ▶ Careful, it could be a pulmonary embolism (PE). In a series of 24 large PEs,

20.8% had a troponin I concentration of > 0.4 $\mu\text{g/l}$, with one having a concentration of 2.3 $\mu\text{g/l}$. The source is presumably the right ventricle, suffering under the sudden increase in workload and the reduced arterial oxygen saturation.

▲ **Douketis JD**, Crowther MA, Stanton EB, Ginsberg JS. Elevated cardiac troponin levels in patients with submassive pulmonary embolism. *Arch Intern Med* 2002;**162**:79–81.

Hypothermia after resuscitation of VF reduces brain damage

▶ Patients at high risk of brain injury (5–15 minutes of arrest before resuscitation, with restoration of circulation within 60 minutes) were randomised to 24 hours of hypothermia (32–34°C) or standard care. Mortality at six months was 41% (57 of 137) in the hypothermia group versus 55% (76 of 136) in the normothermia group (risk ratio 0.74, 95% CI 0.58 to 0.95). The complication rate did not differ significantly between the two groups. Neurological outcomes were also better with hypothermia. The investigators estimate that if seven patients were treated this way, one life would be saved. Only 8% of cardiac arrest patients were deemed suitable for the trial, however, leaving the field open for a larger study. In a smaller study of 77 patients, Bernard showed a similar improvement in neurological outcome with hypothermia (odds ratio for discharge home/residential home of 5.25, 95% CI 1.47 to 18.76, $p = 0.011$), although mortality data did not reach significance.

▲ **The Hypothermia after Cardiac Arrest Study Group**. Mild therapeutic hypothermia to improve the neurologic outcome after cardiac arrest. *N Engl J Med* 2002;**346**:549–56.

▲ **Bernard SA**, Gray TW, Buist MD, Jones BM, Silvester W, Gutteridge G, Smith K. Treatment of comatose survivors of out-of-hospital cardiac arrest with induced hypothermia. *N Engl J Med* 2002;**346**:557–63.

Atrial pacing may improve sleep apnoea ▶ Patients with sleep apnoea have episodes of bradycardia associated with the hypoxic period. Increased vagal tone may have a role to play in the apnoeic episode. In 15 patients with atrial pacing (for sinus node disease or tachy-brady syndrome) and proven sleep apnoea, sleep studies were performed with pacing on demand, and then with atrial pacing set at 15 beats above the nocturnal rate. Duration of sleep was not affected, but the number of episodes of sleep apnoea were reduced by 50%. This would seem to offer a simpler solution than surgery on the pharynx or nocturnal positive pressure ventilation.

▲ **Garrigue S**, Bordier P, Jaïs P, Shah DC, Hocini M, Raheison C, Tunon De Lara M, Haissaguerre M, Clementy J. Benefit of atrial pacing in sleep apnea syndrome. *N Engl J Med* 2002;**346**:404–12.

A new use for ACE inhibitors ▶ Hypoxia leads to polycythaemia. Altitudinal polycythaemia is an exaggerated response seen in some people at altitude, a condition associated with proteinuria and renal impairment. In a trial of 26 patients with this condition, those randomised to the ACE inhibitor enalapril showed a reduction in proteinuria, but also a reduction in their packed cell volume and haemoglobin.

▲ **Plata R**, Cornejo A, Arratia C, Anabaya A, Perna A, Dimitrov BD, Remuzzi G, for the Commission on Global Advancement of Nephrology (COMGAN), Research Subcommittee of the International Society of Nephrology. Angiotensin-converting-enzyme inhibition therapy in altitude polycythaemia: a prospective randomised trial. *Lancet* 2002;**359**:663–6.

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

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Paracardial lipodystrophy versus pericardial effusion in HIV positive patients

T Neumann, J Barkhausen, T Bartel

Objective: To present an epicardial manifestation of the lipodystrophy syndrome, a side effect of antiretroviral treatment in HIV positive patients, which illustrates the important danger of false diagnosis.

Patient: A 52 year old man with HIV (stage C3), diagnosed 10 years previously, was being treated with a combination of nelfinavir, nevirapine, and stavudine. Echocardiographic examination showed a low echogenic pericardial space that had increased tremendously from 4 mm to 18 mm over a 10 month period. The diagnosis of paracardial adipose tissue was verified by magnetic resonance tomography. Doppler echocardiographic parameters were not significantly altered (ratio of early to late ventricular filling $0.88 \nu 0.73$, Tei index $0.30 \nu 0.36$).

Conclusion: Even a pericardial manifestation of lipodystrophy causes negligible functional impairment. Misinterpretation of the lipodystrophy as a pericardial effusion and a subsequent puncture can

have serious complications. Hence, it is strongly suggested that further differential diagnosis be used for HIV positive patients with an echocardiographic suspicion of pericardial effusion. Differential diagnosis by magnetic resonance tomography is possible.

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Churg-Strauss syndrome with critical endomyocardial fibrosis: 10 year survival after combined surgical and medical management

C R McGavin, A J Marshall, C T Lewis

A case is presented of the Churg-Strauss syndrome with hyper-eosinophilia and severe cardiac involvement, namely biventricular endomyocardial fibrosis and gross encroachment of the right ventricular cavity. The clinical picture was similar to Loeffler's syndrome and the idiopathic hyper-eosinophilic syndrome. Combined aggressive surgical and medical management led to full recovery and survival at 10 years. The good long term outcome is attributed to strict control of peripheral eosinophil count by oral corticosteroids. This case illustrates the damaging effects of hyper-eosinophilia on the heart.

(*Heart* 2002;87:e5) www.heartjnl.com/cgi/content/full/87/5/e5

IMAGES IN CARDIOLOGY.....

Imaging of a rupture line of an aortic aneurysm by spiral CT scan

Rupture of an aortic aneurysm can place the patient in a critical state. However, it is extremely difficult to know the point of rupture before surgery. We succeeded in indicating the rupture line of an ascending aortic aneurysm by image reconstruction using data from a spiral scan by computed tomography (CT).

An 84 year old woman was admitted for cardiac tamponade following the rupture of an ascending aortic aneurysm. Conventional CT revealed an eccentric high density ring in the neck of an atherosclerotic fusiform aneurysm in the ascending aorta. This ring could not differentiate the periaortic haematoma from the thrombosed type of acute aortic dissection. The multiplanar reformation, which was obtained from late enhancement of the aorta with contrast materials, depicts a hairbreadth projection (arrow) extending across the adventitia of the aorta. We can see from three dimensional reformation that this hairbreadth projection (arrow) is positioned beside the shoulder of the calcification (asterisk) of the neck of the aneurysm. These images indicate that the brittle wall near the calcification was torn and penetrated by shear stress.

This diagnostic technique and these findings might be useful for the qualitative diagnosis of rupture, which has been difficult to make from images despite the critical state of the patients.

Y Nakamura
S San
T Ohe

ynakamur@mti.biglobe.ne.jp

