LONG-TERM CARDIAC AND VASCULAR PHENOTYPE OF YOUNG WOMEN WITH PREGNANCIES COMPLICATED BY PREECLAMPSIA

doi:10.1136/heartjnl-2012-301877b.143

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Background Preeclampsia is an independent risk factor for cardiovascular disease and is associated with a range of maternal cardiovascular abnormalities during the perinatal period. We studied mothers late after preeclampsia to define persistent cardiac and vascular changes that might link preeclampsia to later disease and identified key pregnancy factors that predicted the variation.

Methods 140 women aged 28–50 years were studied 6–13 years after the index pregnancy. 90 had preeclampsia (45 early onset before 34 weeks gestation and 45 later onset) and 50 had normotensive uncomplicated pregnancies. Women with cardiovascular risk factors before pregnancy were excluded. Central blood pressure (BP) and arterial stiffness (pulse wave velocity (PWV)/augmentation index (AI)) were assessed by applanation tonometry, common carotid intima media thickness (cIMT) by ultrasound, cutaneous capillary density by intravital microscopy and endothelial function by flow mediated dilatation (FMD). 46 women returned for assessment of cardiac structure and function by magnetic resonance and echocardiography as well as ambulatory blood pressure monitoring. Fasting lipids, glucose, insulin and circulating cytokines and adhesion molecules were measured in all subjects.

Results Women with a previous history of preeclampsia had 4–12 mm Hg higher peripheral and central BP ($p<0.001$) as well as characteristic differences in ambulatory measures. They also had increased arterial stiffness (ANOVA $p=0.04$), cIMT (ANOVA $p=0.006$) and capillary rarefaction (ANOVA $p=0.005$). Cardiac size and systolic function were preserved but there was evidence of abnormal diastolic relaxation (E/E' – ANOVA $p=0.04$) and elevated total: HDL cholesterol ($p=0.003$), insulin resistance ($p=0.04$), circulating TNF α ($p=0.007$) and eSelectin ($p<0.001$). All changes were graded according to the timing and severity of preeclampsia.

Conclusion Structural micro and macrovascular changes predominate in young women a decade after preeclampsia. Alterations in metabolic markers and mild changes in diastology are also evident. Timing and severity of preeclampsia are predictive of these differences and may identify women at greatest potential benefit from primary prevention advice.

NURSES MEET THE CHALLENGE OF HELPING HIGH CVD RISK SMOKERS TO QUIT WITH THE HELP OF VARENICLINE IN A PREVENTIVE CARDIOLOGY PROGRAMME

doi:10.1136/heartjnl-2012-301877b.144

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Background The EUROACTION plus study aimed to assess effectiveness of a nurse-led preventive cardiology programme for high CVD risk smokers willing to make a quit smoking attempt compared to usual care in general practice.

Methods High CVD risk smokers aged to 18–80 years with vascular disease and 50–80 years at high risk of developing CVD (Heartscore $\geq 5\%$ over 10 years, or treated for risk factors or DM) and their

partners were individually randomised to either the programme (EA+) or usual care (UC). EA+ patients had optional access to free varenicline and met with the study nurse every 2 weeks to support their quit attempt and to have dietary and physical activity advice and CVD risk factor management. The primary outcome was self reported 7-day point prevalence of abstinence validated with breath carbon monoxide of <10 ppm. Analysis was by intention to treat (ITT). Follow-up was at 16 weeks.

Results 696 patients were recruited: 350 randomised to EA+ and 346 to UC. 85% EA+ and 83% UC returned at 16 weeks. 91% of patients in EA+ chose to use varenicline to help them to quit smoking and 51% of EA+ patients quit compared to 19% in UC (OR 4.52 95% CI 3.2 to 6.4 $p<0.0001$). In those who fully participated in EA+ 63% quit smoking compared to 17% who did not complete and 22% who did not participate. At follow-up self reported health related quality of life (HRQoL) was better in EA+ with significantly higher mean EQ-VAS scores in EA+ (74/100) compared to UC (70, $p=0.002$). Functional limitation profile scores (SF36) improved in EA+ during the programme (25.6–26.2 Δ +0.56 95% CI 0.23 to 0.88 $p=0.0009$). No differences were seen in depression scores (HADS), but anxiety scores reduced in EA+ during the programme (5.63–5.27 Δ –0.35 95% CI –0.67 to –0.03 $p=0.03$).

Conclusion Intensive support from nurses with optional use of varenicline was successful in helping over half of all high CVD risk smokers to quit. This was associated with a reduction in anxiety and increased quality of life.

EUROACTION PLUS: A RANDOMISED CONTROLLED TRIAL ON PREVENTIVE CARDIOLOGY PROGRAMME PLUS INTENSIVE SMOKING CESSATION WITH VARENICLINE FOR VASCULAR AND HIGH CVD RISK SMOKERS AND THEIR PARTNERS—PRINCIPAL RESULTS

doi:10.1136/heartjnl-2012-301877b.145

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Aim The aim of the EUROACTION PLUS trial was to determine if the nurse-led preventive cardiology programme in primary care, with an intensive smoking intervention including the optional use of Varenicline, could achieve more effective smoking abstinence among persistent smokers with either established vascular disease, or at high risk of developing cardiovascular disease and to reduce overall cardiovascular risk compared to usual care (UC).

Methods EUROACTION PLUS (EA PLUS) was a randomised controlled intervention trial carried out in general practices across 4 European countries: Italy, The Netherlands, Spain and the UK. Vascular patients and people at high risk of developing cardiovascular disease who were current smokers were individually randomised to receive either a professional smoking cessation intervention, which included the optional use of Varenicline, delivered in the context of the nurse-led EUROACTION preventive cardiology programme, or their usual care. The primary outcome was the proportion of non-smokers (7-day prevalence of non-smoking) validated by breath CO (<10 ppm) in intervention compared to usual care at 16 weeks. The secondary outcomes included the proportions of patients achieving the Joint European Societies lifestyle, risk factor and therapeutic targets for cardiovascular disease prevention.

Results 696 patients were recruited: 350 randomised to EA PLUS and 346 to UC. 85% EA PLUS and 83% UC returned at 16 weeks. For

the primary endpoint 51% of patients in the EA PLUS arm were abstinent compared to 19% in UC at 16 weeks; OR 4.52 (95% CI 3.20 to 6.39, $p < 0.0001$). In partners, the 7-day point prevalence of abstinence was significantly higher in EA PLUS (73% vs 37%) compared to UC, OR 4.7 (95% CI 1.9 to 11.5, $p < 0.001$). 52.3% of patients in EA PLUS achieved a Mediterranean diet score ≥ 9 , compared to 37.3% in UC ($p < 0.001$). 16.2% in EA PLUS achieved the physical activity target compared to 7.2% in UC ($p = 0.002$) with a significantly higher proportion achieving the METSmax target (Chester Step test): 37.8% in EA PLUS vs 27.3% in UC ($p = 0.04$). Blood pressure target ($< 140/90$ (130/80 diabetes or vascular disease) was significantly higher in EA PLUS (52% vs 43%; OR 1.47, $p = 0.03$) than UC but there were no differences in lipid or glucose management. Prescribing of cardioprotective medication was similar in both arms except for lipid lowering drugs; EA PLUS 53% vs UC (45%, $p = 0.06$); high CVD risk individuals 48% EA PLUS vs 39% UC ($p = 0.04$).

Conclusion This European trial has demonstrated that the EURO-ACTION nurse-led preventive cardiology programme, with an intensive smoking cessation intervention including optional Varenicline, helps more vascular and high risk patients, together with their partners, to stop smoking and better achieve the other European lifestyle and blood pressure targets for cardiovascular disease prevention than usual medical care.

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B-TYPE NATRIURETIC PEPTIDE AND CORONARY ATHEROSCLEROSIS: AN ASSOCIATION DEPENDENT ON CENTRAL PULSE PRESSURE

doi:10.1136/heartjnl-2012-301877b.146

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Background B-type natriuretic peptide (BNP) is traditionally used as a marker of left-ventricular (LV) dysfunction. Prior studies have also identified BNP as a risk marker of coronary atherosclerosis, even in those with normal LV function. We sought to determine the clinical benefit of using BNP in an unselected population undergoing diagnostic angiography and identify any possible mechanisms for this association [the Alternative Risk Markers in Coronary Artery Disease (ARM-CAD) study].

Methods 468 participants without prior coronary bypass surgery were assessed according to the presence/severity of angiographic CAD using a stenosis score weighted for the impact on usual coronary blood flow. Blood samples, risk factor data and radial artery pulse wave analysis (to derive central blood pressures [BP]) were obtained prior to angiography.

Results Mean age $\pm$ SD was 64 ± 11 , BP $144/80 \pm 21/10$, 65% were male, 21% had diabetes, 44% had prior angina or myocardial infarction and 16% had impaired LV. There was a linear increase in BNP with the severity of CAD (p for trend < 0.0001). However, patients with minor coronary stenoses (30%–50%) had elevated BNP levels compared to those with normal coronaries or single vessel CAD ($p < 0.03$), perhaps relating to coronary plaque stability. Multivariate regression, adjusted for risk factors, LV impairment and medications, determined that BNP was an independent marker of the presence of CAD; the OR for any degree of angiographic CAD was 1.33 per log-unit increase in BNP (95% CI 1.03 to 1.71; $p = 0.03$). BNP was associated with disease in the left coronary arteries but not in the right coronary artery (see Abstract 146 figure 1A). Further, the relationship between BNP and CAD was only present in patients with central pulse pressure above the median value of 50 mm Hg (see Abstract 146 figure 1B), suggesting that central BP may be part of the mechanism for the BNP increase seen in patients with CAD.

Abstract 146 Figure 1

Conclusions BNP is associated with the presence and severity of angiographic disease, irrespective of LV impairment. Our data suggest that in patients with coronary atherosclerosis, BNP may be a marker of ventricular wall tension and neurohormonal activation secondary to changes in central BP.

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POST CHALLENGE HYPERGLYCAEMIA: A PREDICTOR OF POOR CARDIOVASCULAR OUTCOME IN PATIENTS WITH ACS

doi:10.1136/heartjnl-2012-301877b.147

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Background Patients with elevated random or diabetes have been known to have an adverse outcome following acute coronary syndrome (ACS). Most centers use fasting blood glucose to assess the glycaemic status for these patients, however the effect of elevated 2 h-post challenge BG to either diabetic or pre-diabetic levels on adverse cardiovascular events after myocardial infarction has been inadequately explored.

Objective We aim to assess the glucometabolic states of patients presenting with ACS using OGTT, and its the long term prognostic implications.

Methods and Results All patients admitted to the coronary care unit, with ACS to our hospital between November 2005 and October 2008 were included. All patients with known history of diabetes were excluded. All patients underwent an oral glucose tolerance test (OGTT) with 3–5 days after admission. The incidence of all cause mortality, cardiovascular death, re-infarction, CCF and CVA were collected. The primary end point was incidence of cardiovascular mortality, non-fatal reinfarction, CCF and non-haemorrhagic stroke. 930 patients were admitted in the described period with ACS, of which 136 were diabetic and noted were not available for 26, leaving 768 patients in the study. 337 (44%) had normal glucose tolerance,