Impact of Simvastatin on Development of New-onset Diabetes Mellitus in Asian Population: Three-year Clinical Follow up Results

Yoonjee Park, Seung-Woon Rha, Byoung Geol Choi, Se Yeon Choi, Cheol Ung Choi, Hong Eay Lim, Jin Won Kim, Eung Ju Kim, Chang Gya Park, Hong Seog Soo, Dong Joo Oh
Korea University Guro Hospital, Seoul, Korea (Republic of)

Background: Although statin therapy is beneficial for vascular diseases, the relationship between specific statin therapy and incidence of new-onset diabetes mellitus (DM) remains uncertain. We evaluated the impact of Simvastatin therapy on the development of new-onset DM from 3-year clinical follow-up data in a series of Asian population.

Methods: A total of 3,436 consecutive patients who did not have DM were enrolled. New-onset DM was defined as having a fasting blood glucose $\geq 126$mg/dL or HbA1c $\geq 6.5\%$. Baseline characteristics between the Simvastatin and the control group were propensity score matched (PSM, C-statics 6.5%). Baseline characteristics between the Simvastatin and the control group were propensity score matched (PSM, C-statics 6.5%). Baseline characteristics between the Simvastatin and the control group were propensity score matched (PSM, C-statics 6.5%). Baseline characteristics between the Simvastatin and the control group were propensity score matched (PSM, C-statics 6.5%).

Results: At baseline, patients in the Simvastatin group showed higher prevalence of diabetes, dyslipidemia, coronary artery disease, smoking and alcoholic history, and higher levels of HbA1c, fasting glucose, triglyceride, fibrinogen, and ALP. Three-year cumulative incidence of new-onset DM was compared between two groups.

Conclusion: In our study, the relationship between the use of Simvastatin and the incidence of new-onset DM remains unclear. Long-term follow up with a larger study population will be necessary for further information.

Is Acetyltransferase Activity an Indicator of BMS Condition in the Follow-up of Coronary Stenting

David G. Iosseliani, Irina E. Kuznetsova
City Center of Interv. Cardioangiology, Moscow, Russian Federation

Background: In-stent stenosis remains one of the most thrilling problems of interventional cardiology, and the search of the ways of its solution includes the study of causes and mechanisms of neo-intimal hyperplasia. For this reason the study of the impact of N-acetylation phenotype on the process of restenosis seems very interesting.

Methods: Retrospective study included 100 male patients aged 56.8 ± 6.1 years on the average, who received 116 coronary BMS for chronic CHD from December 2003 to January 2007. The patients have been selected for the study after control coronary angiography performed in 7.2 ± 2.2 months after PCI. The main inclusion criterion was the presence of in-stent stenosis (Group 1, n=50) and good mid-term results (Group 2, control, n=50) in the absence of known clinical and angiographic risk factors for restenosis development. Baseline angiographic data of patients and immediate results of PCI were evaluated by two independent experts. The standard Sulphadimine was used as the test-agent. After single peroral intake of 500 mg of Sulphadimine, the urine has been collected for 6 hours, and then the ratio of pro-metabolized (N-acetyl-sulphadimine) and non-metabolized sulphadimine in urine was determined with the help of high-effectual liquid chromatography.

Results: Among the studied patients, there were 38% slow acetylators and 62% fast acetylators. The analysis of the distribution of acetylation phenotype on groups 1 and 2 revealed high statistically significant prevalence of fast acetylators among patients with in-stent stenosis in the mid-term after PCI, P=0.0006.

Conclusion: We revealed reliable direct correlation between the velocity of acetylation processes and the degree of in-stent stenosis after coronary stenting with BMS in patients with chronic coronary heart disease.

Abdominal Adiposity Measured with Dual Bioelectrical Impedance Analysis of Hospitalized Patients in the Cardiology Ward

Kenji Sadamatsu, Kaoru Takegami, Taka Matsuura, Aribide Okahara, Takaharu Shirahama, Daigo Mine, Yasuaki Koga, Yasutsugu Nagamoto, Keiki Yoshida
Saga-ken Medical Centre Koseikan, Saga, Japan

Background: Obesity is a well-known risk factor of cardiovascular disease. However, several reports demonstrated “obesity paradox”, while central obesity was associated with the highest risk of mortality, which suggests the significance of visceral fat measurement. Recently, a novel system with dual bioelectrical impedance analysis (HD-2000, Omron healthcare, Kyoto) was developed. This technique does not need radiation exposure and the measurements were validated to have a good correlation with computed tomography.

Methods: A total of 60 patients (69.3 ± 10.6 years old, male 80%) admitted to the department of cardiology were measured their visceral fat areas with dual bioelectrical impedance analysis. Control group included 23 healthy volunteers (31.5 ± 8.3 years old, male 57%).

Results: The values of body mass index (24.0 ± 4.6 vs 21.6 ± 2.6, p=0.03) and visceral fat area (82.0 ± 51.6 vs 46.1 ± 15.7 cm², p=0.001) in the hospitalized patients
were significantly larger than those of the volunteers. Although there was a positive correlation between body mass index and visceral fat area (r = 0.86, p < 0.01), the ratio of visceral fat area to body mass index was also higher in the hospitalized patients (3.24 ± 1.40 vs 2.11 ± 0.61, p < 0.01). Correlations of age to body mass index (r = 0.09, p = 0.44) and visceral fat area (r = 0.16, p = 0.14) were not significant, however, the ratio of visceral fat area to body mass index had a weak correlation to age (r = 0.24, p = 0.03).

Conclusion: Hospitalized patients in the cardiology ward had larger visceral fat. Further investigation is needed to demonstrate clinical usefulness of this novel technique.

Other Pharmacologic Agents

(TCTAP A-205 to TCTAP A-206)

TCTAP A-205

The Protective Effect of PEP-1-CAT Fusion Protein Preconditioning on Myocardial Ischemia-reperfusion Injury in Rats

Yongjin Zhang, Xiaolun Wang
Sixth People’s Hospital Affiliated to Shanghai Jiaotong University, Shanghai, China

Background: Myocardial infarction is a leading cause of death and disability, with a direct correlation between infarct size and prognosis. Early reperfusion is an absolute prerequisite for the survival of ischemic myocardium. However, reperfusion itself may lead to accelerated and additional myocardial injury beyond that generated by ischemia alone. Oxygen free radical theory is an important mechanism of ischemia-reperfusion injury. Hydroxyl, which has high high toxicity, can be removed by CAT in the stage of reperfusion, endogenous CAT is relative scanty. CAT does not readily penetrate through membranes, but CAT can penetrate through cell

Results: Infarct size were measured by TTC staining, LDH, CK and CK-MB release were significantly lower in PEP-1-CAT treated groups compared with I/R group (p < 0.001), LDH and CK release were significantly decreased (p < 0.01) in the group treated with PEP-1-CAT fusion protein groups were significantly lower than I/R group (p < 0.05 or p < 0.01). Myocardial content of LDH and CK release were significantly lower in PEP-1-CAT treated groups compared with I/R group (p < 0.01). Under the fluorescence microscope, the apoptotic myocytes demonstrated brilliant green fluorescence and the percentage of apoptotic myocytes were decreased significantly in PEP-1-CAT treated groups compared with I/R group (p < 0.01). DAPI stained nucleus demonstrated blue fluorescence when excited under UV light, whereas the expression of Bcl-2 and Bax protein in the cytoplasm as well as nucleus membrane demonstrated brilliant green fluorescence, some of which were merged especially in I/R-2. Compared with I/R group, the drug markedly decreased the expression of Bax (p < 0.01), the ratio of Bax to Bcl-2 was decreased considerably.

Conclusion: PEP-1-CAT preconditioning has protective effect on ischemia-reperfusion injury, this may be related to antioxidant and anti-apoptosis effect.

TCTAP A-206

Three-year Cumulative Incidence of New-onset Diabetes; Are There Differences Between Atorvastatin and Simvastatin?

Sung gyu Yoon1, Seung-Woon Bha2, Byoung Geol Choi3, Se Yeon Choi1, Cheol Ung Choi1, Chang Gyu Park2, Hong Seog Seo1, Dong Joo Oh2
1Yeoung San Hospital, Daejeon, Korea (Republic of), 2Soonchunhyang University Cheonan Hospital, Cheonan, Korea (Republic of), 3Korea University Guro Hospital, Seoul, Korea (Republic of)

Background: Chronic statin administration may be associated with modestly decreased HDL-C, fibrinogen, and higher history of angiotensin converting enzyme inhibitor (ACEI) use. However, after propensity score matching, the two groups showed no significant difference at baseline. There was no significant difference in cumulative incidence of new-onset T2DM up to 36 months (Figure).

Conclusion: In our study, the cumulative incidence of new-onset T2DM up to 36 months were not different between chronic simvastatin and atorvastatin use.

Peripheral Vascular Intervention (Non-carotid, Non-neurovascular)

(TCTAP A-207 to TCTAP A-209)

TCTAP A-207

Impact of Hemodialysis in Critical Limb Ischemia Patients with Infra-popliteal Arterial Lesion on Clinical Outcomes Following Percutaneous Transluminal Angioplasty

Sung-Ho Park1, Seung-Woon Bha2, Byoung Geol Choi3, Won-Yong Shin1, Se Yeon Cho4, Youngjee Park1, Akkala Raghavender Goud1, Hu Li, Sanki Lee5, Ji Bak Kimi, Sung Il Im1, Jin Oh Na1, Cheol Ung Choi1, Hong Eun Lim2, Jin Won Kim4, Eung Ja Kim4, Chang Gyu Park2, Hong Seog Seo1, Dong Joo Oh2, 1Soonchunhyang University Cheonan Hospital, Cheonan, Korea (Republic of), 2Korea University Guro Hospital, Seoul, Korea (Republic of)

Background: In general, it has been known that hemodialysis was associated with vascular calcification and adverse clinical outcomes following endovascular intervention (EVT). Although the success rate of infra-popliteal arterial lesion causing critical limb ischemia (CLI) is becoming very high; however, the impact of hemodialysis on the major clinical outcomes following successful EVT is not clarified yet.

Methods: This study consisted of 115 consecutive CLI patients (pts) with infra-popliteal arterial lesion underwent EVT from September 2006 to September 2010. Provisional stenting was done once the balloon angioplasty outcome is not optimal, mainly by self-expanding nitinol stents. 1-year clinical outcomes of hemodialysis group (n=89 pts) were compared with those of non-hemodialysis group (n=26 pts) up to 12 months.

Results: The baseline clinical characteristics were similar between the two groups except that the combined femoral arterial lesion (61.5% vs. 38.2%) was more frequent in the hemodialysis group. 1-year repeat revascularization such as TLR, TES was similar between the two groups. However, the incidence of unknown origin death (16.7% vs. 0%, p=0.006) and ostectomy (27.8% vs. 8.1%, p=0.036) was higher in the hemodialysis group (table).

Conclusion: In our study, at 1 year, despite of similar incidence of repeat revascularization, the incidence of non-cardiac death and surgical intervention (ostectomy, amputation, debriement) was higher in the hemodialysis group. Thus, CLI pts on hemodialysis should be managed by more intensive care.

Table. One-year Clinical Outcomes

<table>
<thead>
<tr>
<th>Variable</th>
<th>Non-hemodialysis (n=89 pts)</th>
<th>Hemodialysis (n=26 pts)</th>
<th>P value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Death</td>
<td>9 (12.2)</td>
<td>4 (22.2)</td>
<td>0.274</td>
</tr>
<tr>
<td>Cardiac death</td>
<td>2 (2.7)</td>
<td>0 (0.0)</td>
<td>0.481</td>
</tr>
<tr>
<td>Unknown death</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>0.886</td>
</tr>
<tr>
<td>Repeat TLR</td>
<td>15 (20.3)</td>
<td>2 (11.1)</td>
<td>0.509</td>
</tr>
<tr>
<td>Target Lesion Revascularization (TLR)</td>
<td>10 (12.5)</td>
<td>1 (3.7)</td>
<td>0.685</td>
</tr>
<tr>
<td>Target Extent Revascularization (TER)</td>
<td>0 (0.0)</td>
<td>1 (3.8)</td>
<td>0.681</td>
</tr>
<tr>
<td>Debridement</td>
<td>10 (13.5)</td>
<td>5 (19.2)</td>
<td>0.142</td>
</tr>
<tr>
<td>Ostectomy</td>
<td>0 (0.0)</td>
<td>1 (3.8)</td>
<td>0.686</td>
</tr>
<tr>
<td>Amputation</td>
<td>2 (2.7)</td>
<td>2 (7.6)</td>
<td>0.184</td>
</tr>
</tbody>
</table>

* Fisher exact test