

Abstracts

Cardiovascular prevention guidelines in daily practice

Kornelia Kotseva and colleagues report on the first and second EUROASPIRE surveys in the *Lancet*.

The first and second EUROASPIRE surveys showed high rates of modifiable cardiovascular risk factors in patients with coronary heart disease. The third EUROASPIRE survey was done in 2006/2007 in 22 countries to see whether preventive cardiology had improved and if the Joint European Societies' recommendations on cardiovascular disease prevention are being followed in clinical practice.

EUROASPIRE I, II and III were designed as cross-sectional studies and included the same selected geographical areas and hospitals in the Czech Republic, Finland, France, Germany, Hungary, Italy, the Netherlands, and Slovenia. Consecutive patients (men and women ≤ 70 years) were identified after coronary artery bypass graft or percutaneous coronary intervention, or a hospital admission with acute myocardial infarction or ischaemia, and were interviewed at least 6 months later.

A total of 3 180 patients were interviewed in the first survey, 2 975 in the second, and 2 392 in the third. Overall, the proportion of patients who smoke has remained nearly the same (20.3% in EUROASPIRE I, 21.2% in II, and 18.2% in III; comparison of all surveys $p=0.64$), but the proportion of women smokers aged <50 years has increased. The frequency of obesity (body mass index ≥ 30 kg/m²) increased from 25.0% in EUROASPIRE I to 32.6% in II, and 38.0% in III ($p=0.0006$). The proportion of patients with raised blood pressure ($\geq 140/90$ mmHg in patients without diabetes or $\geq 130/80$ mmHg in patients with diabetes) was similar (58.1% in EUROASPIRE I, 58.3% in II, and 60.9% in III; $p=0.49$), whereas the proportion with raised total cholesterol (≥ 4.5 mmol/l) decreased from 94.5% in EUROASPIRE I to 76.7% in II, and 46.2% in III ($p<0.0001$). The frequency of self-reported diabetes mellitus increased from 17.4% to 20.1% and 28.0% ($p=0.004$).

These time trends show a compelling need for more effective lifestyle management of patients with coronary heart disease. Despite a substantial increase in antihypertensive

and lipid-lowering drugs, blood pressure management remained unchanged, and almost half of all patients remain above the recommended lipid targets. To salvage the acutely ischaemic myocardium without addressing the underlying causes of the disease is futile; we need to invest in prevention.

Kotseva K, *et al. Lancet* 2009; 373: 929-940.

Drug-eluting stents save limbs in patients with peripheral vascular disease

Infrapopliteal drug-eluting stents (DES) have shown promising efficacy in treating patients with peripheral artery disease (PAD) in cases of critical limb ischaemia, according to a report presented at the Society of Interventional Radiology (SIR) 34th Annual Scientific Meeting.

Dimitris Karnabatidis and colleagues conducted their study using a single-centre, double-arm, prospective registry that included 103 patients diagnosed with critical limb ischaemia who had undergone infrapopliteal revascularisation with angioplasty treatment with either sirolimus-eluting stents (SES) or bare-metal stents (BMS).

Patients were evaluated at regular intervals. Endpoints included mortality, limb salvage, primary patency, angiographic binary restenosis ($>50\%$), and clinically driven target-lesion re-intervention rates. Results were stratified according to SES versus BMS; cumulative proportion outcomes were determined by Kaplan-Meier plots; multivariable Cox proportional hazards regression analysis was applied to adjust for confounding factors of heterogeneity.

Forty-one patients were treated with BMS (47 limbs with 77 lesions), whereas 62 patients were treated with SES (75 limbs with 153 lesions). Patients with diabetes comprised 75.6% and 87.1% of the BMS and SES groups, respectively.

Compared with the BMS group, SES-treated lesions were associated with significantly higher rates of primary patency at 3 years (hazard ratio (HR) 4.81; confidence interval (CI) 2.91 - 7.94; $p<0.001$), as well as lower rates of binary restenosis (HR 0.38; CI 0.25 - 0.58; $p<0.001$), and fewer clinically driven re-intervention events (HR 0.39; CI 0.20 - 0.77; $p=0.006$).

No significant differences were identified between the SES and BMS patients with regard to estimated 3-year patient mortality (29.3% v. 32.0%; $p=0.205$) and limb salvage (80.3% v. 82.0%; $p=0.507$).

The conclusion was that infrapopliteal application of SES for critical limb ischaemia significantly reduces infrapopliteal vascular restenosis and improves long-term angiographic patency, thereby lessening the rate of repeat procedures because of recurrent (critical limb ischaemia) symptoms.

Karnabatidis D, *et al. Abstract* 223; Society of Interventional Radiology (SIR) 34th Annual Scientific Meeting.

Overweight and obesity in late adolescence increase adult mortality

In an article in the *British Medical Journal* Martin Neovius and colleagues investigated the combined effects on adult mortality of overweight and smoking in late adolescence. They used a record linkage study with Cox proportional hazard ratios adjusted for muscle strength, socioeconomic position, and age.

The participants (45 920 Swedish men (mean age 18.7, SD 0.5)), followed up for 38 years, were from the Swedish military service conscription register, cause of death register, and census data.

The main outcome measures were body mass index (BMI) (underweight (BMI <18.5), normal weight (BMI 18.5 - 24.9), overweight (BMI 25 - 29.9), and obesity (BMI 30)), muscle strength, and self-reported smoking (non-smoker, light smoker (1-10 cigarettes/day), heavy smoker (>10 /day)) at mandatory military conscription tests in 1969 -1970, and all-cause mortality.

In over 1.7 million person years, 2 897 men died. Compared with normal weight men (incidence rate 17/10 000 person years, 95% confidence interval 16 - 18), risk of mortality was increased in overweight (hazard ratio 1.33, 1.15 - 1.53; incidence rate 23, 20 - 26) and obese men (hazard ratio 2.14, 1.61 - 2.85; incidence rate 38, 27 - 48), with similar relative estimates in separate analyses of smokers and non-smokers. No increased risk was detected in underweight men (hazard ratio 0.97, 0.86 - 1.08; incidence rate 18, 16 - 19), although extreme underweight (BMI <17) was associated with increased mortality

(hazard ratio 1.33, 1.07 - 1.64; incidence rate 24, 19 - 29). The relative excess risk due to interaction between BMI and smoking status was not significant in any stratum. Furthermore, all estimates of interaction were of small magnitude, except for the combination of obesity and heavy smoking (relative excess risk 1.5, -0.7 - 3.7). Compared with non-smokers (incidence rate 14, 13 - 15), risk was increased in both light (hazard ratio 1.54, 1.41 - 1.70; incidence rate 15, 14 - 16) and heavy smokers (hazard ratio 2.11, 1.92 - 2.31; incidence rate 26, 24 - 27).

Regardless of smoking status, overweight and obesity in late adolescence increase the risk of adult mortality. Obesity and overweight were as hazardous as heavy and light smoking, respectively, but there was no interaction between BMI and smoking status. The global obesity epidemic and smoking among adolescents remain important targets for intensified public health initiatives.

Neovius M, *et al. BMJ* 2009; 338: b496.

Resting heart rate is a low-tech predictor of heart disease in women

Judith Hsla and colleagues, writing in the *British Medical Journal*, evaluate resting heart rate as an independent predictor of cardiovascular risk in women. They used a prospective cohort study in the setting of the Women's Health Initiative study that was undertaken at 40 research clinics in the USA. The study enrolled 129 135 postmenopausal women, who were followed up for clinical cardiovascular events.

During a mean of 7.8 (SD 1.6) years of follow-up, 2 281 women were identified with myocardial infarction or coronary death and 1 877 with stroke. The authors evaluated associations between resting heart rate and cardiovascular events in Cox regression models adjusted for multiple covariates. Higher resting heart rate was independently associated with coronary

events (hazard ratio 1.26, 95% confidence interval 1.11 - 1.42 for highest quintile (>76 beats per minute) v. lowest quintile (62 beats per minute); $p=0.001$), but not with stroke. The relation between heart rate and coronary events did not differ between white women and women from other ethnic groups (p for interaction=0.45) or between women with and without diabetes (p for interaction=0.31), but it was stronger in women aged 50 - 64 at baseline than in those aged 65 - 79 (p for interaction=0.009).

They concluded that resting heart rate, a low-tech and inexpensive measure of autonomic tone, independently predicts myocardial infarction or coronary death, but not stroke, in women.

Hsla J, *et al. BMJ* 2009; 338: b219.

BRIDGET FARHAM

Single suture

Novel alkaloid molecules made by periwinkle plant

Novel alkaloid molecules that are very difficult to synthesise in the laboratory have been made using the cellular machinery of the periwinkle plant.

Naturally occurring alkaloids such as morphine and the anti-cancer drug vinblastine are already extracted from plants for medical applications. But, alkaloids are so complex chemically that creating new ones or even giving existing ones slightly different properties is very difficult.

Because of this, Sarah O'Connor and Weerawat Runguphan at the Massachusetts Institute of Technology decided to try the Madagascar periwinkle (*Catharanthus roseus*). This plant naturally makes vinblastine through a series of complex chemical reactions.

They modified the gene for one enzyme involved in an early stage of the process so that it retained its role in making alkaloids, but acted on different starting compounds than it does naturally. When they inserted the gene into periwinkle cells and cultured them in various compounds, the cells made a range of new alkaloids, which could turn out to have medical uses.

New Scientist 24 January 2009: 19.