Table – Prevalence of dyslipidemia depends on guidelines

<table>
<thead>
<tr>
<th>Baseline</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>N=186 (%)</td>
<td>N=153 (%)</td>
<td>N=141 (%)</td>
<td>N=137 (%)</td>
<td>N=128 (%)</td>
</tr>
<tr>
<td>SCORE</td>
<td>25 (13.4)</td>
<td>20 (13.1)</td>
<td>23 (16.3)</td>
<td>25 (18.2)</td>
</tr>
<tr>
<td>SCORE × 1.5 (2 conditions)</td>
<td>26 (14)</td>
<td>20 (13.1)</td>
<td>23 (16.3)</td>
<td>25 (18.2)</td>
</tr>
<tr>
<td>SCORE × 1.5 (1 condition)</td>
<td>49 (26.3)</td>
<td>54 (35.3)</td>
<td>49 (34.7)</td>
<td>60 (43.8)</td>
</tr>
<tr>
<td>NCEP (FRS)</td>
<td>51 (27.4)</td>
<td>41 (26.8)</td>
<td>30 (21.3)</td>
<td>32 (23.4)</td>
</tr>
<tr>
<td>NCEP × 1.5 (2 conditions)</td>
<td>51 (27.4)</td>
<td>42 (27.4)</td>
<td>30 (21.3)</td>
<td>32 (23.4)</td>
</tr>
<tr>
<td>NCEP × 1.5 (1 condition)</td>
<td>54 (29)</td>
<td>44 (28.7)</td>
<td>31 (22)</td>
<td>32 (23.4)</td>
</tr>
<tr>
<td>AFSSAPS (FRS global)</td>
<td>21 (11.3)</td>
<td>14 (9.2)</td>
<td>11 (7.8)</td>
<td>14 (10.2)</td>
</tr>
<tr>
<td>AFSSAPS (FRS global) × 1.5 (2 conditions)</td>
<td>22 (11.8)</td>
<td>15 (9.8)</td>
<td>11 (7.8)</td>
<td>14 (10.2)</td>
</tr>
<tr>
<td>AFSSAPS (FRS global) × 1.5 (1 condition)</td>
<td>33 (17.7)</td>
<td>27 (17.6)</td>
<td>22 (15.6)</td>
<td>23 (16.8)</td>
</tr>
</tbody>
</table>

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Heightened risk of coronary atheroma conferred by a decrease in the plasma concentrations of lithocholic acid

Henri Duboc (1), Hélène Aelion (2), Dominique Rainteau (3), Sylvie Rajca (3), Harry Sokol (3), Lydie Humbert (3), Dominique Farabos (3), Benoît Coffin (1), Simon Weber (2), Raphaël Porcher (4), Olivier Varenne (2), Denis Duboc (1)

(1) Hôpital Louis Mourier, AP HP, Hépato Gastro Entérologie, Colombes, France – (2) Université Paris Descartes, AP-HP, Cochin Hospital, Department of Cardiology, Paris, France – (3) University Pierre and Marie Curie, UMR 7203, AP-HP, Saint-Antoine Hospital, Paris, France – (4) Université Paris Diderot, Sorbonne Paris Cité, UMR-S 717, APHP, Saint-Joias Hospital, Biostatistic and medical informatics department, Paris, France

Context: The bile acids receptors Farsenoid X and TGR5 protect against the formation of atheroma in mice, though no evidence have linked coronary atheroma and bile acid in human. Bile acids links these receptors with more or less efficient activation, depending on the species.

Objective: To test the hypothesis that changes in concentrations of circulating bile acid species influence the risk of developing coronary atheromas in humans.

Methods: Pilot, prospective, observational study conducted between June and September 2010. The serum concentrations of cholic, chenodeoxycholic, deoxycholic, and lithocholic acids were measured in a fasting blood sample. Consecutive hospitalized or ambulatory patients undergoing emergency or elective coronary angiograms were eligible for inclusion. Post-cardiac arrest and non-fasting states, hepatic disease, and treatment with antimicrobials, corticosteroids, statins or fibrates were exclusion criteria. Of 393 screened patients, 44 met the study entry criteria, and were divided between 27 patients with (Group A) and 17 without (Group B) angiographically visible coronary atheromas. The pool of circulating bile acids was analyzed to measure the plasmatic concentrations of 28 different bile acid species. The variables associated with the presence of angiographically visible coronary atheromas were examined by single and multiple variable logistic regression analysis.

Results: The serum lithocholic acid concentration was significantly lower in group A than in group B. By multiple variable analysis, lithocholic acid was the only predictor of coronary atheroma independently of patient gender (odds ratio 2.41 per 0.05 decrease; 95% confidence interval 1.11 to 5.25, P=0.027)

Conclusion: A low serum concentration of lithocholic acid was an independent predictor of coronary atheroma in human.

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At early phase of endotoxemic shock the increased β-adrenergic contractility is dependent of the endothelial β1-adrenoceptor

David Roul (1), Benjamin Lautzier (1), Nolwenn Merlet (1), Mortéza Erfanian (1), Amandine Grabherr (1), Boris Demain (1), Bertrand Rozec (2), Chantal Gauthier (1)

(1) L’Institut du thorax-Inserm UMR 1087-CNRS UMR 6291, Nantes, France – (2) L’Institut du thorax, Nantes, France

Cardiovascular alterations in the septic shock include a hypotension associated with a cardioopathy. The sympathetic regulation of the cardiovascular system is impaired during the shock and associated with an altered endothelial function. However, involved cellular mechanisms are not clear. The aims of this project were to determine the role of the three β-adrenoceptor subtypes, β1, β2, and β3-AR in the cardiac dysfunction in endotoxemic rats. Selective β-AR responses were studied on papillary muscle contractility with or without a functional endothelium. Endothelium damage was realized with 3s Triton X-100 at 0.5%.

Methods: Rats (12w) received either endotoxin (LPS, 5mg. kg-1) or saline i.v. (C). 3h later, cardiac parameters were studied in vivo by echocardiography. Selective β-AR responses were studied on papillary muscle contractility with or without a functional endothelium. Endothelium damage was realized with 3s Triton X-100 at 0.5%.

Results: In vivo, LPS rats presented altered systolic (shortening fraction –21±4% vs C p=0.05) and diastolic (E wave –47±5% vs C p=0.05) functions. In papillary muscle, isoproterenol (non selective βAR agonist) induced contractility was increased in LPS (+105±21% vs C; p=0.05). This increase did not result from β2-AR and β3-AR because there expressions were respectively decreased by 20±4%; (p=0.05 vs C) and 47±7% (p=0.05 vs C) in LPS and correlated to a maintained β1-AR-induced contractility and a decreased β2-AR (–38±8% vs C; p=0.05). The β3-AR-induced contractility was not modified in LPS muscle without endothelium whereas it was reduced in C muscle without endothelium (79±6% vs C; p<0.05). Conversely, albeit β1-AR expression was decreased (–66±5% vs C; p<0.05), β1-AR response was increased in papillary muscles (+94±16% vs C; p=0.05) from LPS rats. Surprisingly, the disrupted endothelium abolished this increase.

Conclusion: Our results demonstrate, for the first time, an increased β1-AR contractility, on papillary muscle form LPS rats, dependent of the functional endothelium. This suggests that β1-AR could be involved in the persistent tachycardia observed in the shock leading to propose β1-AR blockers in this disease.

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Mobilization of CD34+KDR+ cells among circulating progenitors predicts target lesion revascularization

Laurent Bonello (1), Marc Laine (1), Karine Baumstarck (2), Christophe Piot (3), Franck Paganeli (1), Francoise Dignat-George (4), Florence Sabatier (4)

(1) Hôpital Nord, cardiologie, Marseille, France – (2) Unité d’aide méthodologique à la recherche clinique, direction de la recherche, Marseille, France – (3) CHU Montpellier, Montpellier, France – (4) Hôpital de la Conception, Marseille, France

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Endothelial lesion and regeneration are critical events in the process leading to in-stent restenosis (ISR) after bare metal stent percutaneous coronary intervention (PCI).

Objectives: We prospectively investigated the relationship between markers reflecting the endothelial response to injury and the occurrence of ISR in patients undergoing PCI.

Method and results: We performed a multicentric prospective study which included 156 patients undergoing elective PCI with bare-metal stent (BMS). The endothelial lesion was assessed by the enumeration of circulating endothelial cells (CEC). Endothelial regeneration was evaluated by enumeration of circulating CD34+ progenitors cells (PC) and CD34+ CD133+ endothelial progenitor cells (EPC). Measurements were performed before PCI (H0), 6 and 24 hours (H6 and H24) after. Dynamic changes were evaluated by calculating delta value (delta) of each marker. The primary and secondary end-points of the study were clinical target lesion revascularizations (TLR) and major adverse cardiovascular events (MACE) at 6 months follow-up. During follow-up, 28 MACE were recorded including 27 TLR. PCI induced a significant rise in CEC, CD34+ PC and CD34+KDR+. Baseline, H6 and H24 levels of markers did not differ between patients with and without TLR. The delta percentage of CD34+ PC expressing KDR was significantly reduced in patients with TLR compared to patients without TLR (–0.5±6.3 vs 2.9±15.6, p=0.015). In multivariate analysis, this parameter independently predicted the occurrence of TLR and MACE (p=0.02 and p=0.014 respectively).

Conclusion: In response to PCI, rather than the extent of the endothelial injury, the proportion of CD34+KDR+ mobilized among PC determines the risk of TLR and MACE.

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Symmetric dimethylarginine serum level as a new marker of left ventricular ejection fraction in patients with acute myocardial infarction

Julie Lorin (1), Jean-Claude Guillard (1), Claudia Korandji (1), Yves Cottin (2), Luc Rochette (1), Catherine Vergely (1), Marianne Zeller (1)
(1) LPPCE, Facultés de médecine et pharmacie, Dijon, France – (2) Service de cardiologie CHU, Dijon, France

Asymmetric dimethylarginine (ADMA) is a by-product of protein methylilation implicated in the prognosis after acute myocardial infarction (MI) and heart failure through the Nitric Oxide Synthase (NOS) inhibition. We aimed to investigate whether SDMA – the endogenous symmetrical stereoisomer of ADMA – that has insignificant inhibitory effects on NOS might be a marker of left ventricular function in acute MI.

Methods: Blood samples from 468 consecutive patients hospitalized <24 hours after acute MI were taken on admission. Serum levels of ADMA and SDMA were determined using high-performance liquid chromatography. Left ventricular ejection fraction (LVEF) was assessed by echocardiography at 2±1 d after admission.

Results: Among the study population, mean age was 66±14 y, most were male (77%), hypertensive (54%), with prior CAD (20%) or diabetes (20%). On admission, half had ST segment elevation MI (STEMI) (55%), and ¼ suffered from heart failure, as assessed by Killip >1 (23%). Mean LVEF was 52±13%. Mean ADMA and SDMA levels were at 0.81±0.42 and 0.61±0.44, respectively. Spearman analysis showed that LVEF was correlated negatively with SDMA (r=−0.135, p=0.006), but neither with ADMA (r=−0.001, p=0.99). SDMA was strongly associated with age (r=+0.354, p<0.001), creatinine clearance (r=−0.416, p<0.001), CRP (r=−0.134, p=0.004) and homocysteine (r=−0.413, p=0.001). By univariate linear regression analysis, age, homocysteine, hypertension, diabetes, prior CAD, admission heart rate, creatinine clearance, anterior wall location, STEMI, CK peak, and acute statin treatment, in addition to SDMA, were significantly associated with LVEF (p<0.05). Backward multivariate analysis including these covariates showed that SDMA remains an independent predictor of LVEF (B=−3.422; SE=1.687, p=0.043), beyond classical determinants of LVEF including age, homocysteine and renal function.

Conclusion: Our large prospective study showed for the first time that SDMA, but ADMA, may be linked to left ventricular function in patients with acute MI, and suggests that such dimethylarginines may probably exert biological activity by other pathways than NOs activity inhibition and beyond renal function.

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Association of the prothrombin 20120GA variant with myocardial infarction in Tunisian population

Amani Kallel (1), Yousra Sediri (1), Salem Abdessalem (2), Mohamed Sami Mourali (1), Moncef Feki (1), Rachid Mechmeche (2), Rafid Jamaa (1), Nazihah Kaabachi (1)
(1) Hôpital La Rabta, biochimie, Tunis, Tunisie – (2) Hôpital La Rabta, laboratoire de biochimie, Tunis, Tunisie

Introduction: The prothrombin is the precursor of the serine protease thrombin, a key enzyme in hemostasis and thrombosis. Prothrombin 20120GA polymorphism was described as a moderate risk factor for venous thrombosis because this mutation is associated with prothrombin elevated levels which may lead to an imbalance between the procoagulant, anticoagulant and fibrinolytic system. 20120GA curriers have an increased risk of thrombosis. In this study, we proposed to determine the prevalence of 20120GA prothrombin variant among Tunisian population, and to evaluate the potential relevance of this variant with myocardial infarction (MI).

Methods: This study included 1007 unrelated male Tunisians divided into 399 MI patients and 608 healthy controls. Both groups were aged between 35-70 years. The prothrombin 20120GA polymorphism was carried out by polymerase chain reaction/restriction fragment length polymorphism (PCR-RFLP) analysis.

Results: The distribution of genotypes was in accordance with Hardy-Weinberg equilibrium (P>0.05). A significant difference in genotype distribution and allele frequency was observed between patients and controls. Patients with MI had a frequency of 97% for GG genotype and 3% for GA + AA genotypes. The control group had a frequency of 99% for the GG genotype and 1% for the GA + AA genotype (Q2=6.95, p=0.031). The MI patient group showed a significant higher frequency of the 20120A allele compared to the controls 0.02 vs. 0.01 [OR=3.60 (95% CI=1.29-10.53), p<0.005].

Conclusion: Our work showed a significant association between the 20120GA polymorphism of the prothrombin gene and MI in the Tunisian population.

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Heart rate variability in the first five minutes of the tilt test to predict syncope?

David Matelot (1), Nadine Khodor (2), Alfredo Hernandez (2), Nathalie Thillaye-Du-Boullay (2), Guy Carrault (2), François Carré (2)
(1) CIC-IT – Inserm 804, Rennes, France – (2) LTSI – Inserm 1099, Rennes, France

Purpose: Vasovagal syncope mechanisms, diagnostic tools and treatments are currently strongly explored and debated. The aim of this study is to specify the early cardiac autonomic adaptations to tilt test in negative and positive (cardio-inhibitory and vasodepressor) subjects.

Method: Healthy men (n=81) from 18 to 35 years old underwent a 45 min 80° tilt test after a 15 min rest. Three clinicians independently classified each tilt test results according to the VASIS classification: negative (NEG), mixed, cardio-inhibitor (CI) or vasodepressive (VD) syncope. Only three groups were studied: the NEG (n=13), CI (n=11) and VD (n=6). ECG recorded during 5 min of resting (Rest5) and the first 5 min of the tilt test (Early5) were compared within and between groups. ECG signals were analysed with the validated algorithm Segments (LTSI, Rennes) to calculate usual HRV parameters: Ptot, LF, HF, LFnu, HFnu.

Results: First, within group comparisons showed that in NEG subjects from Rest5 to Early5, HF and HFnu decreased (p<0.01) and LF (p=0.05) and LFnu (p=0.01) increased. VD subjects showed similar responses (p<0.05), except for HF indices (NS). In CI subjects LF and HF indices weren’t significantly different between Rest5 and Early5. Second, between groups comparisons of the relative adaptations (%) from Rest5 to Early5 showed that the increase in LFnu was higher in NEG (+180±86%) than in CI (+60±50%) (p=0.01). HFnu decrease was also higher in NEG (-66±5%) than in CI (−38±9%) (p<0.05).