Ischaemic heart disease

Angiographically complex plaques have more inflammation. Previous work has shown that complex plaques are found in acute coronary syndromes (ACS) more often than in stable angina, and that inflammation plays a role in ACS. This study links the two findings. A total of 79 patients with unstable (n = 46) or stable angina (n = 33) underwent directional coronary athereotomy for culprit lesions. The mean (SD) percentage of macrophages in athereotomy specimens from patients with unstable angina was greater than in specimens from patients with stable angina (21 [14%] vs 13 [10%], p = 0.01); similar results were seen with simple coronary lesions (23 [13%] vs 9 [8%], p < 0.001).

Exercise for pleasure is better than exercise at work. Does having a strenuous job provide any protection from cardiovascular risk? Leisure activity showed a clear inverse association with risk of coronary heart disease (CHD). A case–control study of 312 patients with known coronary artery disease (CAD) and 479 controls was performed. Compared with subjects who reported no summer leisure activities, the odds ratio for CHD was 0.85 (95% confidence interval [CI] 0.47 to 1.53) in the category < 3/week; 0.60 (95% CI 0.38 to 0.95) in the category 1–2 hours/week; and 0.39 (95% CI 0.26 to 0.59) in the category > 2 hours/week, after full adjustment for covariates. Similar results were obtained for winter activities. By contrast, there was a strong positive association between work related activity and risk of CHD. Furthermore, levels of inflammatory markers such as C reactive protein, serum amyloid A, interleukin 6, and intercellular adhesion molecule 1 were inversely and independently associated with leisure time activities, but not with work.

Diet and lifestyle modification may avoid pharmacotherapy in mild hypertension. In 810 adults with above optimal blood pressure (120–159 mm Hg systolic and 80–95 mm Hg diastolic) not taking antihypertensive medications, three intervention groups were assessed: (1) “established”, a behavioural intervention that implemented established recommendations (n = 268); (2) “established plus DASH”, which also implemented the DASH diet, which is high in fruit and fibre and low in saturated fat (n = 269); and (3) an “advice only” comparison group (n = 273). Both behavioural interventions significantly reduced weight, improved fitness, and lowered sodium intake. The established plus DASH intervention also increased fruit, vegetable, and dairy intake. After subtracting change in advice only, the mean net reduction in systolic blood pressure was 3.7 mm Hg (p < 0.001) in the established group and 4.3 mm Hg (p < 0.001) in the established plus DASH group; the systolic blood pressure difference between the established and established plus DASH group was 0.6 mm Hg (p = 0.43). At baseline, hypertension prevalence was 38%; at six months prevalence was 26% in the advice only group, 17% in the established group (p = 0.01 compared with the advice only group), and 12% in the established plus DASH group (p < 0.001 compared with the advice only group; p = 0.12 compared with the established group).

General cardiology

Predicting diabetes mellitus with more than glucose and HbA1c. In a nested case–control study from the Women’s Health Study, 126 women with diabetes diagnosed during a four year follow up period were compared with 225 age matched controls. Fasting insulin concentration and proinsulin:insulin ratio were assessed in quartiles, and proinsulin level was assessed in categories (≤ 4.0 pmol/l, 4.01–6.99 pmol/l, ≥ 7.0 pmol/l). The risk of...
developing type 2 diabetes was determined using conditional logistic regression analysis that adjusted for body mass index and other baseline risk factors. Women with elevated insulin values in the highest as compared with the lowest quartile were more likely to develop diabetes (OR 5.6, 95% CI 1.8 to 17.6), as were women with elevated (≥ 7.0 pmol/l) proinsulin values (OR 16.4, 95% CI 5.8 to 46.8) and women with pro-insulin:insulin ratios in the highest quartile (OR 9.6, 95% CI 3.1 to 30.8). Similar results were observed among women with a baseline haemoglobin A1c, concentration ≤ 6.0%.

**AICD therapy summarised by meta-analysis**

Compared with usual care (most commonly amiodarone treatment), use of implantable cardioverter-defibrillators (ICDs) in eight trials significantly reduced sudden cardiac death (relative risk (RR) 0.43, 95% CI 0.35 to 0.53) and all cause mortality (RR 0.74, 95% CI 0.67 to 0.82). The included trials were divided into two categories: primary prevention (involving patients resuscitated after cardiac arrest or unstable ventricular tachycardia or ventricular fibrillation, n = 1800) and primary prevention (involving patients with increased risk for sudden cardiac death but without documented cardiac arrest, ventricular fibrillation, or ventricular tachycardia, n = 2946). Regardless of baseline risk, ICDs were equally efficacious in preventing sudden cardiac death in both types of trials (RR 0.50 (95% CI 0.38 to 0.66) for secondary prevention). The relative risk reduction in time to syncope with DDD p = 0.02) and functional class (11.0 (95% CI 2.6 to 94.9), p = 0.007) than controls, but were no different in the change in distance walked in six minutes. Peak oxygen consumption increased by 1.1 ml/kg/min (95% CI 0.7 to 1.6 ml/kg/min) in the CRT group versus 0.1 ml/kg/min (95% CI −0.1 to 0.8 ml/kg/min) in controls (p = 0.04), although treadmill exercise duration increased by 56 seconds (95% CI 30 to 82 seconds) in the CRT group and decreased by 11 seconds (95% CI −55 to 12 seconds) in controls (p < 0.001). No significant differences were observed in changes in left ventricular size or function, overall heart failure status, survival, and rates of hospitalisation.

**Biventricular AICDs improve quality of life but not survival**

Of 369 randomised patients who received devices with combined biventricular resynchronisation (CRT) and ICD capabilities, 182 were controls (ICD activated, CRT off) and 187 were in the CRT group (ICD activated, CRT on). At six months, patients assigned to CRT had a greater improvement in median (95% CI) quality of life score (−17.5 (95% CI −21 to −14) v −11.0 (95% CI −16 to −7), p = 0.02) and functional class (−1 (95% CI −1 to −1) v 0 (95% CI −1 to 0), p = 0.007) than controls, but were no different in the change in distance walked in six minutes. Peak oxygen consumption increased by 1.1 ml/kg/min (95% CI 0.7 to 1.6 ml/kg/min) in the CRT group versus 0.1 ml/kg/min (95% CI −0.1 to 0.8 ml/kg/min) in controls (p = 0.04), although treadmill exercise duration increased by 56 seconds (95% CI 30 to 82 seconds) in the CRT group and decreased by 11 seconds (95% CI −55 to 12 seconds) in controls (p < 0.001). No significant differences were observed in changes in left ventricular size or function, overall heart failure status, survival, and rates of hospitalisation.

**Pacemaker therapy is no good for vasovagal syncope**

Of the 52 patients randomised to ODO (pacemaker off), 22 (42%) had recurrent syncope within six months as compared with 16 (33%) of 48 patients in the DDD (pacemaker on) group. The cumulative risk of syncope at six months was 40% (95% CI 25% to 52%) for the ODO group and 31% (95% CI 17% to 43%) for the DDD group. The relative risk reduction in time to syncope with DDD pacing was 30% (95% CI −33% to 63%; one sided p = 0.14). Lead dislodgement or repositioning occurred in seven patients. One patient had vein thrombosis, another had pericardial tamponade leading to removal of the pacemaker system, and a third had infection involving the pacemaker generator. What is not clear is how many patients truly had bradycardia rather than vasodilatation induced syncope, for which pacing would not be appropriate. Caution is required in view of the small size of the group.

**Age alone may not be important when deciding on warfarin treatment for AF**

A history of cerebrovascular accident (CVA), hypertension, symptomatic CAD, and diabetes were used to identify a higher risk population for stroke in the presence of atrial fibrillation (AF). Using data from six trials of aspirin in AF, with 2501 patients, the risk of CVA in the absence of these factors was 1.1 per 100 patient years (PY), equivalent to that of the general population. This compares to the overall group rate of 3.5 per 100 PY. Even in the over 75 years group, 16% fitted this low risk category. Warfarin treatment in the low risk group resulted in a CVA rate of 1.5 per 100 PY (p = NS v aspirin).

**Low level raised troponin predicts bad outcome in systemic amyloidosis**

Patients with primary systemic amyloidosis that affects the heart have a poor outlook. Cardiac troponins T and I (cTnT, cTnI) are highly specific and sensitive biomarkers of myocardial injury. In 261 patients newly diagnosed as having primary systemic amyloidosis, median survival for patients with detectable cTnI and cTnT (six and eight months, respectively) was worse than that for those with undetectable cTnI and cTnT (22 and 21 months, respectively). Median and 25th and 75th percentile values for cTnT were 0.024 µg/l, < 0.01 µg/l, and 0.084 µg/l, and for cTnI were 0.1 µg/l, 0.05 µg/l, and 0.24 µg/l, respectively. After multivariate analysis, cTnI proved a better predictor of survival than cTnT.

**Basic science**

Growing new blood vessels

The establishment of stable and functional blood vessel networks is a complex process that requires several angiogenic factors to stimulate vessel sprouting and remodelling of the primitive vascular network. Clinical delivery of either vascular endothelial growth factor (VEGF) or fibroblast growth factor (FGF-2) alone has produced some controversial results in the treatment of cardiac ischaemia. FGF-2 and VEGF are potent angiogenic factors in vivo and platelet derived growth factor (PDGF-BB) has a substantial role in the stabilisation of newly formed blood vessels. This paper describes the use of FGF-2 and VEGF alone or in combination with PDGF-BB. The authors discovered initial studies in mouse cornea that single angiogenic factors were unable to establish stable vascular networks. In contrast, a combination of PDGF-BB and FGF-2, but not PDGF-BB and VEGF or VEGF and FGF-2, synergistically induced angiogenesis and long lasting functional vessels. Subsequently, in both rat and rabbit ischaemic hind limb models, PDGF-BB and FGF-2 together notably stimulated collateral arteriogenesis after ligation of the femoral artery, and induced the formation of vascular networks that remained stable for more than a year, even after depletion of angiogenic factors.

**Journals scanned**


**Reviewers**

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