Role of Pitavastatin (Livalo®) in Asian Acute Myocardial Infarction Patients

: Insights from Livalo Acute Myocardial Infarction Study (LAMIS)

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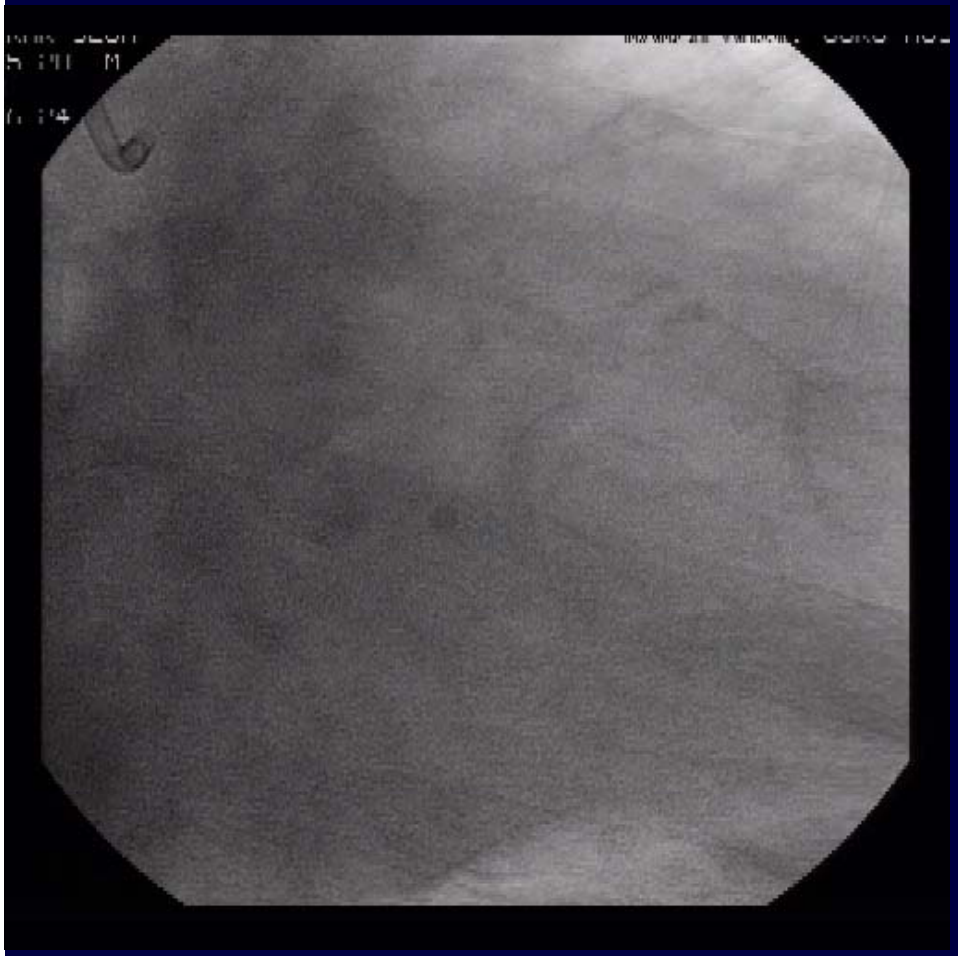
Contents

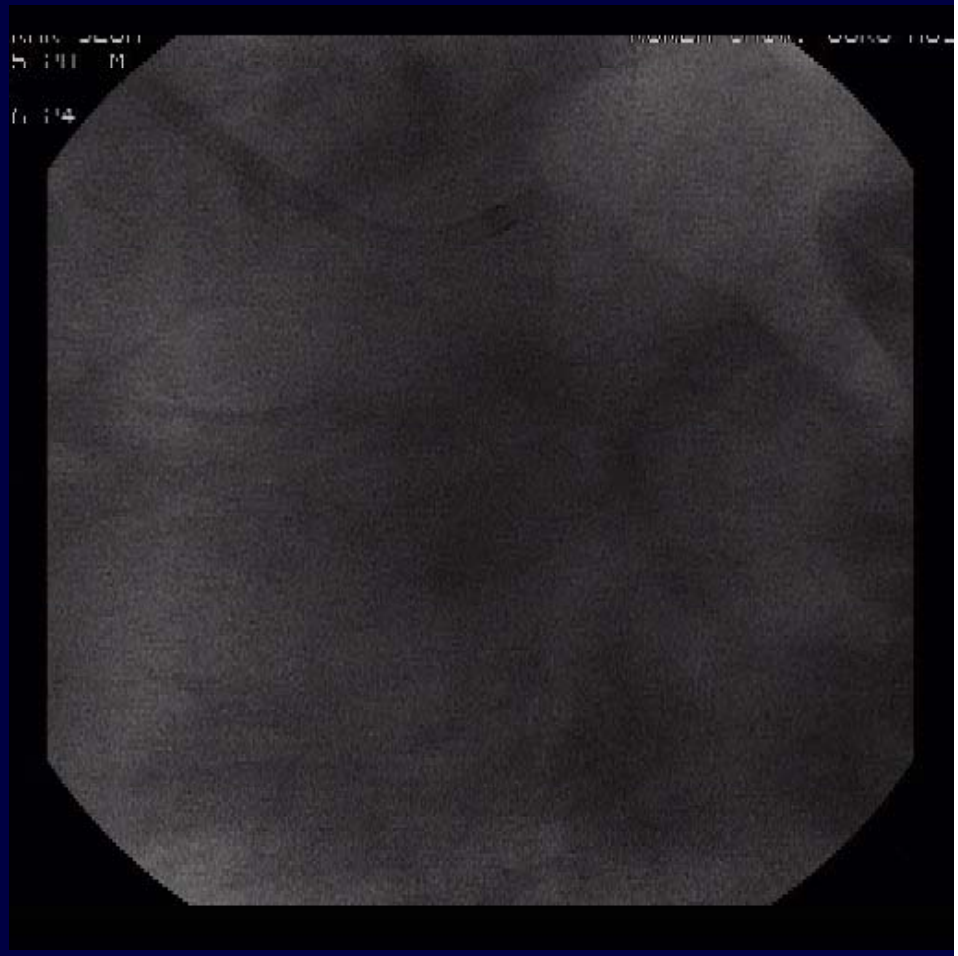
1. Introduction; ACS in DES Era & LAMIS
2. Pitavastatin (Livalo) in AMI
   ; insights from LAMIS (Livalo AMI Study) & KAMIR (Korea AMI Registry)
3. Pitavastatin (Livalo) in STEMI
4. Pitavastatin (Livalo) in NSTEMI
5. Pitavastatin (Livalo) in AMI with DM
6. Summary & Conclusion

AMI with DES-Efficacy & Safety?

1. Still restenosis; DES failure
2. Stent thrombosis; Clinically more risky
3. DES-Spasm/Endothelial Dysfunction
4. DES aneurysm/ Late stent malapposition
5. Hypersensitivity reaction
6. Late catch up/ LTO (Late Total Occlusion)
7. Others…

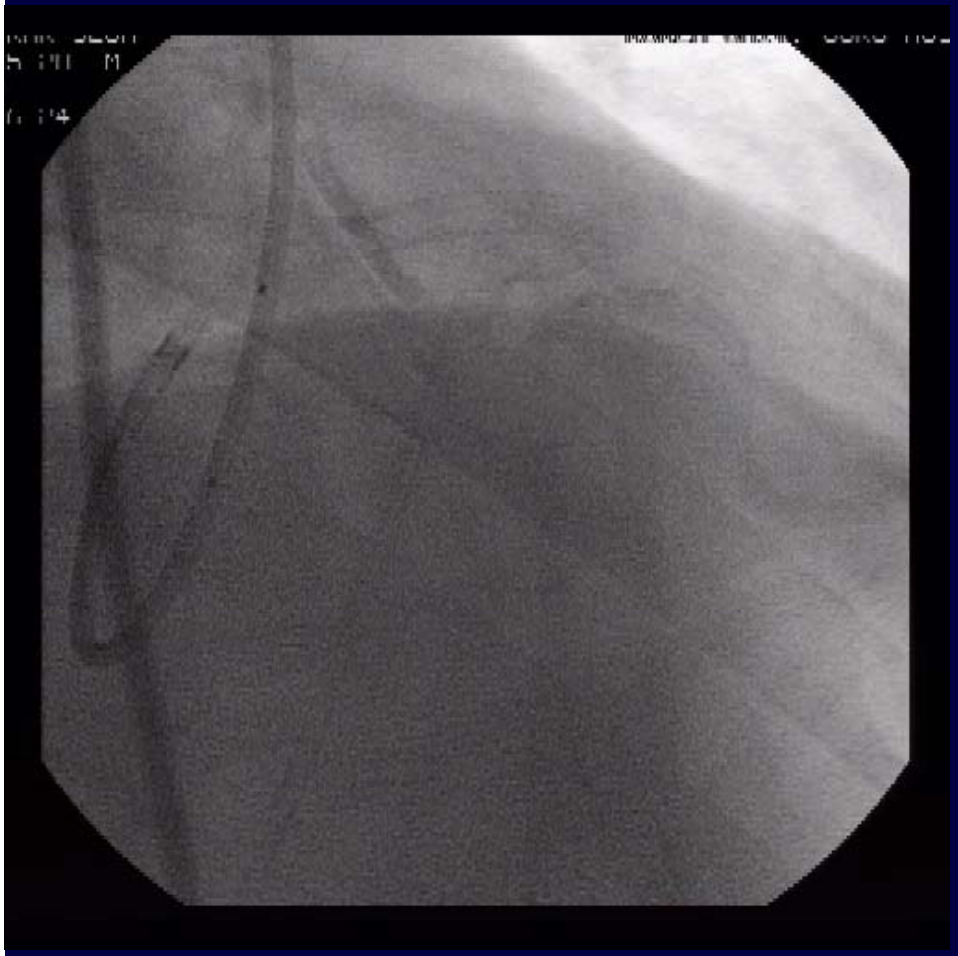
Acute Ant Wall MI due to Acute Stent Thrombosis (1)

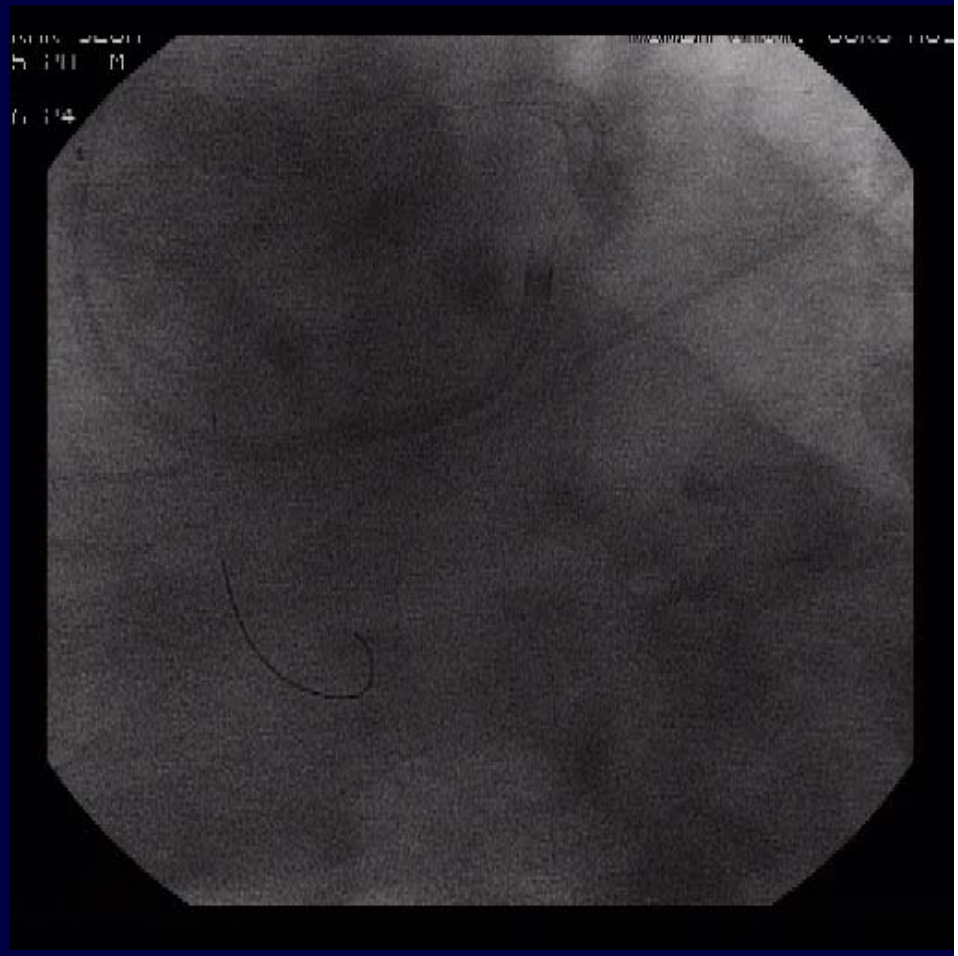




Pre PCI (Acute stent thrombosis at previously implanted DES)

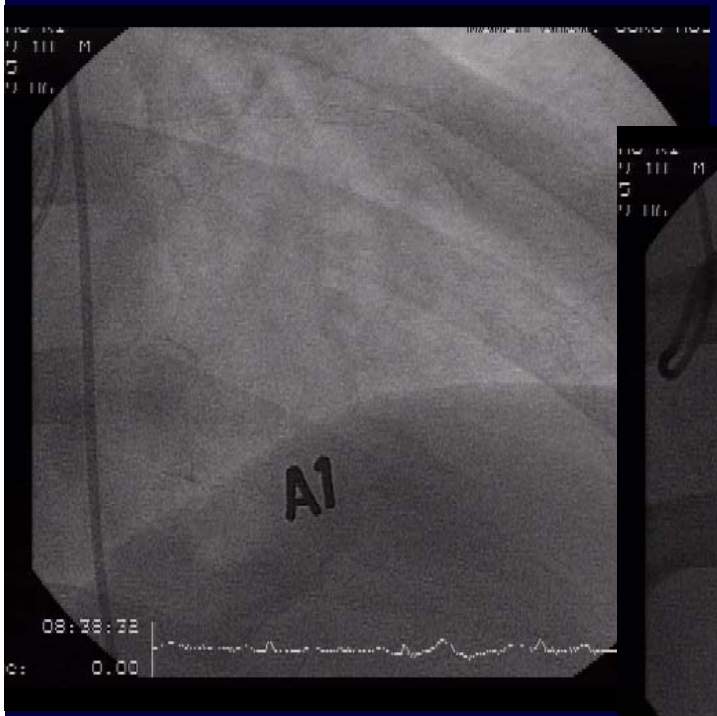
Acute Ant Wall MI due to Acute Stent Thrombosis (2)



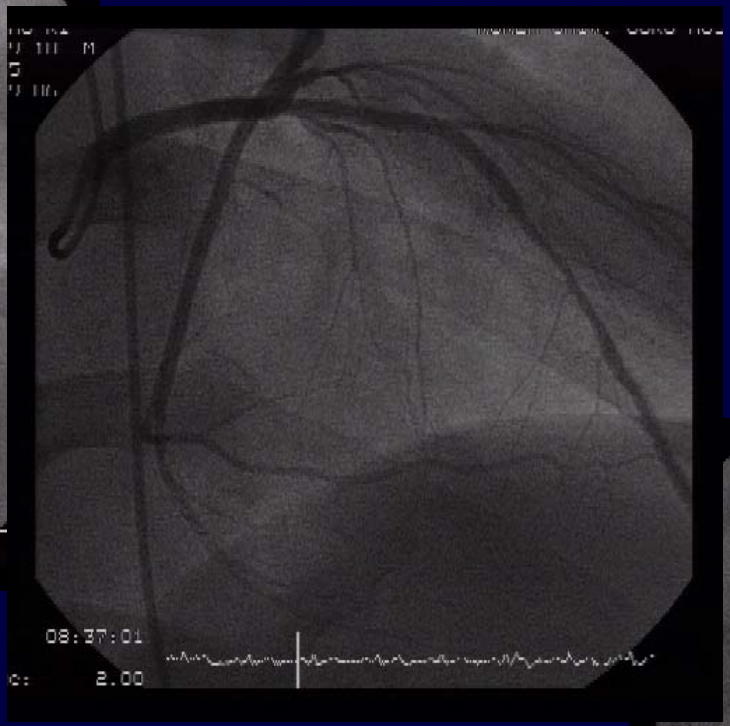


Post PCI

Post DES Spasm (1)

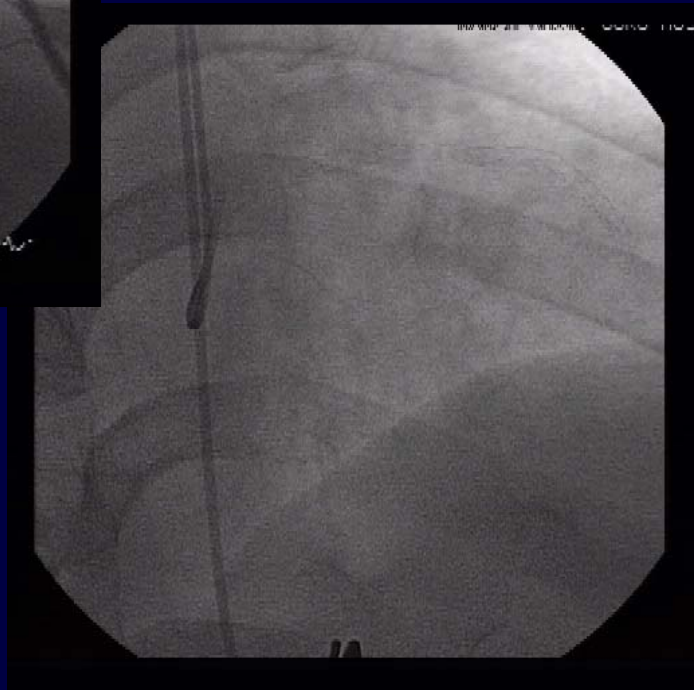


Ergonovine

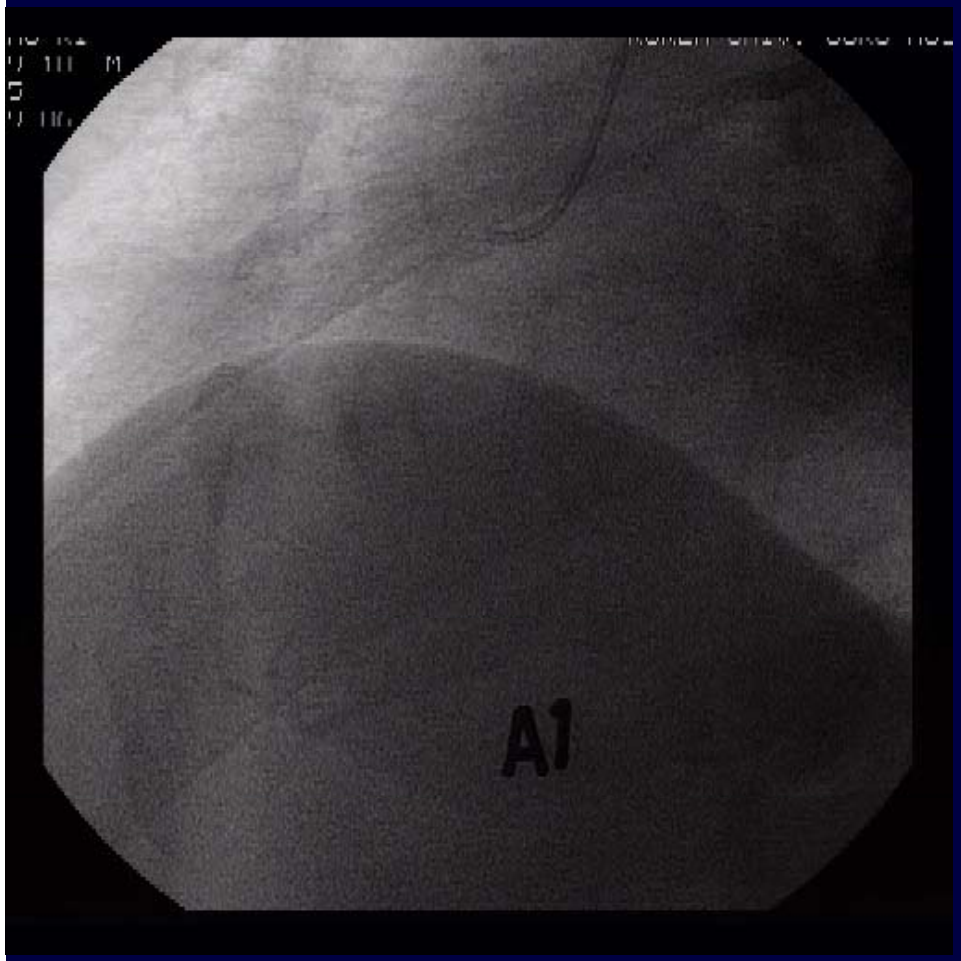


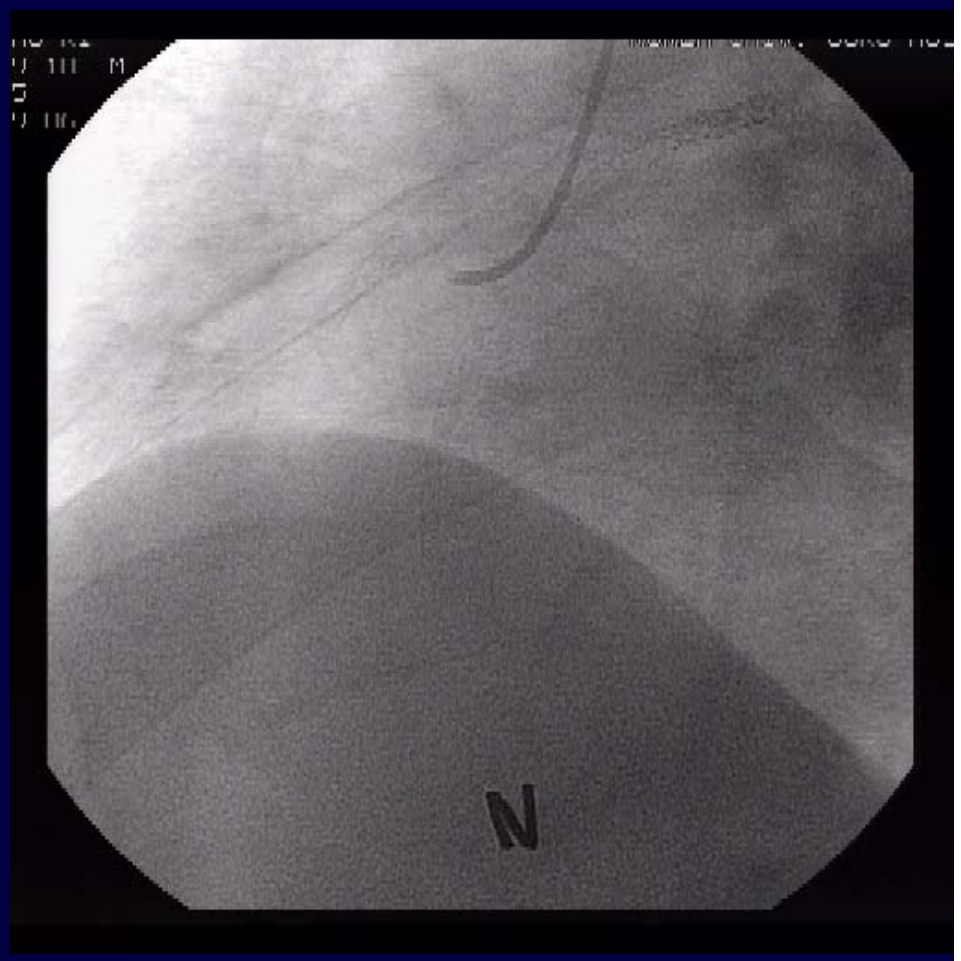
Ach

NTG



Post DES Spasm (2)

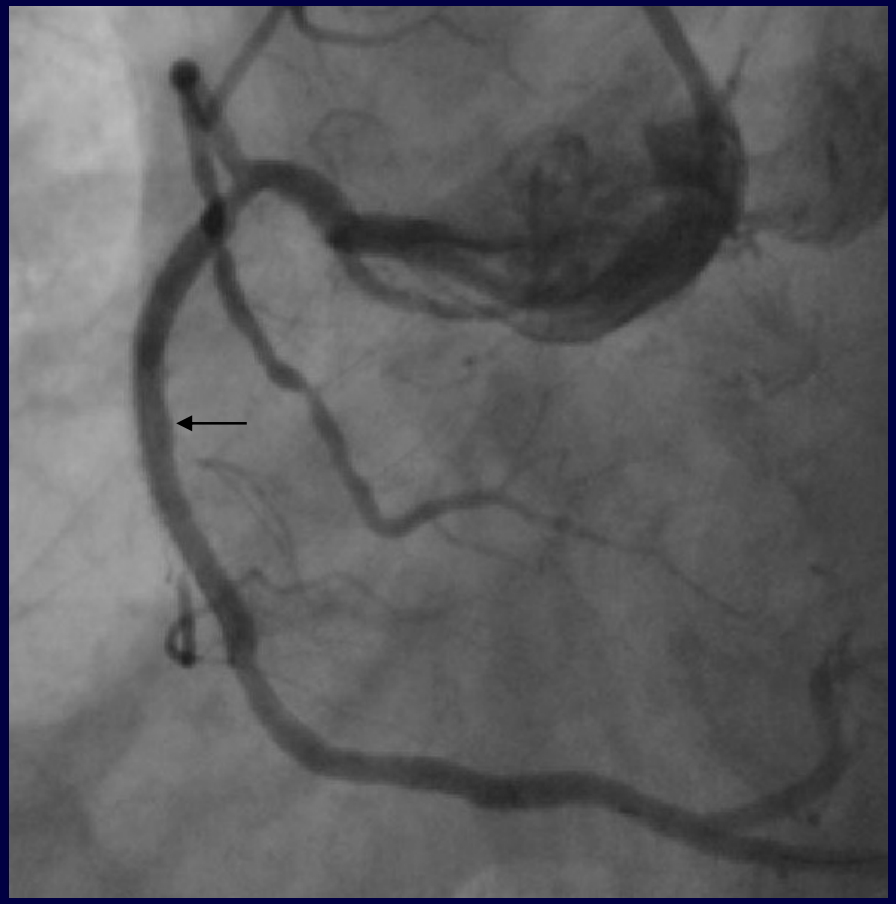


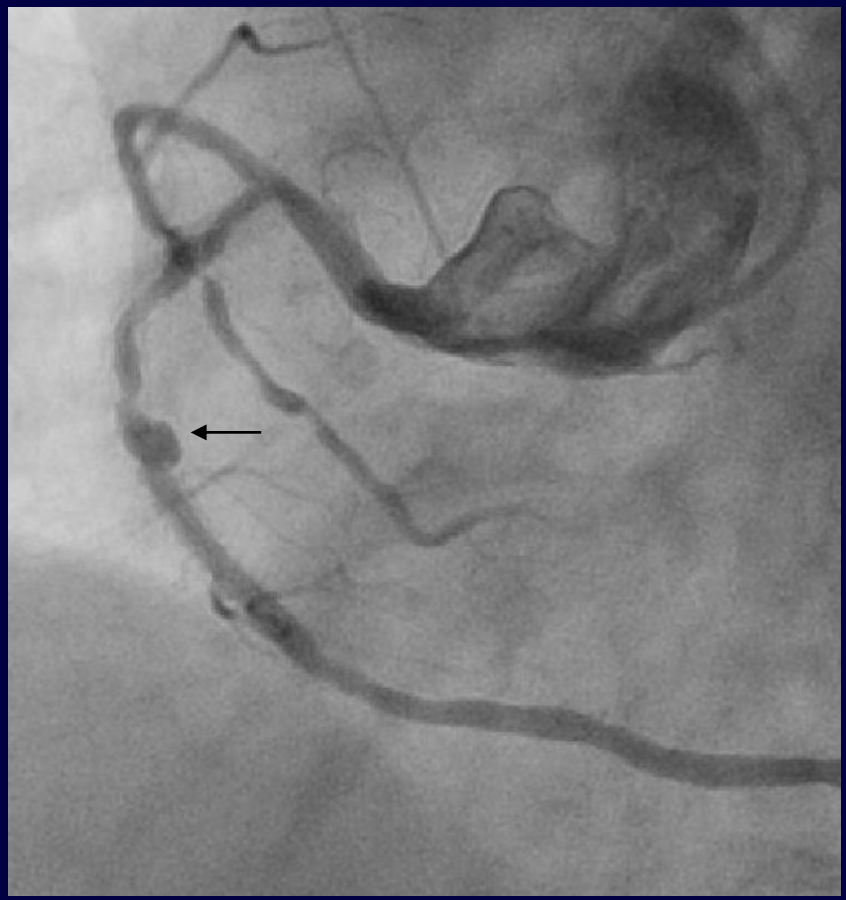


Ach injection into RCA

Incomplete Stent Apposition (ISA)

; could Develop into Aneurysm

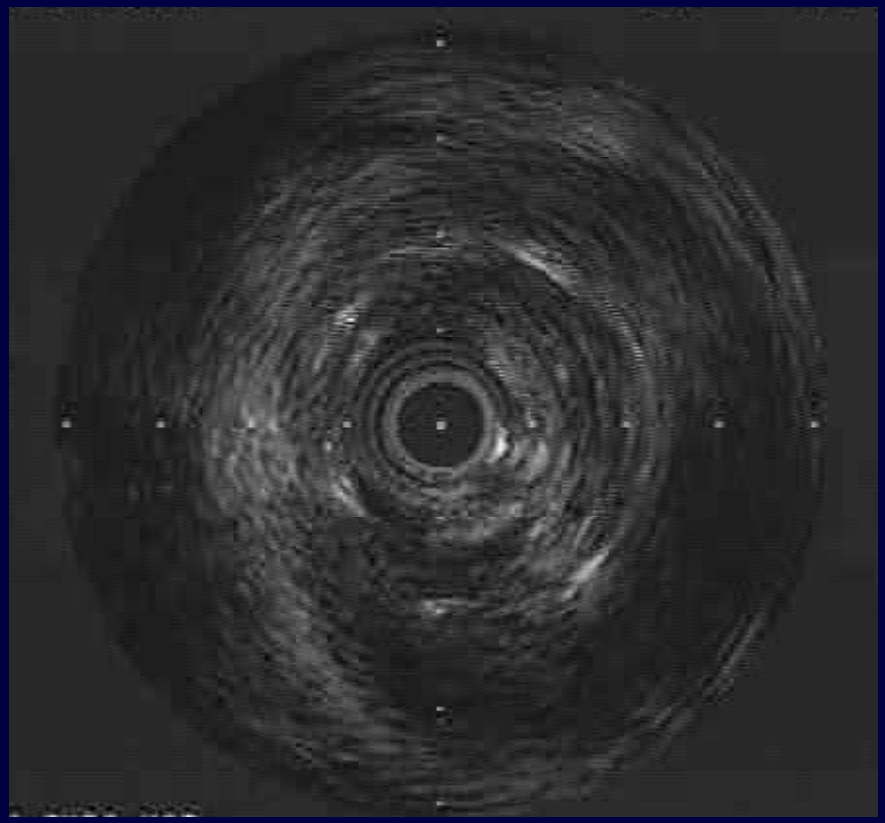




JSIC 2008

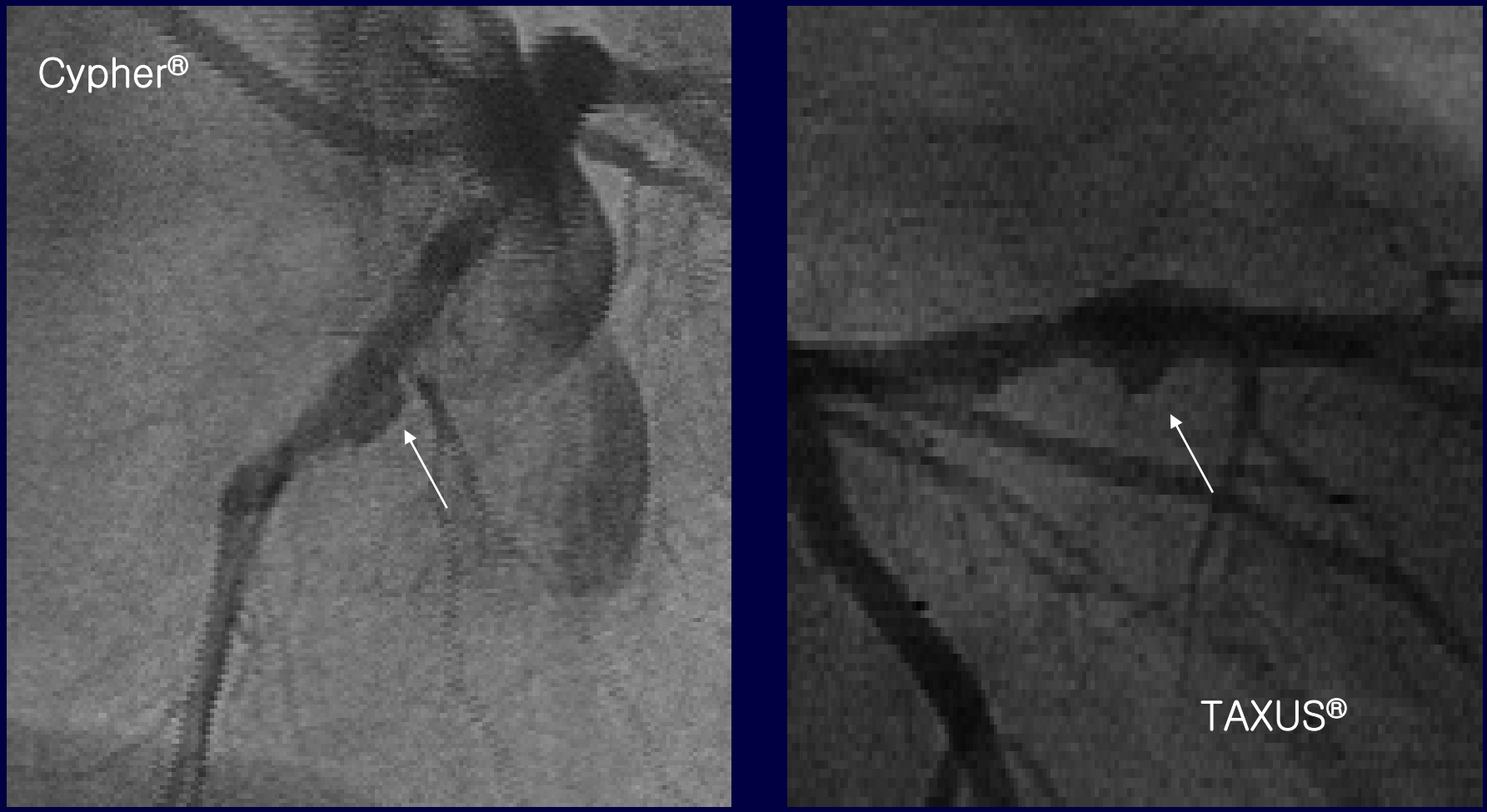
Definition of Coronary Neo-Aneurysm

- Focal or diffuse abnormal luminal dilatation 5 0% larger than that of reference segment beyo nd the implanted DES on the follow up angiog raphy.



JSIC 2008

Neo Aneurysm Formation after DES Implantation



JSIC 2008

For Prevention and Optimization of PCI in DES era..

1. Adequate device selection & technology
2. Optimal systemic medical therapy

** Role of Statins?*

; what are the rationale for using Statins in ACS, especially in AMI?

Pleiotropic Effects of Statin

1. Inhibition of VSMC growth
2. Restoration of Endothelial dysfunction
3. Atherosclerotic plaque stabilization/Regression
4. Reduced leukocyte adhesiveness
5. Reduced ischemia-reperfusion injury
6. Others….

Korean AMI Registry (KAMIR) & Livalo AMI Registry (LAMIS)

1. Korean prospective multicenter registry from 41 (currently more than 50) major PCI centers for AMI since *2005. 11.*
2. Korean prospective multicenter registry from 10 centers for evaluating role of Pitavastatin (Livalo) in AMI since *2007.5*
3. DES penetration in KAMIR

   ; over 92%, major DES & New DESs

   No regulation for the statins

Livalo AMI Study (LAMIS)
"Updated issue with Pitavastatin"

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In Ho Chae6, Jong Hyun Kim7, Kyeong Ho Yun8, Sang Wook Kim9,
Kee Sik Kim10, Mi Hee Kim11, Ji Eun Oh 11, *Myung Ho Jeong2**

(On behalf of LAMIS Investigators)

Korea University1, ChonNam University2, Gachon University3, KonYang University4, KeiMyung University5, Seoul National University6, Han Seo Hospital7, WonKwang University8, Chung Ang University9, Catholic University of Daegu10, Chung Wae Pharm11

*** PI of LAMIS Investigators**

LAMIS-Major Enrolling Hospitals

Data extracted date : 2010. 03. 13

Center	PI	First enroll date	Enroll No.
Gachon University Gil Medical Center	Tae Hoon Ahn	2007-12-10	33
Konyang University Hospital	Jang Ho Bae	2007-06-26	120
Keimyung University Dongsan Medical Center	Seung Ho Hur	2007-06-26	121
Korea University Guro Hospital	*Seung Woon Rha*	2007-04-23	131
Daegu Catholic University Medical Center	Kee Sik Kim	2007-06-26	124
Seoul National University Bundang Hospital	In Ho Chae	2007-10-31	51
Hanseo Hospital	Jong Hyun Kim	2007-05-21	132
Wonkwang University Hospital	Kyeong Ho Yun	2007-04-30	131
Chonnam National University Hospital	*Myung Ho Jeong*	2007-07-18	165
Chung-Ang University Hospital	Sang Wook Kim	2007-06-20	120
Total			1128

Background

1. There are very limited data regarding role of statin in managing acute myocardial infarction (AMI) patients, especially in drug-eluting stent (DES) era.

2. Statin therapy, specifically a lipophilic statin Pitavastatin (Livalo®) in AMI setting may play an important role by not only reducing LDL-cholesterol, but also through the pleiotrophic effects.

In the present study, we evaluated the efficacy and safety of routine administration of Pitavastatin in AMI pts as a substudy of Korea Acute Myocardial Infarction Registry (KAMIR).

Method

Source Data

The current data regarding CVD came from the subgroup analysis of Korea Acute Myocardial Infarction Registry (*KAMIR study).*

Study population

This study consisted of 1059 consecutive AMI patients (pts; male 73.9 %; mean age, 61.5 yrs ± 12.7) presented in 10 major percutaneous coronary intervention (PCI) centers in Korea from April 2007 to March 13, 2010.

Administraion

Initial dosage: 2mg/day
If it's not enough to reduce LDL-C, increase up to 4mg/day.

Study Definition

CVD	included ischemic and hemorrhagic cerebral events. TIA was not considered as CVD.
Revascularization	both Re-PCI and CABG
All MACE	included total death, revascularization, and myocardial re-infarction.

Study endpoints

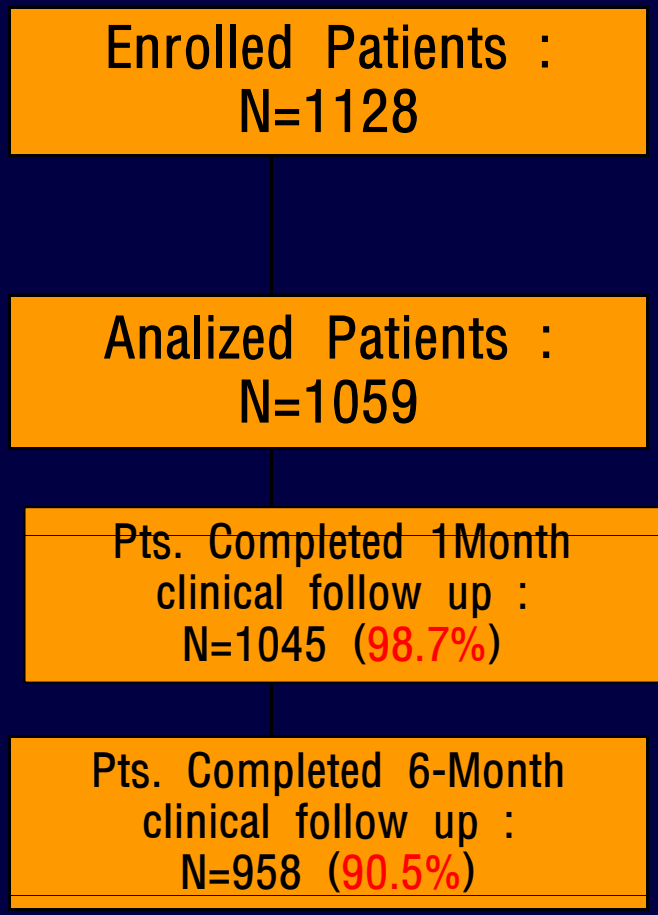
1. The clinical outcomes up to 1 year
   1) Overall outcomes of LAMIS
   2) Outcome comparison with Historical Control group in KAMIR (No Statin group & All Statin group)

2. The changes of lipid profiles and noble biochemical markers at baseline, 1, 6 and 12 months

3. Adverse effects & Safety issues

LAMIS Enrollment Status 2010.3

Data extracted date : 2010. 03. 13



Exclusion : Protocol violations
(69 patients)

- Did not administrated Pitavastatin (Livalo) at discharge (34)
- Death before discharge (11)
- Same patients(10)
- Transfer other hospital before discharge(4)
- Etc.(9)

General background

Demographic data

Data extracted date : 2010. 03. 13

variables			frequency(n)	percentage (%)
Gender	n=1059	Male	783	73.9
		Female	276	26.1
Age	n=1059	Mean±SD	61.5± 12.7	
		Under 40	53	5.0
		41~70	728	68.7
		Over 70	278	26.3
Height(cm)	n=1052	Mean±SD	164.3±8.8	
Weight(kg)	n=1059	Mean±SD	65.4 ±11.3	
BMI(Kg/m^2)	n=1052	Mean±SD	24.2±3.2	
		Under 25	683	64.5
		25 ~ 29.9	322	30.4
		Over 30	54	5.1

Risk Factors

❸ History of ischemic heart disease

	frequency(n)	percentage(%)
Yes	118	11.2
No	938	88.8

	frequency(n)	percentage(%)
Previous angina	49	0.4
Previous PCI	53	0.4
Previous AMI	19	0.2
Previous CABG	2	0.0

❹ History of hypertension

	frequency(n)	percentage(%)
Yes	491	46.4
No	561	53.1
Unknown	5	0.5

	frequency(n)	percentage(%)
Treated	397	84.1
Untreated	75	15.9

Risk Factors

❺ History of diabetes mellitus

	frequency(n)	percentage(%)
Yes	255	24.1
No	799	75.6
Unknown	3	0.3

	frequency(n)	percentage(%)
Oral treated	199	80.6
Insulin treated	16	6.5
Oral + insulin	0	0
Untreated	32	13.0

❻ History of dyslipidemia

	frequency(n)	percentage(%)
Yes	102	9.6
No	923	87.2
Unknown	33	3.1

	frequency(n)	percentage(%)
Treated	40	43.0
Untreated	53	57.0

Risk Factors

❼ History of smoking

	frequency(n)	percentage(%)
Current-smoking	506	48.1
Ex-smoking	155	14.7
No	392	37.2

❽ Family history of heart disease

	frequency(n)	percentage(%)
Yes	54	5.1
No	903	85.5
Unknown	99	9.4

Risk Factors

❾ Past regular medication

	frequency(n)	percentage(%)
Yes	447	42.8
No	598	57.2

❿ History of statin

	frequency(n)	percentage(%)
Yes	50	4.8
No	999	95.2

	frequency(n)	percentage(%)
Pitavastatin	14	29.2
Rosuvastatin	8	16.7
Pravastatin	0	0.0
Fluvastatin	1	2.1
Atorvastatin	11	22.9
Simvastatin	13	27.1
Lovastatin	1	2.1

AMI Management

❶ Initial therapeutic strategy

	frequency(n)	percentage(%)
STEMI	674	63.9
NSTEMI	381	36.1

STEMI

	frequency(n)	percentage(%)
Primary PCI	540	81.5
Facilitated PCI	45	6.8
Thrombolysis	38	5.7
Conservative Management	40	6.0

NSTEMI

	frequency(n)	percentage(%)
Early invasive management	245	65.7
Early conservative management	128	34.3

AMI Management

❷ Treatment & outcome

	frequency(n)	percentage(%)
Thrombolysis	51	4.67
PCI	971	88.8
CABG	4	0.4
Others	67	6.1

Thrombolysis

	frequency(n)	percentage(%)
Successful thrombolysis in clinical	33	64.7
Successful thrombolysis on angiogram	14	27.5
Failed thrombolysis	4	7.8
No survival	0	0

AMI Management

PCI

	frequency(n)	percentage(%)
Successful PCI	844	88.1
Sub-optimal PCI	106	11.1
Failed PCI	8	0.8
No survival	0	0

PCI with stent

	frequency(n)	percentage(%)
Yes	935	97.3
No	26	2.7

CABG

	frequency(n)	percentage(%)
Successful CABG	4	100.0
Sub-optimal CABG	0	0.0
Failed CABG	0	0.0
No survival	0	0.0

AMI Management

❸ Angiographic finding

	frequency(n)	percentage(%)
One vessel	465	44.8
Two vessel	344	33.2
Three vessel	190	18.3
Left main	12	1.2
No significant stenosis	26	2.5

	frequency(n)	percentage(%)
Spasm	10	40
Myocardial bridge	1	4
Good thrombolytic state	4	16
Normal coronary artery	8	32
others	2	8

AMI Management

❹ Post TIMI flow

	frequency(n)	percentage(%)
TIMI 0	18	1.8
TIMI I	7	0.7
TIMI II	76	7.7
TIMI III	893	89.8

❺ Stage of revascularization

	frequency(n)	percentage(%)
No revascularization of IRA	60	6.0
Revascularization of single IRA	519	52.2
Revascularization of only IRA in multi-vessel	155	15.6
Multi-vessel revascularization	121	12.2
Total revascularization	140	14.1

Major Clinical Outcomes 2010.3

❶ Cumulative clinical outcomes up to 1 year

	1M	3M	6M		9M	12M	
N	1045	1006	958	%	906	870	%
Death	6	12	18	1.9	20	32	3.7
cardiac death	5	10	12	1.3	14	20	2.3
non-cardiac death	1	2	6	0.6	6	12	1.3
Repeat MI	2	9	11	1.1	11	14	1.6
STEMI	2	5	6	0.6	6	8	0.9
NSTEMI	1	4	5	0.5	5	6	0.7
Repeat Revascularization	2	8	31	3.2	69	93	10.7
CABG	0	0	0	0.0	14	22	2.5
TLR	1	7	19	2.0	33	41	4.7
TVR	1	7	23	2.0	43	53	6.1
non-TVR	1	1	8	0.8	12	18	2.1
All MACE (TVR-MACE)	9	25	47	4.9	68	104	11.9
1) TLR-MACE	7	19	33	3.4	49	65	7.5
2) TVR-MACE	9	25	47	4.9	68	104	11.9

Discharge & follow up

❷ Laboratory tests (result from every visit)

	Pre-discharge		1M		6M		12M	
	mean±SD (n)		mean±SD (n)		mean±SD (n)		mean±SD (n)	
TC	190.7±42.4	1050	153.8±29.5	573	156.2±34.2	457	159.0±35.2	321
TG	124.7±90.7	1036	145.3±108.9	547	139.2±76.7	439	151.8±157.1	303
HDL-C	45.1±11.8	1034	44.4±10.6	541	44.4±11.2	435	43.7±9.6	300
LDL-C	122.0±37.2	1027	87.6±25.0	533	90.9±27.4	429	90.2±28.9	293
hs- CRP (Median)	19.2±262.9 1	922	2±9.5 0.5	538	2.1±9.5 0.3	397	2.5±13.6 0.2	255
Max. CK	1129.3±2132.9	969	105.4±95.9	505	120±97.7	378	117.6±79.5	220
GOT	90.6±138.9	1054	25±17.4	599	25.6±26.5	472	24.9±9.9	322
GPT	40.1±44	1054	27.8±26	600	26.8±29.4	467	26.3±16.1	322

Discharge & follow up

❹ NCEP 치료목표 달성률

	1M	6M	12M
	% (n)	% (n)	% (n)
LDL ≤ 100mg/dL 달성률	71.1 (379/533)	67.6 (290/429)	72.7 (213/293)
LDL ≤ 70mg/dL 달성률	25.3 (135/533)	24.0 (103/429)	22.9 (67/293)
DM 환자에서 LDL ≤ 70mg/dL 달성률	28.4 (36/129)	29.9 (26/87)	31.7 (19/41)

Adverse Drug Reaction

❹ Adverse Events

Number of cases

	Total AE		Serious case		myalgia	CK ↑	GOT/ GPT↑
	AE	ADR	SAE	SADR			
Gachon University Gil Medical Center	4	0	3	0	0	0	0/1
Konyang University Hospital	18	1	2	0	0	1	0/1
Keimyung University Dongsan Medical Center	79	1	8	0	1	5	8/6
Korea University Guro Hospital	41	3	7	0	1	2	3/9
Daegu Catholic University Medical Center	2	0	1	0	0	5	0/1
Seoul National University Bundang Hospital	2	2	0	0	0	0	3/3
Hanseo Hospital	6	0	1	0	0	0	0/3
Wonkwang University Hospital	70	0	7	0	4	3	4/5
Chonnam National University Hospital	80	14	12	0	2	14	13/21
Chung-Ang University Hospital	14	0	2	0	0	0	1/4
Total	316	21	43	0	8	30	32/53

Adverse Drug Reaction

❹ Adverse Events(n=1128)

	SAE	ADR
Number of cases(patients)	43(40)	21(15)
Rate of events	3.8%	1.9%

DEATH(11)
LUNG EDEMA (3)
CARDIAC DEATH(2)
MI(2)
CONGESTIVE HEART FAILURE (2)
CEREBRAL HAEMORRHAGE (2)
GASTRITIS(2)
GASTRIC ULCER HAEMORRHAGIC(2)
CHEST DISCOMFORT(1)
THYROID NEOPLASM MALIGNANT(1)
PULMONARY TUBERCULOSIS REACTIVE(1)
CEREBELLAR INFARCTION(1)
ENDOPHTHALMITIS(1)
BLADDER CARCINOMA(1)
ARRHYTHMIA NODAL(1)
INTERSTITIAL LUNG DISEASE(1)
HEART THROBBING(1)
CARDIAC FAILURE(1)
BILE DUCT CARCINOMA(1)
INFLAMMATORY SWELLING(1)
ASTHMA(1)
DERMATITIS(1)
ABDOMINAL PAIN(1)

Elevated GOT(4)
Elevated GPT (4)
MYALGIA**(3)**
Elevated CK(1)
CONVULSIONS, legs(1)
VOMITING(1)
COUGHING**(1)**
CONSTIPATION(1)
ABDOMINAL PAIN**(1)**
DIARRHEA(1)
DIZZINESS(1)
PAIN NECK/SHOULDER(1)
RASH (1)

LAMIS Summary

1. Major clinical outcomes in AMI pts who received routine Pitavastatin (LIVALO) were excellent up to 12 months.

2. Long-term administration of Pitavastatin in pts with AMI was safe and effective in reducing future cardiovascular events.

LAMIS-Conclusion

Routine administration of 2mg Pitavastatin daily in pts with AMI showed excellent biochemical and clinical outcomes without significant adverse effects.

New Cath Lab (Oct 2007)

Cath Lab Family

Korea University Guro Hospital

Pitavastatin (Livalo®) versus No Statin in Patients with *Acute Myocardial Infarction* Undergoing Percutaneous Coronary Intervention : 12-month Clinical Outcomes from Livalo Acute Myocardial Infarction Study (LAMIS)

Seung-Woon Rha, Lin Wang, Ji Young Park, Kanhaiya L. Poddar, Sureshkumar Ramasamy, Byoung Geol Choi, Ji Bak Kim, Seung Yong Shin, Un-Jung Choi, Cheol Ung Choi, Hong Euy Lim, Jin Won Kim, Eung Ju Kim, Chang Gyu Park, Hong Seog Seo, Dong Joo Oh,
Young Keun Ahn*, Myung Ho Jeong* and Other KAMIR Investigators

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*** Chonnam National University Hospital, Gwangju, Korea**

KSC 2009 Meeting

Background

1. Current guidelines recommend that the goal of lipid-lowering therapy in patients (pts) with coronary artery disease is LDL-C level < 100mg/dl.

2. Pitavastatin (Livalo) is a potent lipophilic statin and may play an important role in acute myocardial infarction (AMI) setting but there have been limited data regarding role of pitavastatin in managing AMI patients (pts), especially in the drug-eluting stent era.

Purpose

This study was to evaluate whether the routine administration of Pitavastatin daily in AMI pts can positively impact on clinical outcomes compared with those of AMI pts without statin therapy up to 12 months.

Methods

1. Source Data

1) Pitavastatin Data were originated from the Livalo AMI study *(LAMIS; 2007.2-2009.7)*

2) AMI pts without statin usage were drawn as a 'historical comparison group' from the subgroup analysis of *Korea Acute Myocardial Infarction Registry* (*KAMIR study; 2005.11-2009.2*)

2. Study population

1) The study population consisted of 1,069 consecutive AMI pts enrolled for the interim analysis.

2) Pitavastatin group; exclusively used Pitavastatin (2mg/day as sole statin therapy from the presentation time

Methods

3. Study Groups

All the pts were divided into 2 groups accordin g to their use of statins:

Pitavastatin group N=1070 pts
No Statin group N=3011 pts

Methods

4. Antithrombotic therapy

1) Enoxaparin (Clexane®); 60mg bid before PCI and after PCI during the hospital stay (within 7 days).

2) Unfractionated Heparin; a bolus of 50 U/kg prior to PCI for 1st one hour

3) GP IIbIIIa blocker (Reopro®); depend on physician's discretion

Methods

5. Percutaneous Coronary Intervention (PCI) Procedure

1) A variety of atheroablative devices were not utilized and mostly simple predilation or was performed to get an adequate luminal diameter which was necessary to accommodate the unexpanded DES or BMS and their delivery system.

2) Thrombus aspiration was done using Thrombuster II catheter or Export catheter if there were significant angiographic visible thrombi in the target lesion before stenting.

6. Study Endpoints

; We compared the major clinical outcomes of both groups at 12-month.

Statistics (1)

1. All statistical analyses were performed using SPSS 17.0.
2. Continuous variables were expressed as means ± standard deviation and were compared using Student's t-test.
3. Categorical data were expressed as percentages and were compared using chi-square statistics or Fisher's exact test.
4. A *P*-value of 0.05 was considered statistically significant.

Statistics (2)

5. To rule out the confounding effects from the baseline biases, multivariate Cox regression analysis were performed.

6. Confounding factors included age, gender, body mass index, conventional cardiovascular risk factors (hypertension, diabetes mellitus, hyperlipidemia, smoking and family history of coronary heart disease), past history (prior myocardial infarction, prior heart failure, peripheral artery disease, cerebrovascular disease), diagnosis of AMI, and major treatments (PCI or thrombolysis, aspirin, clopidogrel, cilostazol, heparins, glycoprotein IIb/IIIa receptor blockers, beta-blockers, angiotensin converting enzyme inhibitors, angiotensin II receptor blockers, calcium channel blockers).

Baseline Characteristics(1)

Variable, n (%)	No statin (N=3011 pts)	Pitavastatin (N=1070 pts)	p-value
Age, years	63.6 ±13.0	61.4 ±12.6	<0.001
Gender(Male)	2190 (71.2)	793 (74.1)	0.065
Diagnosis			
STEMI	1696 (55.5)	676 (63.4)	<0.001
NSTEMI	1362 (44.5)	390 (36.6)	<0.001
Hypertension	1465 (48.2)	495 (46.6)	0.375
Untreatment	187 (6.2)	73 (6.9)	0.405
treatment	1260 (41.4)	403 (37.9)	0.046
DM	896 (29.6)	261 (24.5)	0.002
Untreatment	105 (3.5)	31 (2.9)	0.387
Oral	691 (22.8)	206 (19.4)	0.019
insulin	96 (3.2)	15 (1.4)	0.002

Baseline Characteristics(2)

Variable, n (%)	No statin (N=3011 pts)	Pitavastatin (N=1070 pts)	p-value
Dyslipidemia	203 (7.7)	104 (10.1)	0.018
Untreatment	71 (2.7)	57 (5.5)	<0.001
treatment	132 (5.0)	47 (4.5)	0.577
Smoking	1739 (57.1)	666 (62.5)	0.002
Current	1286 (42.2)	509 (47.8)	0.002
Quit	453 (14.9)	157 (14.8)	0.924
IHD (Ischemic Heart Disease)	503 (16.4)	123 (11.5)	<0.001
Previous angina	175 (5.6)	51 (4.8)	0.290
Previous PCI	289 (9.3)	53 (5.0)	<0.001
Previous AMI	105 (3.4)	20 (1.9)	0.013
PreviousCABG	30 (1.0)	3 (0.3)	0.030
Family Hx of IHD	173 (5.7)	55 (5.2)	0.522
Multi Vessle disease	1489 (58.1)	544 (50.8)	<0.001
LM lesion	113 (4.4)	12 (1.1)	<0.001

Baseline Characteristics(3)

Variable, n (%)	No statin (N=3011 pts)	Pitavastatin (N=1070 pts)	p-value
KillipClass			
Class1	2108 (71.7)	842 (80.0)	-
Class2	406 (13.8)	157 (14.9)	-
Class3	293 (10.0)	37 (3.5)	-
Class4	135 (4.6)	16 (1.5)	-
Post LVEF	50.9 ±12.7	52.7 ±11.4	<0.001
Total Cholesterol	174.1 ±43.6	190.5 ±42.2	<0.001
Triglyceraide	123.3 ±91.9	126.3 ±92.0	0.376
HDL-C	44.8 ±13.9	45.2 ±11.8	0.378
LDL-C	108.3 ±42.3	121.8 ±36.8	<0.001
hs-CRP	8.8 ±35.4	9.9 ±30.2	0.394
CK	1393.9 ±2078.6	1106.2 ±2111.8	<0.001

In-hospital Treatment Strategies

Variable, n (%)	No statin (N=3011 pts)	Pitavastatin (N=1070 pts)	p-value
Medication			
Past Medication	1108 (35.6)	459 (43.4)	<0.001
Single	116 (3.9)	25 (2.4)	0.030
Dual	2111 (71.1)	607 (59.5)	<0.001
Triple	744 (25.0)	389 (38.1)	<0.001
STEMI			
Primary PCI	1240/1676 (74.0)	544/665 (81.8)	-
Facilitated PCI	53/1676 (3.2)	46/665 (6.9)	-
Thrombolysis	133/1676 (7.9)	39/665 (5.9)	-
Conservative	250/1676 (14.9)	36/665 (5.4)	-
NSTEMI			
Early invasive therapy	612/1306 (46.9)	255/383 (66.6)	<0.001
Early conservative therapy	694/1306 (53.1)	128/383 (33.4)	<0.001
Thrombolysis	204 (6.7)	54 (5.0)	0.057
PCI	2332 (76.0)	987 (92.2)	<0.001

Clinical outcomes at 6month.

Variable, n (%)	No statin (N=2574 pts)	Pitavastatin (N=1025 pts)	p-value
Total Death	137 (5.3)	22 (2.1)	<0.001
Cardic Death	86 (3.3)	11 (1.1)	<0.001
Non Cardic Death	51 (2.0)	12 (1.2)	0.094
Recurrent MI	23 (0.9)	11 (1.1)	0.543
QMI	11 (0.4)	5 (0.5)	0.806
NQMI	12 (0.5)	5 (0.5)	0.932
Repeat PCI	107 (4.2)	34 (3.3)	0.241
TLR	47 (1.8)	22 (2.1)	0.527
TVR	54 (2.1)	27 (2.6)	0.328
Non TVR	50 (1.9)	8 (0.8)	0.012
CABG	24 (0.9)	0 (0.0)	0.002
Total MACE	264 (10.3)	57 (5.6)	<0.001
TLR MACE	133 (5.2)	33 (3.2)	0.012
TVR MACE	189 (7.3)	49 (4.8)	0.005

Clinical outcomes at 6month.

	Unadjusted OR (95% CI)	p-value	Adjusted OR* (95% CI)	p-value
Total Death	2.559 (1.622-4.038)	<0.001	1.762 (0.995-3.122)	0.052
Cardic Death	3.186 (1.694-5.994)	<0.001	2.193 (1.018-4.726)	0.045
Non Cardic Death	1.706 (0.906-3.214)	0.094	1.172 (0.509-2.699)	0.709
Recurrent MI	0.800 (0.388-1.647)	0.543	0.588 (0.196-1.760)	0.324
QMI	0.876 (0.303-2.526)	0.806	0.658 (0.141-3.073)	0.594
NQMI	0.956 (0.336-2.719)	0.932	0.634 (0.103-3.891)	0.623
Repeat PCI	1.264 (0.853-1.872)	0.241	1.445 (0.868-2.405)	0.157
TLR	0.848 (0.508-1.414)	0.527	0.939 (0.489-1.802)	0.850
TVR	0.792 (0.496-1.264)	0.328	0.963 (0.516-1.798)	0.906
Non TVR	2.518 (1.190-5.331)	0.012	2.195 (0.911-5.289)	0.080
CABG	-	-	-	-
Total MACE	1.941 (1.444-2.609)	<0.001	1.851 (1.266-2.705)	0.001
TLR MACE	1.638 (1.111-2.415)	0.012	1.406 (0.863-2.293)	0.172
TVR MACE	1.578 (1.143-2.180)	0.005	1.364 (0.894-2.081)	0.150

Clinical outcomes at 12month.

Variable, n (%)	No statin (N=2067 pts)	Pitavastatin (N=930 pts)	p-value
Total Death	158 (7.6)	28 (3.0)	<0.001
Cardic Death	96 (4.6)	15 (1.6)	<0.001
Non Cardic Death	64 (3.1)	13 (1.4)	0.007
Recurrent MI	30 (1.5)	13 (1.4)	0.903
QMI	16 (0.8)	6 (0.6)	0.702
NQMI	14 (0.7)	6 (0.6)	0.920
Repeat PCI	146 (7.1)	66 (7.1)	0.974
TLR	70 (3.4)	42 (4.5)	0.131
TVR	82 (4.0)	55 (5.9)	0.018
Non TVR	65 (3.1)	13 (1.4)	0.005
CABG	24 (1.2)	1 (0.1)	0.003
Total MACE	328 (15.9)	97 (10.4)	<0.001
TLR MACE	164 (7.9)	57 (6.1)	0.080
TVRMACE	240 (11.6)	82 (8.8)	0.022

Clinical outcomes at 12month.

	Unadjusted OR (95% CI)	p-value	Adjusted OR* (95% CI)	p-value
Total Death	2.650 (1.759-3.991)	<0.001	1.119 (1.119-3.261)	0.018
Cardic Death	2.971 (1.715-5.149)	<0.001	2.146 (1.056-4.360)	0.035
Non Cardic Death	2.254 (1.235-4.112)	0.007	1.575 (0.715-3.470)	0.259
Recurrent MI	0.960 (0.499-1.849)	0.903	0.734 (0.266-2.025)	0.550
QMI	1.201 (0.469-3.080)	0.702	0.899 (0.236-3.425)	0.876
NQMI	1.050 (0.402-2.741)	0.920	0.536 (0.104-2.664)	0.438
Repeat PCI	0.995 (0.736-1.345)	0.974	1.038 (0,700-1.540)	0.852
TLR	0.741 (0.501-1.095)	0.131	0.780 (0.477-1.277)	0.323
TVR	0.657 (0.463-0.933)	0.018	0.725 (0.465-1.151)	0.173
Non TVR	2.290 (1.256-4.175)	0.005	2.100 (1.016-4.340)	0.045
CABG	10.913 (1.474-80.791)	0.003	11.726 (1.511-90.972)	0.019
Total MACE	1.620 (1.273-2061)	<0.001	1.441 (1.053-1.972)	0.022
TLR MACE	1.320 (0.966-1.803)	0.080	1.132 (0.760-1.686)	0.541
TVRMACE	1.358 (1.044-1.768)	0.022	1.125 (0.794-1,594)	0.507

Results

1. The baseline characteristics were similar between the two groups except that pts in Livalo group were younger (61.2±12.0 vs 63.0±12, $p<0.05$) and showed higher total cholesterol level (194.9±41.3 vs 174.5±42.2, mg/dl, $p<0.01$) than no statin group.

2. Although the incidence of recurrent AMI was similar between the groups, the incidence of mortality, repeat PCI and MACE were significantly lower in the Pitavastatin group.

Results

3. Pitavastatin administration was associated with less incidence of MACE at 12 months (ORunadjusted: 0.560, 95% CI: 0.360-0.873, P=0.010, ORadjusted by propensity score: 0.200, 95% CI: 0.065-0.613, P= 0.005).

Conclusions

Routine administration of 2mg Pitavastatin daily in *AMI* pts showed better clinical outcomes compared with those of AMI pts without statin therapy up to 12 months.

Propensity Score Analysis of 12-month Clinical Outcomes following Pitavastatin (Livalo®) Administration in Patients with Acute Myocardial Infarction : Results from Livalo Acute Myocardial Infarction Study (LAMIS)

Seung-Woon Rha, Lin Wang, Ji Young Park, Kanhaiya L. Poddar, Sureshkumar Ramasamy, Byoung Geol Choi, Ji Bak Kim, Seung Yong Shin, Un-Jung Choi, Cheol Ung Choi, Hong Euy Lim, Jin Won Kim, Eung Ju Kim, Chang Gyu Park, Hong Seog Seo, Dong Joo Oh,

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KSC 2009

Methods

1. Source Data

1) Pitavastatin Data were originated from the Livalo AMI study (LAMIS)

2) AMI pts without statin usage were drawn as a 'historical comparison group' from the subgroup analysis of *Korea Acute Myocardial Infarction Registry* (*KAMIR study*).

2. Study population

1) The study population consisted of 2,530 consecutive AMI pts enrolled for the interim analysis.

2) Pitavastatin group; exclusively used Pitavastatin (2mg/day as sole statin therapy from the presentation time

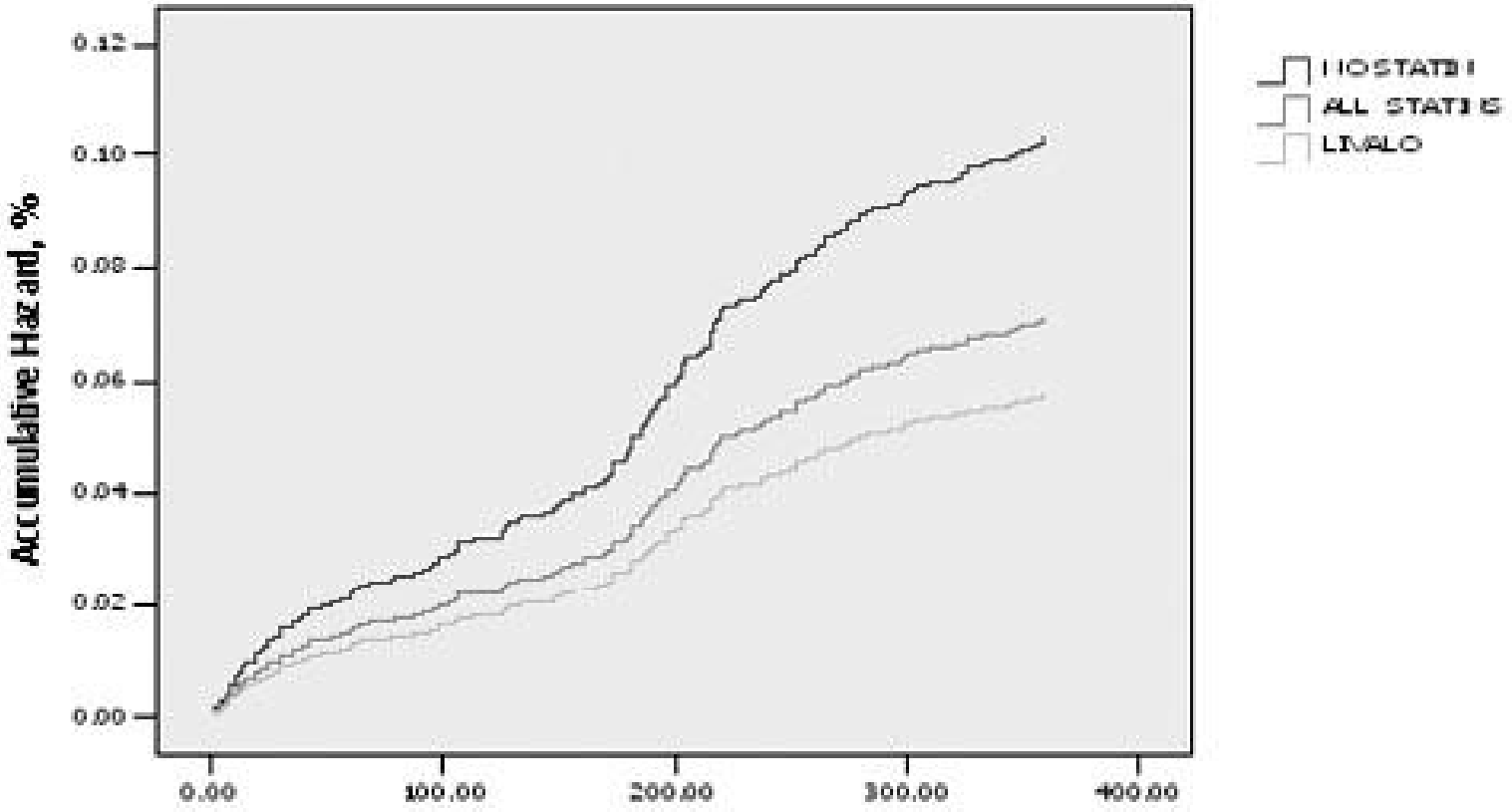
Methods

3. Study Groups

All the pts were divided into 3 groups according to their use of statins:

Pitavastatin in LAMIS group	N=601 pts
Statin in KAMIR group	N=1461 pts
No Statin in KAMIR group	N=468 pts

Figure. Twelve-Month Cumulative Clinical Events: Total MACEs



Results

1. Patients in Livalo group were younger and successful PCI rate and ejection fraction (EF) was higher than those of no statin group ($p<0.05$).

2. Pitavastatin (ORunadjusted: 0.560, 95% CI: 0.360-0.873, P=0.010, ORadjusted by propensity score: 0.200, 95% CI: 0.065-0.613, P= 0.005) was associated with less incidence of MACE at 12 months compared with the AMI pts without any statin therapy

3. Overall statin administration (OR: 0.812, 95% CI: 0.550-1.199, P=0.295) was associated with less incidence of MACE at 12 months compared with the AMI pts without any statin therapy (Figure).

Research Family 2007-8

Research Family 2008-2010

Cath Lab Family 2008-9

Efficacy and Safety of Pitavastatin (Livalo®) in *Acute ST-Segment Elevation Myocardial Infarction* Patients : 12-month follow up data from Livalo Acute Myocardial Infarction Study (LAMIS) and Korea Acute Myocardial Infarction Registry (KAMIR)

Seung-Woon Rha, Lin Wang, Ji Young Park, Kanhaiya L. Poddar, Sureshkumar Ramasamy, Byoung Geol Choi, Ji Bak Kim, Seung Yong Shin, Un-Jung Choi, Cheol Ung Choi, Hong Euy Lim, Jin Won Kim, Eung Ju Kim, Chang Gyu Park, Hong Seog Seo, Dong Joo Oh,
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CCT 2010 Meeting

Purpose

This study was to evaluate whether the routine administration of Pitavastatin daily in STEMI pts can positively impact on clinical outcomes compared with those of AMI pts without statin therapy up to 12 months.

Methods

1. Source Data

1) Pitavastatin Data were originated from the Livalo AMI study (LAMIS)

2) AMI pts without statin usage were drawn as a 'historical comparison group' from the subgroup analysis of *Korea Acute Myocardial Infarction Registry* (*KAMIR study*).

2. Study population

1) The study population consisted of 675 consecutive STEMI pts enrolled for the interim analysis.

2) Pitavastatin group; exclusively used Pitavastatin (2mg/day as sole statin therapy from the presentation time

Methods

3. Study Groups

All the pts were divided into 2 groups according to their use of statins:

Pitavastatin group	N=675 pts
No Statin group	N=1696 pts

Clinical outcomes at 6month.

Variable, n (%)	No statin (N=1420 pts)	Pitavastatin (645 pts)	p-value
Total Death	64 (4.5)	13 (2.0)	0.006
Cardic Death	38 (2.7)	6 (0.9)	0.011
Non Cardic Death	26 (1.8)	7 (1.1)	0.210
Recurrent MI	10 (0.7)	6 (0.9)	0.548
QMI	7 (0.5)	4 (0.6)	0.713
NQMI	3 (0.2)	1 (0.2)	0.788
Repeat PCI	69 (4.9)	22 (3.4)	0.137
TLR	32 (2.3)	13 (2.0)	0.731
TVR	37 (2.6)	18 (2.8)	0.809
Non TVR	28 (2.0)	5 (0.8)	0.044
CABG	10 (0.7)	0 (0.0)	0.035
Total MACE	136 (9.6)	33 (5.1)	0.001
TLR MACE	70 (4.9)	19 (2.9)	0.040
TVRMACE	96 (6.8)	28 (4.3)	0.032

Clinical outcomes at 6month.

	Unadjusted OR (95% CI)	p-value	Adjusted OR* (95% CI)	p-value
Total Death	2.291 (1.253-2.291)	0.007	1.049 (1.018-1.082)	0.002
Cardic Death	2.2928 (1.232-6.963)	0.015	0.593 (2.778-1.265)	0.176
Non Cardic Death	1.700 (0.734-3.937)	0.216	0.487 (0.174-1.363)	0.171
Recurrent MI	0.733 (0.265-2.025)	0.549	2.631 (0.574-12064)	0.213
QMI	0.794 (0.232-2.722)	0.713	2.241 (0.387-12.975)	0.368
NQMI	1.363 (0.141-13.133)	0.789	-	-
Repeat PCI	1.446 (0.887-2.359)	0.139	0.558 (0.229-1.038)	0.066
TLR	1.121 (0.584-2.150)	0.731	0.754 (0.341-1.667)	0.486
TVR	0.932 (0.526-1.650)	0.809	0.747 (0.355-1.576)	0.444
Non TVR	2.575 (0.990-6.699)	0.045	0.490 (0.172-1.397)	0.182
CABG	-	-	-	-
Total MACE	1.964 (1.327-2.908)	0.001	0.486 (0.295-0.800)	0.005
TLR MACE	1.708 (1.020-2.861)	0.042	0.649 (0.347-1.217)	0.178
TVRMACE	1.598 (1.038-2.460)	0.033	0.617 (0.353-1.080)	0.091

Clinical outcomes at 12month.

Variable, n (%)	No statin (N=1148 pts)	Pitavastatin (N=583 pts)	p-value
Total Death	72 (6.2)	15 (2.6)	0.001
Cardic Death	43 (3.7)	8 (1.4)	0.006
Non Cardic Death	30 (2.6)	6 (1.0)	0.029
Recurrent MI	12 (1.0)	7 (1.2)	0.664
QMI	9 (0.8)	5 (0.9)	0.872
NQMI	3 (0.3)	1 (0.2)	0.713
Repeat PCI	91 (7.9)	41 (7.0)	0.508
TLR	44 (3.8)	25 (4.3)	0.647
TVR	52 (4.5)	36 (6.2)	0.141
Non TVR	39 (3.4)	7 (1.2)	0.007
CABG	10 (0.9)	0 (0.0)	0.024
Total MACE	169 (14.7)	54 (9.3)	0.001
TLR MACE	86 (7.5)	33 (5.7)	0.155
TVR MACE	119 (10.4)	46 (7.9)	0.097

Clinical outcomes at 12month.

	Unadjusted OR (95% CI)	p-value	Adjusted OR* (95% CI)	p-value
Total Death	2.520 (1.431-4.436)	0.001	0.542 (0.262-1.120)	0.098
Cardic Death	2.797 (1.306-5.989)	0.008	0.507 (0.196-1.311)	0.161
Non Cardic Death	2.581 (1.068-6.235)	0.035	0.466 (0.144-1.510)	0.203
Recurrent MI	0.813 (0.318-2.075)	0.665	1.990 (0.476-8.328)	0.346
QMI	0.872 (0.305-2.738)	0.872	1.651 (0.359-7.598)	0.520
NQMI	1.525 (0.158-14.692)	0.715	-	-
Repeat PCI	1.138 (0.776-1.669)	0.508	0.766 (0.477-1,229)	0.269
TLR	0.890 (0.539-1.469)	0.647	0.973 (0.533-1.776)	0.928
TVR	0.721 (0.466-1.116)	0.142	1.112 (0.645-1.919)	0.702
Non TVR	2.894 (1.286-6.510)	0.010	0.409 (0.168-0.996)	0.049
CABG	-	-	-	-
Total MACE	1.691 (1.223-2.338)	0.001	0.615 (0.410-0.922)	0.019
TLR MACE	1.350 (0.892-2.043)	0.159	0.806 (0.486-1.337)	0.403

Results

1. The baseline characteristics were similar between the two groups, except that pts in Patavastatin group were younger than no statin group (59.9±12.6 vs 62.2±12.6, $p<0.05$) whereas past medication was unfavorable in Pitavastatin group ($P<0.05$).

2. Although the incidence of target lesion & vessel revascularization (TLR & TVR) and recurrent AMI were similar between the two groups, the all cause mortality, repeat PCI (primarily by reduced non-TVR) and total MACE were significantly lower in the Pitavastatin group (Table).

Results

3. Pitavastatin administration was associated with less incidence of MACE at 12 months (OR: 0.463, 95% CI: 0.276-0.776, P=0.003).

Conclusions

Routine administration of 2mg Pitavastatin daily in *STEMI* pts showed better clinical outcomes compared with those of STEMI pts without statin therapy up to 12 months.

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Efficacy and Safety of Pitavastatin (Livalo®) in *Acute Non ST-Segment Elevation Myocardial Infarction* Patients

: 12-month follow up data from Livalo Acute Myocardial Infarction Study (LAMIS)

Seung-Woon Rha, Lin Wang, Ji Young Park, Kanhaiya L. Poddar, Sureshkumar Ramasamy, Byoung Geol Choi, Ji Bak Kim, Seung Yong Shin, Un-Jung Choi, Cheol Ung Choi, Hong Euy Lim, Jin Won Kim, Eung Ju Kim, Chang Gyu Park, Hong Seog Seo, Dong Joo Oh,
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AP TCT 2010 Meeting

Purpose

This study was to evaluate whether the routine administration of Pitavastatin daily in NSTEMI pts can positively impact on clinical outcomes compared with those of AMI pts without statin therapy up to 12 months.

Methods

1. Source Data

1) Pitavastatin Data were originated from the Livalo AMI study (LAMIS)

2) AMI pts without statin usage were drawn as a 'historical comparison group' from the subgroup analysis of *Korea Acute Myocardial Infarction Registry* (*KAMIR study*).

2. Study population

1) The study population consisted of 377 consecutive NSTEMI pts enrolled for the interim analysis.

2) Pitavastatin group; exclusively used Pitavastatin (2mg/day as sole statin therapy from the presentation time

Methods

3. Study Groups

All the pts were divided into 2 groups according to their use of statins:

Pitavastatin group N=377 pts
No Statin group N=1117 pts

Clinical outcomes at 6month.

Variable, n (%)	No statin (N=1117 pts)	Pitavastatin (N=377 pts)	p-value
Total Death	72 (6.4)	9 (2.4)	0.003
Cardic Death	48 (4.3)	5 (1.3)	0.007
Non Cardic Death	24 (2.1)	5 (1.3)	0.317
Recurrent MI	13 (1.2)	5 (1.3)	0.730
QMI	4 (0.4)	1 (0.3)	0.787
NQMI	9 (0.8)	4 (1.1)	0.644
Repeat PCI	36 (3.2)	12 (3.2)	0.970
TLR	14 (1.3)	9 (2.4)	0.122
TVR	16 (1.4)	9 (2.4)	0.211
Non TVR	21 (1.9)	3 (0.8)	0.148
CABG	14 (1.2)	0 (0.0)	0.033
Total MACE	126 (11.3)	24 (6.4)	0.006
TLR MACE	62 (5.6)	14 (3.7)	0.160
TVRMACE	91 (8.1)	21 (5.6)	0.100

Clinical outcomes at 6month.

	Unadjusted OR (95% CI)	p-value	Adjusted OR* (95% CI)	p-value
Total Death	0.356 (0.176-0.718)	0.004	0.606 (0.253-1.450)	0.261
Cardic Death	0.299 (0.118-0.795)	0.022	0.550 (0.171-1.761)	0.314
Non Cardic Death	0.612 (0.232-1.616)	0.322	0.904 (0.263-3.116)	0.974
Recurrent MI	1.200 (0.425-3.389)	0.730	1.159 (0.241-5.573)	0.854
QMI	0.740 (0.082-6.642)	0.788	0.543 (0.017-16.992)	0.728
NQMI	1.320 (0.404-4.312)	0.646	1.121 (0.160=7.867)	0.908
Repeat PCI	0.987 (0.508-1.918)	0.970	0.809 (0.349-1.876)	0.621
TLR	1.927 (0.827-4.489)	0.126	1.404 (0.478-4.123)	0.537
TVR	1.683 (0.737-3.841)	1.683	1.404 (0.478-4.123)	0.537
Non TVR	0.419 (0.124-1/412)	0.160	0.325 (0.067-1.574)	0.163
CABG	-	-	-	-
Total MACE	0.535 (0.340-0.841)	0.007	0.598 (0.338-1.058)	0.077
TLR MACE	0.656 (0.363-1.186)	0.163	0.861 (0.401-1.849)	0.702
TVRMACE	0.665 (0.408-1.085)	0.103	0.937 (0.496-1.770)	0.842

Clinical outcomes at 12month.

Variable, n (%)	No statin (N=905 pts)	Pitavastatin (N=345 pts)	p-value
Total Death	85 (9.4)	13 (3.8)	0.001
Cardic Death	53 (5.9)	7 (2.0)	0.005
Non Cardic Death	33 (3.6)	7 (2.0)	0.146
Recurrent MI	18 (2.0)	6 (1.7)	0.926
QMI	7 (0.8)	1 (0.3)	0.338
NQMI	11 (1.2)	5 (1.4)	0.742
Repeat PCI	52 (5.7)	25 (7.2)	0.324
TLR	24 (2.7)	17 (4.9)	0.043
TVR	28 (3.1)	19 (5.5)	0.045
Non TVR	25 (2.8)	6 (1.7)	0.298
CABG	14 (1.5)	1 (0.3)	0.068
Total MACE	156 (17.2)	43 (12.5)	0.039
TLR MACE	76 (8.4)	24 (7.0)	0.401
TVRMACE	118 (13.0)	36 (10.4)	0.211

Clinical outcomes at 12month.

	Unadjusted OR (95% CI)	p-value	Adjusted OR* (95% CI)	p-value
Total Death	0.381 (0.209-0.692)	0.002	0.515 (0.233-1.138)	0.101
Cardic Death	0.333 (0.150-0.740)	0.007	0.519 (0.179-1.508)	0.228
Non Cardic Death	0.547 (0.240-1.249)	0.152	0.675 (0.233-1.955)	0.469
Recurrent MI	0.957 (0.377-2.430)	0.926	1.103 (0.278-4.385)	0.889
QMI	0.373 (0.046-3.042)	0.357	0.255 (0.014-4.501)	0.351
NQMI	1.195 (0,412-3.465)	0.743	1.508 (0.279-8.157)	0.633
Repeat PCI	1.282 (0.782-2.100)	0.325	1.220 (0.629-2.365)	0.557
TLR	1.903 (1.009-3.587)	0.047	1.690 (0.757-3.775)	0.200
TVR	1.825 (1.006-3.314)	0.048	1.690 (0.757-3.775)	0.200
Non TVR	0.623 (0.253-1.532)	0.303	0.536 (0.160-1.790)	0.310
CABG	0.185 (0.024-1.412)	0.104	0.143 (0.018-1.171)	0.070
Total MACE	0.484 (0.475-0.983)	0.040	0.757 (0.468-1.2230	0.255
TLR MACE	0.816 (0.506-1.314)	0.402	0.996 (0.534-1.855)	0.989
TVRMACE	0.777 (0.523-1.154)	0.211	0.975 (0.562-1.664)	0.927

Results

1. The baseline characteristics were similar between the two groups, except that pts in Pitavastatin group were younger (59.9±12.6 vs 62.2±12.6, $p<0.05$) whereas past medication was unfavorable ($P<0.05$) than no statin group.

2. At 12 months, the Pitavastatin group showed no definite evidence in reducing major clinical outcomes except lower trend of CABG than those of no statin group (Table).

Results

3. Pitavastatin administration was associated with less incidence of MACE at 12 months (OR: 0.503, 95% CI: 0.265-0.954, P=0.035).

Conclusions

Routine administration of 2mg Pitavastatin daily in *NSTEMI* pts failed to show better major clinical outcomes compared with those of NSTEMI pts without statin therapy up to 12 months, but needs more detailed data with larger study population.

Efficacy and Safety of Pitavastatin (Livalo®) in *Acute Myocardial Infarction* Patients with *Diabetes Mellitus* : 12-month follow up data from Livalo Acute Myocardial Infarction Study (LAMIS) and Korea Acute Myocardial Infarction Registry (KAMIR)

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AP TCT 2010 Meeting

Background

1. Pitavastatin (Livalo) is a potent lipophilic statin and may play an important role in acute myocardial infarction (AMI) setting .

2. There have been limited data regarding role of pitavastatin in managing AMI patients (pts) with diabetes mellitus, especially in the drug-eluting stent era.

3. Pitavastatin may play an important role by not only reducing LDL-cholesterol, but also through the pleiotrophic effects, especially in diabetic pts.

Purpose

This study was to evaluate whether the routine administration of Pitavastatin daily in *diabetic AMI* pts can positively impact on clinical outcomes compared with those of AMI pts without statin therapy up to 12 months.

Methods

1. Source Data

1) Pitavastatin Data were originated from the Livalo AMI study (LAMIS)

2) AMI pts without statin usage were drawn as a 'historical comparison group' from the subgroup analysis of *Korea Acute Myocardial Infarction Registry* (*KAMIR study*).

2. Study population

1) The study population consisted of 181 consecutive diabetic AMI pts (from LAMIS) and 212 diabetic AMI pts without statin (from KAMIR) enrolled for the interim analysis.

2) Pitavastatin group; exclusively used Pitavastatin (2mg/day as sole statin therapy from the presentation time

Methods

3. Study Groups

All the pts were divided into 2 groups according to their use of statins:

Pitavastatin group N=181 pts
No Statin group N=212 pts

Clinical Outcomes at 12 months

Variables, N (%)	No Statin (N=212 pts)	Pitavastatin (N=181 pts)	P-value
Cardiac Death	4 (1.9)	1 (0.6)	0.239
Repeat PCI	19 (9.0)	6 (3.3)	0.022
TLR	9 (4.2)	5 (2.8)	0.429
TVR	10 (4.7)	5 (2.8)	0.313
Non-TVR	9 (4.2)	1 (0.6)	0.020
Recurrent AMI	3 (1.4)	1 (0.6)	0.396
CABG	4 (1.9)	0 (0)	0.063
Total MACE	31 (14.6)#	11(6.1)*	0.006

Results

1. Baseline characteristics were similar between the groups, except past medications were unfavorable in Livalo group ($p<0.05$).

2. At 12 months, although the cardiac mortality was not different, the incidence of repeat PCI (primarily due to less incidence of non-target vessel revascularization), coronary artery bypass graft (CABG) and major adverse cardiac events (MACE) were lower in the Pitavastatin group (Table).

Results

3. Pitavastatin administration was associated with less incidence of MACE at 12 months ($OR_{unadjusted}$: 0.394, 95% CI: 0.198-0.784, P=0.008, $OR_{adjusted\ by\ propensity\ score}$: 0.215, 95% CI: 0.075-0.620, P= 0.004).

Conclusions

Routine administration of 2mg Pitavastatin daily in *diabetic AMI* pts showed better clinical outcomes compared with those of AMI pts without statin therapy up to 12 months.

Summary & Conclusion

1. Introduction; ACS in DES Era & LAMIS
2. Pitavastatin (Livalo) in AMI
   ; insights from LAMIS (Livalo AMI Study) & KAMIR (Korea AMI Registry)
3. Pitavastatin (Livalo) in STEMI
4. Pitavastatin (Livalo) in NSTEMI
5. Pitavastatin (Livalo) in Diabetic AMI

** *Pitavastatin is crucial, essential and absolutely needed in pts with AMI in DES era!!*

R Family at Tianjin 2009

Research Family Members

International Research Fellow

대한민국 Research Fellow도 대환영!!

(자격)

1. English Proficiency
2. Paperwork & Research가 최우선
3. Cardiovascular Intervention
4. Clinical Fellow 1년 이상 수료자
5. Highly motivated!!

Thank You for Your Attention!!