

Selected abstracts from the 8th World Congress of Cardiac Rehabilitation and Secondary Prevention

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Cardiovascular risk factors in children referred to a paediatric weight reduction clinic

Hussey J, Gormley J, Bell C et al

Central obesity, dyslipidaemia, hypertension and impaired glucose tolerance, collectively referred to as the metabolic syndrome, frequently precede type II diabetes and cardiovascular disease. Recent evidence indicates that prevalence of the metabolic syndrome is high among obese children and increases with the degree of obesity. Researchers from the Faculty of Health Sciences, Trinity College Dublin, and the Department of Paediatrics, AMNCH, screened for the presence of components of the metabolic syndrome in Irish children referred to a weight management programme.

Twenty-four children, 12 girls and 12 boys, mean (\pm SD) ages 10.8 (\pm 2.8) and 13.3 (\pm 2.6) and mean BMI 30.3 (\pm 6.4) and 32 (\pm 5.6), respectively, were studied. Systolic blood pressure above the 95th percentile was detected in 46% (11/24), sub-normal exercise tolerance (Balke treadmill test) was present in 83% (20/24) and 71% (17/24) had below

recommended energy expenditure (MET/hour per week) in regular exercise. In terms of lipid profiles, 17% (4/24) of the children had low HDL levels ($<$ 1.0mmol/l), 8% (2/24) had high LDL levels ($>$ 3.6mmol/l) and 8% (2/24) had high triglyceride levels ($>$ 2.1mmol/l). Insulin levels were measured in half of the children and were above normal (0-12) in 75% (9/12). Overall, 29% (7/24) of the children had at least three components of the metabolic syndrome.

A US study published in the *Journal of the American Medical Association* in 1999 found evidence of atherosclerosis in the coronary vasculature of more than half the adolescents (15-19 years) studied. Here we have evidence of biomarkers of an increased risk of adverse cardiovascular outcome in obese children. Primary preventative measures, increased awareness, screening and early intervention may be necessary in light of growing evidence of increasing obesity in all age groups.

Factors that influence participation on phase III cardiac rehabilitation programmes

Love J, Hussey J, Gormley J et al

The effectiveness of cardiac rehabilitation (CR) as an intervention is largely dependent on patient compliance with phase III CR. Phase I takes place in hospital, phase II being early outpatient rehabilitation and phase III being advanced/maintenance outpatient rehabilitation. Investigators at the AMNCH and Trinity College Dublin conducted a prospective study to determine compliance with phase III CR and to investigate whether sociodemographic and medical factors were significant determinants of patient compliance.

A total of 711 patients referred to phase III CR over a two year period were enrolled. Of these, 49% attended and 51% failed to attend. Those who attended were younger and more likely to be male. Current smokers were less likely to attend

than ex- and non-smokers. Those in employment were significantly more likely to attend than the unemployed. Patients post-angioplasty were better attenders than those with other diagnoses and presence of concomitant illness was also a significant determinant of non-attendance.

Female patients and the elderly are consistently identified as those least likely to comply with phase III CR despite clear benefit. Direct evaluation of their reasons for non-attendance may help identify ways in which phase III programmes could be modified to accommodate them better. The unemployed are also poor attenders and could be focussed on in phase II to improve this. The negative impact of current smoking status underlines the importance of an intensive smoking cessation programme through phase I and II CR.

The CAREGENE study: ACE gene I/D polymorphism and trainability of aerobic power in coronary artery disease

Defoor J, Vanhees L, Martens K et al

A common insertion/deletion (I/D) variant (289 bp/intron 16) of the angiotensin-converting enzyme (ACE) gene has been linked to cardiovascular morbidity. Carriage of the D allele is associated with higher ACE activity which, in turn, is associated with high circulating levels of plasminogen activator inhibitor (PAI)-1, the endogenous inhibitor of fibrinolysis. Clinical studies have linked the carriage of the D allele with left ventricular hypertrophy, systemic hypertension, myocardial infarction and in-stent restenosis. Response to physical training and aerobic power (peak oxygen uptake [VO_2 max]) are also known to be heritable. Thus, investigators from the University of Leuven in Belgium evaluated whether the ACE I/D genotype is association with aerobic power in patients with coronary artery disease (CAD).

Patients with CAD who had achieved maximal exhaustion during graded bicycle spiro-ergometric testing both at baseline and after completion of three months of cardiac rehabilitation between 1990 and 2001 were eligible for the study. Genetic samples were available for 833 patients and were typed for the I/D variant. A total of 690 of these

patients were not on ACE inhibitor therapy.

Twenty-six per cent of patients carried the II genotype, 40% ID and 34% DD. Peak VO_2 (ml/min) at baseline was similar for all three genotypes and increased significantly with physical training in all groups. When patients not on an ACE inhibitor were compared, the percentage increase in aerobic power differed significantly between genotypes. A greater response to physical training (increase in peak VO_2 max) occurred in II homozygotes (II=27.4% [± 18.3], ID=23.3% [± 16.9], DD=24.8% [± 17.2]). The same observation did not hold for patients on ACE inhibitor therapy.

This study suggests that patients with CAD who carry the II ACE genotype have a greater aerobic power response to physical training when compared to those with the ID and DD genotype. Whether the absence of this observation in patients taking ACE inhibitors reflects a beneficial effect favouring the ID and DD genotype needs further evaluation. Further understanding of gene-environment interactions may allow us to tailor physical and pharmacological therapy to suit individual CAD patients.

Cognitive behavioural psychotherapy – useful in the management of anxiety and depression in cardiac rehabilitation

Pyne P, Minogue L, Timmons K et al

Once felt to be an appropriate response to a cardiac event, depression is now an established independent risk factor for heart disease and a significant determinant of outcome both post myocardial infarction and in patients with heart failure. If not sought, the diagnoses of anxiety and depression are often over-looked and the opportunity for meaningful intervention missed. In addition to pharmacotherapy and exercise programmes, cognitive behavioural psychotherapy (CBT) is a potential early therapeutic intervention. Investigators from St Vincent's University Hospital, Dublin, studied the prevalence of psychological morbidity in patients attending for cardiac rehabilitation (CR) and evaluated the efficacy of short-term CBT as an intervention.

Using the Hospital Anxiety and Depression Scale (HADS), patients attending a six week CR programme were assessed pre- and post-CBT. Of 93 patients enrolled, 42 (45%) had a

HADS score ≥ 8 indicating psychological difficulties. Anxiety was more prevalent than depression. After attending the group CBT sessions (six hours psychotherapy), the mean (\pm SD) anxiety score fell from 11.1 (± 3.0) to 7.3 (± 1.5) and the mean depression score fell from 9.8 (± 2.4) to 2.6 (± 3.4).

Depression and anxiety are common companions of heart disease; however, we are only beginning to understand how they contribute to cardiovascular morbidity and mortality. Patients post myocardial infarction diagnosed in hospital with major depression have four times the mortality risk of non-depressed patients at six months. Therefore, screening for psychological difficulties and intervening with therapies such as CBT may be a useful adjunct to current management. Determination of HADS score after six months in this cohort may further substantiate the sustained benefit of CBT.

Unrealistic optimism in cardiac patients – a cause for concern?

Hevey D, McGuone D, McGee HM et al

The term ‘unrealistic optimism’ describes an individual’s perception that he or she is at lower risk for health problems than his or her peers. This phenomenon may present a major obstacle when trying to achieve health-related behavioural change such as a reduction in lifestyle-related risk factors during cardiac rehabilitation (CR). A study conducted by investigators from the Royal College of Surgeons in Ireland and Beaumont Hospital, Dublin, evaluated the prevalence of unrealistic optimism among attenders of a CR programme and its relationship with medical and psychological factors.

Consecutive attenders (n=59) at a CR programme completed an unrealistic optimism test which established their perception of their own risk status relative to the general

population, cardiac patients and their rehabilitation class. Clinical data and psychological status were also evaluated. Most patients had an optimistic bias and 55.8% perceived their risk to be lower than that of their peer group. Hypertensive patients were more likely to exhibit higher levels of unrealistic optimism while the opposite was observed in smokers. No significant relationship between psychological status and unrealistic optimism was established.

The authors concluded that the optimistic bias among hypertensive patients may be related to the unobservable nature of the condition and may contribute to non-adherence. Whether this disposition directly hinders secondary prevention or is a positive coping factor has yet to be established.



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Pharma News

Irish doctors establish that hypertension medication may also help prevent new development of diabetes

A new international study involving Irish patients at high risk of heart disease has found that a blood pressure medication may also play an important role in preventing diabetes.

The VALUE study compared Diovan, a newer treatment for high blood pressure, against an older medicine. It concluded that, for high risk patients, good blood pressure control was essential to ensure that they avoided serious medical complications. While researchers established that the two treatments were equally as good in preventing the development of hypertension-related illness and death, it also identified an unexpected benefit from Diovan in preventing the development of new diabetes. Diabetes accounts for 10% of all healthcare costs in Ireland – €444 million annually.

Irish GPs and hospital-based doctors at 10 different centres around the country enrolled 149 patients with complications from high blood pressure in the six-year VALUE study. They worked in conjunction with almost 1,000 other centres in more than 30 countries. Professor

John Feely, Professor of Clinical Pharmacology at St James’s Hospital, Dublin, was one of the Irish doctors involved. He said: “The results of this study are very positive for patients with hypertension. The study showed that the two products involved, an older and a newer first-line agent, are safe and effective in controlling blood pressure.

“In addition, specifically for Diovan, it is shown to prevent new onset of diabetes. The study also showed that the lower the blood pressure in high-risk patients the better, and you need combination therapies to treat it.”

The Diovan-based regimen was associated with a 23% reduction in new onset diabetes.

Irish patients in VALUE were men and women aged 50 years and older with high blood pressure and additional cardiovascular risk factors such as smoking, hypercholesterolaemia and left ventricular hypertrophy.

The study was announced at the 14th European Meeting on Hypertension in Paris in early June and was simultaneously published in the online edition of *The Lancet*.