**Topic 41 – Biomarkers**

**0033**

Can cardiac troponin I measurement help to predict recent coronary occlusion in out-of-hospital cardiac arrest survivors?

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**Background:** Recent guidelines recommend the immediate performance of a coronary angiography when an acute myocardial infarction is suspected as a cause of out-of-hospital cardiac arrest. However, prehospital factors such as post resuscitation electrocardiogram pattern or clinical features are poorly sensitive in this setting. We searched to evaluate if a measurement of cardiac troponin I can help to detect a recent coronary lesion in out-of-hospital cardiac arrest.

**Methods:** Between January 2012 and June 2013, 34 out-of-hospital cardiac arrest survivors have been consecutively studied. An immediate coronary angiography has been systematically performed. Blood cardiac troponin I levels at admission were analyzed to assess the optimum cutoff for identifying a recent coronary lesion, using ROC curves with the criterion of Youden.

**Results:** During coronary angiography, a coronary artery disease has been detected in 36 of 54 patients (66%). The optimum cardiac troponin I threshold was determined at 0.5μg/l. Significant coronary artery disease was observed in 76% of patients with troponin I >0.5μg/l and in 12% of patients with troponin I < 0.5μg/l (p=0.001) (sensitivity 97%, specificity 41%).

**Conclusion:** In this cohort of out-of-hospital cardiac arrest patients, isolated cardiac troponin I measurement is modestly predictive of a recent coronary artery disease. As a result and given the high benefit of percutaneous coronary intervention for such patients, the dosage of cardiac troponin I at admission could not help in the decision of early coronary angiography.

**0470**

Serum IF1 concentration as a predictor of mortality in coronary heart disease patients

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**Aim:** The ecto-F1-ATPase/P2Y13 pathway plays a key role in reverse cholesterol transport. Exogenous IF1, known as the natural mitochondrial specific inhibitor of F1-ATPase activity, inhibits ecto-F1-ATPase activity and decreases HDL-C uptake by hepatocytes. We previously found that IF1 is present in human serum and is negatively associated with coronary heart disease (CHD). Here, we investigated the relationship between serum IF1 concentration and mortality in CHD patients.

**Methods:** Serum IF1 was measured in 624 CHD patients aged 45-74 from the GENES (Genetique et ENvironement en Europe du Sud) study. After 9.1 years follow up, mortality rate was 24.5%.

**Results:** Patients who had died were older at inclusion, were more often treated for dyslipidemia or diabetes mellitus, had higher tobacco consumption, CRP level but lower physical activity. Resting heart rate and the Gensini score of CHD severity were higher while LVEF (Left Ventricular Ejection Fraction) was decreased. They also had lower serum IF1 concentration (0.41 vs 0.44μg/ml, p=0.03). In CHD patients, IF1 concentration was negatively associated with triglycerides, Gensini score and resting heart rate and positively with physical activity, HDL-C and LVEF. HDL-C was correlated with the Gensini score but not with resting heart rate and LVEF. Serum IF1 in the two highest quartiles (≥0.42μg/ml) was associated with significantly reduced mortality risk, even after multivariable adjustments for classical cardiovascular risk factors and Gensini score (HR=0.55, p=0.026 for the highest quartile). Significance was lost after adjustment for LVEF (HR=0.72, p=0.23).

**Conclusion:** High serum IF1 is predictor of reduced mortality in CHD patients. This prognostic value remains significant whatever the value of HDL-C and Gensini score, a marker of atheroma diffusion, but was lost after adjustment for LVEF. Correlation between serum IF1 concentration and LVEF might underlie the relationship between IF1 level and mortality.

**0057**

Preoperative Growth Differentiation Factor 15 (GDF15) as a novel biomarker of acute kidney injury after cardiac bypass surgery

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**Objective:** Previously, we demonstrated that preoperative plasma GDF15 levels significantly improved the prognostic value of the EuroSCORE for mortality after cardiac surgery. Despite the strong correlation between GDF15 and renal function, no data are available regarding the potential interest of preoperative GDF15 levels to improve the prediction of acute kidney injury (AKI) after coronary artery bypass grafting (CABG).

**Design:** 134 patients operated on for CABG of whom 50 underwent off-pump surgery at our university hospital were included in this prospective, observational study. Exclusion criteria were age <18 years or >80 years, previous atrial fibrillation/flutter, previous severe renal failure (estimated glomerular filtration rate <30ml/min), previous cardiac surgery, and emergency surgery. AKI was defined according to KDIGO criteria. GDF15 levels in plasma were measured before induction and 12 hours after surgery.

**Results:** 42 patients developed postoperative AKI which had significantly higher preoperative plasma GDF15 levels (OR=2.85; 95%CI=1.32-6.13, p=0.008), higher preoperative serum creatinine levels (OR=1.025; 95%CI=1.003-1.05; p=0.026), and most often underwent cardiopulmonary bypass (CPB) surgery (OR=2.67; 95%CI 1.17-6.14, p=0.020). On ROC curves, GDF15 was found to be the best preoperative biomarker to predict AKI (AUC 0.83; CI 0.75-0.89), compared with eGFR (AUC 0.67; 95%CI 0.59-0.75; p=0.003) and NT-proBNP (AUC 0.62; CI 0.51-0.72 p=0.001). GDF15 level was also significantly better than the EuroSCORE in predicting AKI (AUC 0.62, 95%CI 0.54-0.70 p<0.001). The predictive model including high blood pressure, diabetes, preoperative eGFR and CPB surgery was significantly improved when preoperative GDF15 was added.

**Conclusion:** Preoperative GDF15 plasma levels are associated with postoperative AKI in CABG patients. Preoperative GDF15 may improve postoperative risk stratification and discrimination among candidates for surgery.

**0058**

Low circulating levels of Growth Differentiation Factor 15 (GDF-15) before coronary artery bypass surgery may predict post-operative atrial fibrillation

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**Background:** Post-operative atrial fibrillation (POAF) following cardiac surgery has a high prevalence and is associated with considerable morbidity.

**Aims:** To assess the role of GDF-15, a member of the TGFβ superfamily, as a potential new predictor of POAF after off-pump (OFFP) and on-pump (ONP) coronary artery bypass graft (CABG) surgery.