

**CRT-137****Impact of Renin-angiotensin-aldosterone System Inhibitors On 5-year Clinical Outcomes in Patients with Significant Coronary Artery Spasm; A Propensity Score Matching Study**

Se Yeon Choi,<sup>1</sup> Seung-Woon Rha,<sup>2</sup> Byoung Geol Choi,<sup>2</sup> Sang-Ho Park,<sup>3</sup> Woong Gil Choi,<sup>4</sup> Soo Hyun Kim,<sup>5</sup> Eun-Gyu Lee,<sup>6</sup> Ji Young Park,<sup>7</sup> Jihun Ahn,<sup>8</sup> Sang Yeub Lee,<sup>9</sup> Sang Min Kim,<sup>9</sup> Min Woong Kim,<sup>9</sup> Seong Gyu Yoon,<sup>2</sup> Tae Hoon Ahn,<sup>10</sup> Dong Joo Oh<sup>2</sup>  
<sup>1</sup>Department of Medicine, Korea University Graduate School, Seoul, Korea, Republic of; <sup>2</sup>Cardiovascular Center, Korea University Guro Hospital, Seoul, Korea, Republic of; <sup>3</sup>Cardiology Department, Soonchunhyang University Cheonan Hospital, Cheonan, Korea, Republic of; <sup>4</sup>Division of Cardiology, Konkuk University Chungju Hospital, Chungju, Korea, Republic of; <sup>5</sup>Division of Cardiology, Konkuk University Chungju Hospital, Chungju, Korea, Republic of; <sup>6</sup>Cardiovascular Center, Andong Sungso Hospital, Andong, Korea, Republic of; <sup>7</sup>Cardiology Department, Eulji General Hospital, Seoul, Korea, Republic of; <sup>8</sup>Department of Internal Medicine, Soonchunhyang University Gumi Hospital, Gumi, Korea, Republic of; <sup>9</sup>Cardiovascular Center, Chungbuk National University Hospital, Cheongju, Korea, Republic of; <sup>10</sup>Department of Cardiology, Hanyang University Medical Center, Hanmaeum Hospital, Changwon, Korea, Republic of; <sup>11</sup>Gachon University of Medicine and Science, Gil Hospital, Incheon, Korea, Republic of

**BACKGROUND** It has been well known that a major cause of vasospastic angina is endothelial dysfunction of the coronary artery. Also, renin-angiotensin-aldosterone system (RAAS) is known to be closely associated with endothelial dysfunction. However, there is no study for impact of RAAS inhibitor on long-term clinical outcomes in vasospastic angina patients (pts).

**METHODS** A total of 3,349 consecutive pts without significant coronary artery disease (CAD) underwent acetylcholine (Ach) provocation test and diagnosed as CAS between Nov. 2004 and May, 2014 were enrolled. Significant CAS was defined as > 70% of narrowing by incremental intracoronary injection of 20, 50 and 100 µg into left coronary artery. Pts were divided into two groups based on the treat of RAAS inhibitors (the RAAS group: n=666, the control group; n=2683). To adjust potential confounders, a propensity score matched (PSM) analysis was performed using the logistic regression model.

**RESULTS** After PSM analysis, 2 propensity-matched groups (1,143 pairs, n = 2,286, C-statistic=0.845) were generated and the baseline characteristics of the two groups were balanced. At 5 years, despite of similar incidence of individual hard endpoints including mortality, myocardial infarction and revascularization, the RAAS inhibitors group were significantly associated with lower incidence of recurrent angina requiring repeat coronary angiography than the control group (HR; 0.63, 95% C.I; 0.40-0.99, p=0.048, Table and Figure).

**CONCLUSIONS** In our study, RAAS inhibitor was associated with reduced incidence of recurrent angina in pts with vasospastic angina up to 5-year clinical follow-up.

**Table. Clinical outcomes upto 5-years**

Variable, N (%)	HR(95%CI)	p Value
RAAS	0.630 (0.398-0.995)	0.048
Gender	1.675 (0.936-2.997)	0.082
Age	1.024 (1.000-1.048)	0.041
Diabetes	0.683 (0.391-1.192)	0.180
Dyslipidemia	1.466 (0.893-2.406)	0.130
Current alcoholics	1.174 (0.676-2.037)	0.568
Current smokers	1.258 (0.743-2.128)	0.392
Myocardial_Bridge	0.777 (0.432-1.400)	0.402
Aspirin	1.301 (0.804-2.105)	0.282
Nitrate	1.726 (0.919-3.240)	0.089
Diltiazem	1.234 (0.678-2.248)	0.491
Trimetazidine	0.925 (0.586-1.462)	0.742
ACEI	1.712 (0.994-2.947)	0.052
ARB	1.597 (0.901-2.830)	0.108
Statins	1.592 (0.917-2.762)	0.098

**Figure 137D: Cumulative % Recurrent Angina Repeat CAG**

Log Rank = 0.027

14.5% (Control) vs 3.9% (RAAS)

**CRT-138****Impact of Trimetazidine Treatment on 5-year Clinical Outcomes in Patients with Significant Coronary Artery Spasm; A Propensity Score Matching Study**

Seung-Woon Rha,<sup>1</sup> Byoung Geol Choi,<sup>2</sup> Se Yeon Choi,<sup>1</sup> Ji Young Park,<sup>3</sup> Sang-Ho Park,<sup>4</sup> Jihun Ahn,<sup>5</sup> Woong Gil Choi,<sup>6</sup> Soo Hyun Kim,<sup>6</sup> Eun-Gyu Lee,<sup>7</sup> Sang Yeub Lee,<sup>8</sup> Sang Min Kim,<sup>9</sup> Min Woong Kim,<sup>9</sup> Seong Gyu Yoon,<sup>2</sup> Tae Hoon Ahn,<sup>10</sup> Dong Joo Oh<sup>1</sup>  
<sup>1</sup>Cardiovascular Center, Korea University Guro Hospital, Seoul, Korea, Republic of; <sup>2</sup>Department of Medicine, Korea University Graduate School, Seoul, Korea, Republic of; <sup>3</sup>Cardiology Department, Eulji General Hospital, Seoul, Korea, Republic of; <sup>4</sup>Cardiology Department, Soonchunhyang University Cheonan Hospital, Cheonan, Korea, Republic of; <sup>5</sup>Department of Internal Medicine, Soonchunhyang University Gumi Hospital, Gumi, Korea, Republic of; <sup>6</sup>Division of Cardiology, Konkuk University Chungju Hospital, Chungju, Korea, Republic of; <sup>7</sup>Cardiovascular Center, Andong Sungso Hospital, Andong, Korea, Republic of; <sup>8</sup>Cardiovascular Center, Chungbuk National University Hospital, Cheongju, Korea, Republic of; <sup>9</sup>Department of Cardiology, Hanyang University Medical Center, Hanmaeum Hospital, Changwon, Korea, Republic of; <sup>10</sup>Gachon University of Medicine and Science, Gil Hospital, Incheon, Korea, Republic of

**BACKGROUND** Trimetazidine (Vastinam™) is an anti-ischemic metabolic agent, which improves myocardial glucose utilization through inhibition of fatty acid metabolism, also known as fatty acid oxidation inhibitor. Trimetazidine usually prescribed as a long-term treatment of angina pectoris. The aim of this study is to investigate clinical impact of trimetazidine as an additional treatment of acetylcholine (Ach) induced coronary artery spasm (CAS) on clinical outcomes up to five-years.

**METHODS** A total of 3,360 consecutive patients (pts) underwent Ach provocation test and positive CAS pts were enrolled between Nov. 2004 and May. 2014. Significant CAS was defined as > 70% of narrowing by incremental intracoronary injection of 20, 50 and 100 µg into left coronary artery. Pts were divided into two groups: the Trimetazidine group (Diltiazem+Nitrate+Trimetazidine; n=1,154), the control group (Diltiazem+Nitrate+Placebo; n=745). To adjust potential confounders, a propensity score matched (PSM) analysis was performed using the logistic regression model.

**RESULTS** After PSM analysis, 2 propensity-matched groups (659 pairs, n =1,318, C-statistic=0.695) were generated and the baseline characteristics of the two groups were balanced. At 5 years, there were similar incidence of individual hard endpoints including mortality, myocardial infarction, revascularization and recurrent angina requiring repeat coronary angiography.

**CONCLUSIONS** In this study, despite the expected improvement if ischemic symptoms by anti-ischemic mechanisms, an additional treatment with Trimetazidine in CAS pts was not associated with improving clinical outcomes up to five-years. To get a final conclusion, a large scale randomized trial would be needed.

**Table. Clinical Outcomes up to 5-years after Propensity Score Matching**

Variable, N (%)	HR(95%CI)	p Value
Trimetazidine	1.267 (0.854-1.878)	0.239
Age	1.012 (0.992-1.032)	0.222
Gender (male)	1.334 (0.812-2.191)	0.255
DM	0.784 (0.460-1.336)	0.373
Dyslipidemia	1.908 (1.198-3.040)	0.007
Current smokers	1.337 (0.821-2.175)	0.242
Current alcoholics	0.869 (0.555-1.360)	0.540
Aspirin	1.709 (1.062-2.956)	0.023
Beta blockers	1.496 (0.842-2.656)	0.169
Diuretics	1.194 (0.621-2.296)	0.595
ARB	0.711 (0.387-1.305)	0.272
ACEI	1.280 (0.585-2.800)	0.535
Statins	1.249 (0.772-2.023)	0.364
Myocardial_Bridge	1.171 (0.753-1.821)	0.482
Hypertension	0.950 (0.623-1.451)	0.815

**Figure 138D: Cumulative % Recurrent Angina Repeat CAG**

Log Rank = 0.161

12.6% (Dual: Diltiazem + Nitrate) vs 8.4% (Dual: Diltiazem + Trimetazidine)