METHODS From the IRIS-DES registry, we identified 683 patients treated using stent with ST-elevation myocardial infarction (STEMI) who had multivessel disease. A total 212 patients was underwent infarct-artery percutaneous coronary intervention (PCI) alone, and a 471 patients was underwent preventive PCI. Major adverse cardiac events (MACE) were defined using composite of death, myocardial infarction, and target vessel revascularization (TVR).

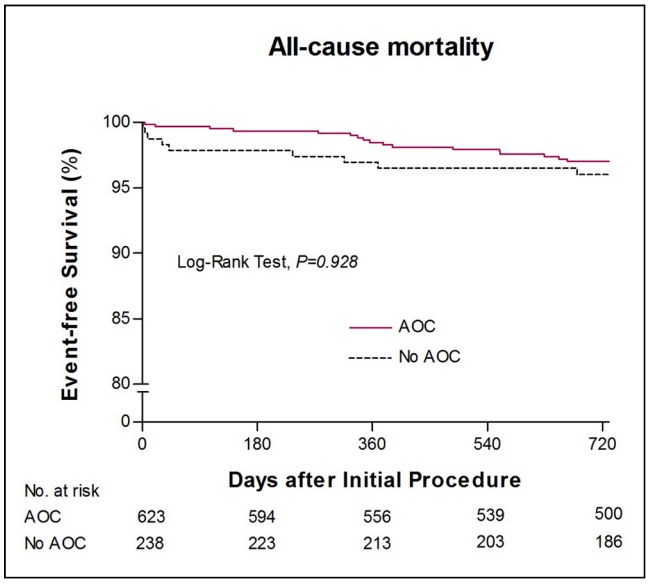
RESULTS During follow up (median 2 years), culprit only PCI versus preventive PCI was no significant difference in MACE cumulative incidence(11.4% vs. 12.5%, Hazard ratio[HR], 95% confidence interval [CI] 0.89 (0.55 - 1.45), P = 0.652), death (6.0% vs. 7.1%, 0.86 (0.45 - 1.65), P = 0.653), MI (1.6% vs. 7.1%, 1.11 (0.27 - 4.60), P = 0.876), and TVR (8.5% vs. 12.0%, 0.65 (0.38 - 1.12), P = 0.121). The cumulative rates of Academic Research Consortium defined definite stent thrombosis were 1.0% in Only culprit PCI group and 0.9% in preventive PCI group (P = 0.901).

CONCLUSION In our registry study, the preventive PCI in STEMI cannot contribute to improve clinical outcome, including death, MI, and TVR. A preventive angioplasty strategy of nonculprit lesions in STEMI remains controversial.

Table 1. Characteristics of Study Patients Undergoing PCI of the ULMCA

	No AOC (N=238)	AOC (N=623)	P-value
Age (years)	62.34±10.97	63.92±9.47	0.231
Gender (Male)	45(18.9)	174(27.9)	0.007
Hypertension	144(60.5)	356(57.1)	0.371
Diabetes	85(35.7)	216(34.7)	0.774
LV ejection fraction (%)	57.3±9.72	59.6±7.64	0.035
Aorto-ostial lesion	5(2.1)	307(49.3)	0.001
At least one chronic total occlusion	7(2.9)	6(1)	0.033
At least one severe calcification	14(5.9)	21(3.4)	0.095
At least one thrombus present	12(5)	26(4.2)	0.579
At least one ulceration	11(4.6)	13(2.1)	0.043
Reference diameter (mm)	3.58±0.44	3.7±0.42	0.001
Lumen diameter stenosis (%)	61.83±32.8	64.79±26.5	0.171
Total number of stents	2.89±1.4	2.68±1.5	0.301
Total stent length	70.32±39.7	63.08±38.1	0.158
Maximal balloon inflation size	3.94±0.3	4.08±0.4	0.004

Data are N (%), mean±SD; AOC, aorto-ostial coverage



TCTAP A-010

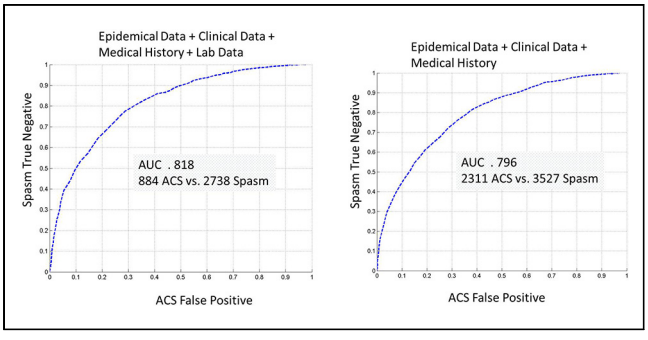
A Machine Learning-Based Approach to Prediction of Acute Coronary Syndrome

Ji Young Park,[1] Yung-Kyun Noh,[2] Byoung Geol Choi,[3] Seung-Woon Rha,[3] Kee Eung Kim[2]
[1]Eulji General Hospital, Korea (Republic of); [2]Korea Advanced Institute of Science and Technology, Korea (Republic of); [3]Korea University Guro Hospital, Korea (Republic of)

BACKGROUND Acute coronary syndrome (ACS) refers to symptoms attributed to obstruction of the coronary arteries, and is associated with coronary thrombosis. In ACS patients, revascularization within the time of guideline recommendation is critical to improve prognosis, where in real situation, however, patients with appropriate treatment are minor. Diagnostic dilemma is one of the important reasons of reperfusion delay. Despite well trained physicians and diagnostic tools, diagnosing ACS early in the emergency department (ED) remains a challenge. In this study, we investigate the possibility of predicting ACS using machine learning algorithms at an early stage using clinical and laboratory data in patients who presented a chest pain at admission of emergency room or outpatients clinic.

METHODS We obtained 2,344 ACS patient and 6289 non-ACS patient data, and 27 features are selected for ACS prediction. Among the non-ACS, patients, coronary artery spasm (CAS) was 2,738 patients. A standard algorithm, linear discriminant analysis (LDA) is used for prediction, and the classification accuracy of ACS and non-ACS patients is reported as well as the analysis which features are more relevant. Based on the feature pattern and filter characteristics, we can analyze which features possess the discriminative information while other features help improve accuracy by reducing noise of features with discriminative information.

RESULTS The accuracy of classification is average of 0.81 for non-trained data, and we could select relevant features of classification as well as the features without discriminative information but reducing noise of relevant features. Even when we eliminate the relevant features chosen at first stage, the less-informative features still have discriminative information achieving the accuracy of 0.81.



CONCLUSION The risk group of ACS patients can be selected before emergency using prediction algorithm, and the accuracy is high. However, in this study, there were several missing data, which is related to predict ACS. Therefore, in the future, a large cohort study without missing data should be needed to get a final result.

TCTAP A-011

Incidence of Sub-Acute Stent Thrombosis in Patients with ST-Segment Elevation Myocardial Infarction: Comparison with Elective Patients and Impact of Two-Stent Procedure

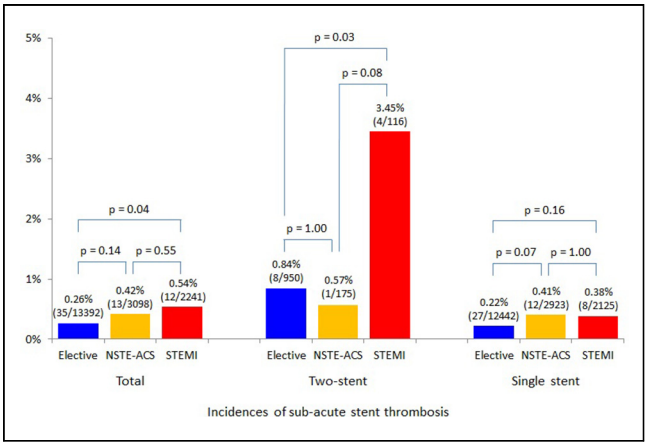
Hidewo Amano,[1] Kazushige Kadota,[1] Yu Izawa,[1] Takenori Kanazawa,[1] Tahei Ichinohe,[1] Yusuke Hyodo,[1] Takeshi Tada,[1] Tsuyoshi Goto,[1] Kazuaki Mitsudo[1]
[1]Kurashiki Central Hospital, Japan

BACKGROUND It is reported that emergency procedure and two-stent procedure at the bifurcation lesion are high risk factors for sub-acute stent thrombosis (SAT). However, the impacts of presence or absence of ST-segment elevation in acute coronary syndrome (ACS) patients and two-stent procedure in those patients are little known. We compared

the incidence of SAT between ST-segment elevation myocardial infarction (STEMI), non-ST-segment elevation ACS (NSTE-ACS) and elective patient sand investigated the impact of two-stent procedure.

METHODS From January 2001 to December 2013, percutaneous coronary intervention was performed in 2241 STEMI, 3098 NSTE-ACS, and 13392 elective patients, in whom the incidence of SAT was compared between those treated with two-stent procedure and single stent procedure. SAT was defined as stent thrombosis which occurs from one day to one month after procedure according to the Academic Research Consortium definition. The patients whose cause of stent thrombosis was diagnosed as heparin-induced thrombocytopenia were excluded.

RESULTS SAT occurred in 12 (0.54%) of the 2241 STEMI patients, 13 (0.42%) of the 3098 NSTE-ACS patients and 35 (0.26%) of the 13392 elective patients. And data are shown in the figure.



CONCLUSION The incidence of SAT was significantly higher in STEMI patients than in elective patients. The difference was remarkable in those treated with two-stent procedure but not significant in those treated with single stent procedure.

TCTAP A-012

Classification of Patients by Pathophysiological Stages, a New Method to Stratify Post-STEMI Patients

Heng Ge,[1] Ben He[1]
[1]Shanghai Renji Hospital, China

BACKGROUND The prognosis of ST-segment Elevation Myocardial Infarction (STEMI) remains hugely different. Risk stratification is therefore very important for individual patient in terms of prognostic estimation and medical regiment planning. However, the ways for stratification are far from uniform. Evaluations are made based on different considerations but largely dependent on doctors' own experiences. We presumed that a classification based on different pathophysiological stages would be an objective way to stratify patients.

METHODS 140 first-STEMI patients were classified as: grade 0, no detectable myocardial necrosis; grade 1, with myocardial necrosis; grade 2, myocardial necrosis with reduced left ventricular ejection fractions (LVEF); grade 3, reduced LVEF accompanied with cardiac remodeling; grade 4, apparent mitral regurgitation additional to the grade-3 criteria. To guarantee the equal comparison, myocardial necrosis, infarction size and cardiac remodeling was determined by cardiac magnetic resonance while mitral regurgitation and cardiac improvements were assessed by echocardiography.

Pathophysiological criteria to stratify post-STEMI patients

Mitral regurgitation					
LV Remodeling					
LVEF reduction					
Myocardial necrosis					
Myocardial edema					
Grade	**0**	**1**	**2**	**3**	**4**

RESULTS 1.4%, 42.1%, 27.2%, 25% and 4.3% patients were classified as grade 0 to grade 4, respectively. According rate of 90-day MACEs (any death, resuscitated cardiac arrest, acute heart failure and stroke) was 0%,5.1%, 7.9%, 47.1% and 71.4% ($p<0.001$). Grade-2 patients had more LVEF improvements than grade-3/4 patients after 90 days (44.7% vs 18.4%, $p<0.001$). Both the classification and the infarction size were independent predictors for 90-day MACEs. However, without the necessity to quantify infarction extent directly, the classification is a good reflection of infarction size (0±0%, 16.78±9.49%, 24.53±10.18%, 36.59±13.05% and 40.33±15.82% by grade 0 to 4, $P<0.001$) and has a comparable prognostic value as the infarction size(0.822 vs. 0.815, $p=0.855$ by C-statistics).

CONCLUSION The new classification may provide a standard scale to describe the impact of STEMI on individual patient and facilitate diagnostic consensus among doctors.

TCTAP A-013

Nine-Month Outcomes Following Primary PCI with Bioresorbable Vascular Scaffold Implantation in Patients with ST-Segment Myocardial Infarction: Results from the Multicentre "Registro ABSORB Italiano" (RAI Registry)

Alfonso Ielasi,[1] Bernardo Cortese Cortese,[2] Attilio Varricchio,[3] Maurizio Tespili,[1] Giuseppe Steffenino[4]
[1]Bolognini Hospital, Italy; [2]Fatebenefratelli Hospital, Milan, Italy; [3]Monaldi Hospital, Naples, Italy; [4]S.Croce e Carle Hospital, Cuneo, Italy

BACKGROUND Newer-generation DES may be considered the standard of care for the treatment of STEMI patients undergoing primary PCI. However, the implantation of these permanent devices can be associated with important limitations in this setting. The bioresorbable vascular scaffold (Absorb BVS) has been designed to overcome their limitations, disappearing entirely within 3 years and restoring native vessel state. In this multicentre prospective registry we sought to evaluate the immediate and midterm clinical outcomes following single or multiple overlapping BVS implantation in the STEMI setting.

METHODS A prospective cohort analysis was performed on all STEMI patients (symptom onset <24 hours from hospital admission) who underwent primary PCI with BVS implantation in different Italian Hospitals. The primary endpoint of the study was procedural success, defined as BVS implantation at the "culprit" lesion site with less than 30% final stenosis and TIMI 3 flow without in-hospital MACE (cardiac death, myocardial infarction [MI] or need for emergent target lesion revascularization [TLR]). Furthermore, we evaluated the occurrence of cardiac death, MI, TLR and BVS thrombosis up to 9-month follow-up.

RESULTS Between December 2012 and February 2014, 1,232 STEMI patients underwent primary PCI. Of these, 74 (6.0%) received a BVS, 18 (24.3%) of them were multiple and overlapping. Procedural success was obtained in 72 (97.3%) cases without differences between the groups (overlapping BVS100% vs. single BVS 96.4%, $p=0.5$). One patient experienced a re-infarction due to sub-acute BVS thrombosis while the other patient had a final TIMI flow 2. At 9-month follow-up, 2 non-fatal MI (2.7%), 3 TLR (4.1%), and 1 sub-acute BVS thrombosis were reported in 3 patients (1 [5.6%] overlapping BVS and 2 [3.6%] in the single BVS group, $p=0.5$). All the events were successfully managed with re-PCI.

CONCLUSION Single or multiple overlapping BVS implantation in STEMI patients can be successfully performed with a high procedural success rate and encouraging 9-month outcomes. Larger randomized trials and longer follow-up are needed to assess the potential clinical benefit of BVS versus new-generation DES in this setting.

TCTAP A-014

Complete Versus Target-Vessel Revascularization in NSTEMI Patients

Nikolay Dimitrov,[1] Kiril Karamfilov,[1] Iana Ivaylova Simova,[2] Rumen Iliev[1]
[1]University Hospital St. Ekaterina, Bulgaria; [2]National Cardiology Hospital, Bulgaria

BACKGROUND Acute myocardial infarction without ST segment elevation (NSTEMI) is the most common form of presentation of acute myocardial necrosis. Optimal therapeutic strategy in NSTEMI patients is a subject of debate - it has been shown recently that disturbed myocardial perfusion in the non-target coronary arteries is associated with worse prognosis and potential benefits of expanding the primary intervention to full instead of target-vessel revascularization are being discussed. The aim of this study is to compare the incidence of