60th Korean Society of Cardiology
Apr 21-22 2017

Clinical Experience of the Korea Acute Myocardial Infarction Registry and Future Development of KAMIR

Myung Ho Jeong, MD, PhD, FACC, FAHA, FESC, FSCAI, FAPSIC
On behalf of KAMIR Investigators

Principal Investigator of Korea Acute Myocardial Infarction Registry,
Director of Korea Cardiovascular Stent Research Institute,
Director of Heart Research Center Nominated by Korea Ministry of Health and Welfare,
Professor of Chonnam National University Hospital,
Gwangju, Korea

Korea Acute Myocardial Infarction Registry (KAMIR) for the memorandum of 50th Anniversary of Korean Circulation Society

Sep 29-30th 2005

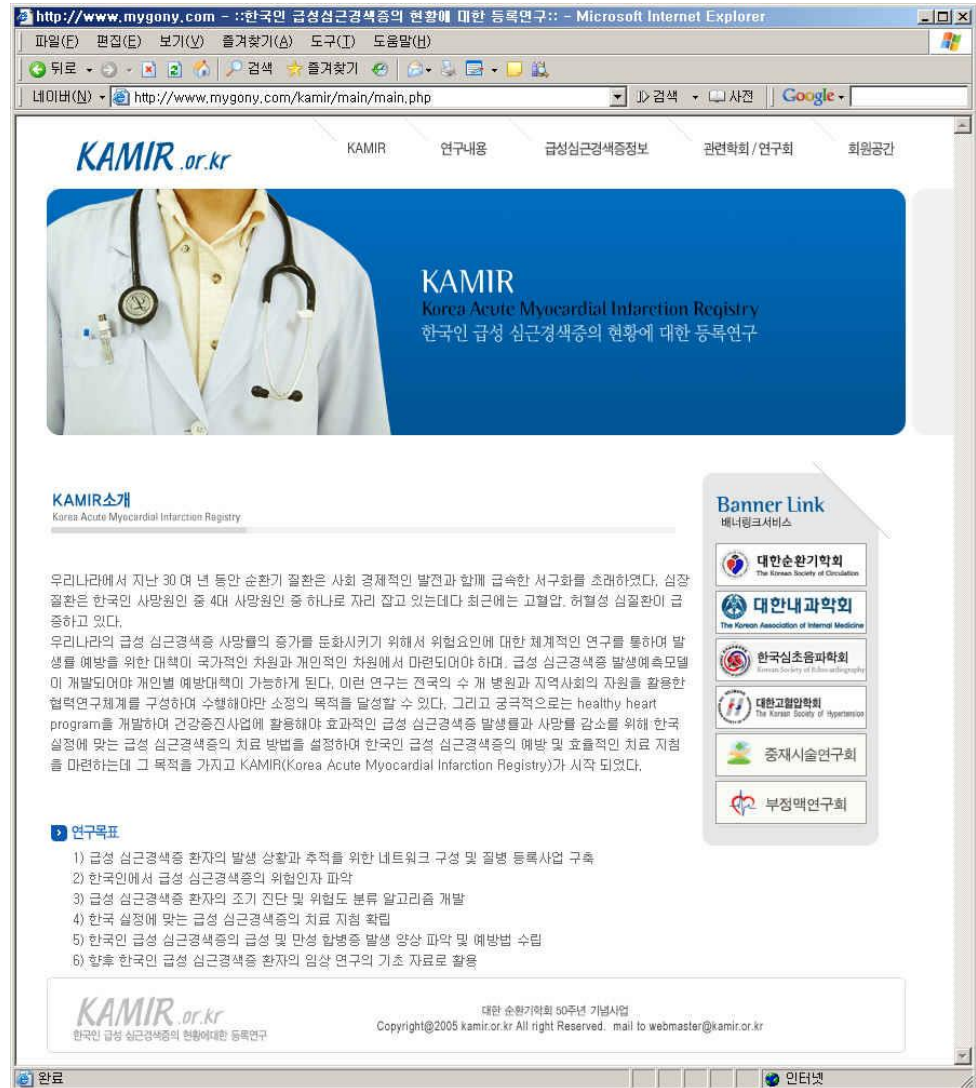# KAMIR Site Design

❖ **KAMIR Main**

• **Composition**

- KAMIR Introducing page
- Banner link

http://www.kamir.or.kr

Major Characteristics of KAMIR
- Simple
- Quick
- Easy
- Informative
- Update regularly

KAMIR: Korea Acute Myocardial Infarction Registry

Principal Investigator: Jeong MH

Sub-investigators: Kim YJ, Kim CJ, Cho MC, Ahn YK

Co-investigators: 55 primary PCI centers – all major centers in Korea
Ko YP, Koo BG, Gwon HC, Kim KS, Kim DI, Kim MH, Kim BO, Kim SW, Kim SJ, Kim YJ, Kim JK, Kim CJ, Kim TI, Rha SW, Rhew JY, Park GS, Park SW, Park SH, Bae JH, Seong IW, Seung KB, Ahn YK, Ahn TH, Yang JY, Oh SK, Yoon Jh, Lee HS, Lee MY, Lee SH, Lee SW, Rhim JY, Jeong KT, Jeong MH, Chung WS, Jeong HJ, Cho MC, Cho JH, Cho JM, Joo SJ, Jin DG, Jin SW, Chae SC, Chae IH, Chae JK, Choi DH, Tahk SJ, Han KR, Hur SH, Hwang JY

Steering Committee:
Park SJ, Jang YS, Seung KB, Chung WS, Cho JG, Kim YJ, Kim CJ, Cho MC, Yoon JH, Chae IH, Jeong MH

Purpose of KAMIR Study

1. On-line registration of Korean AMI patients

2. Early detection of high risk patients

3. Risk factor documentation and analysis

4. New therapeutic strategy for AMI

5. Effective prevention strategy for AMI

6. Establish Asian guideline of AMI

The Needs of Sequent Study Following KAMIR

Long-term FU clinical study for the management of acute myocardial infarction was needed

National support for research project was ultimately required subsequent to the KAMIR study

AMI Registry Supported by National Institute of Health (2011)

iCReaT Clinical Resarch and Trial Management System

피험자관리 자료추출 보고서

정보변경 로그아웃

비로가기

CRC 전남대학교병원(광주)

과제 C110016 국문 : 급성심근경색증 환자 예후 및 관리지표발굴을 위한 전항적 추적관찰연구
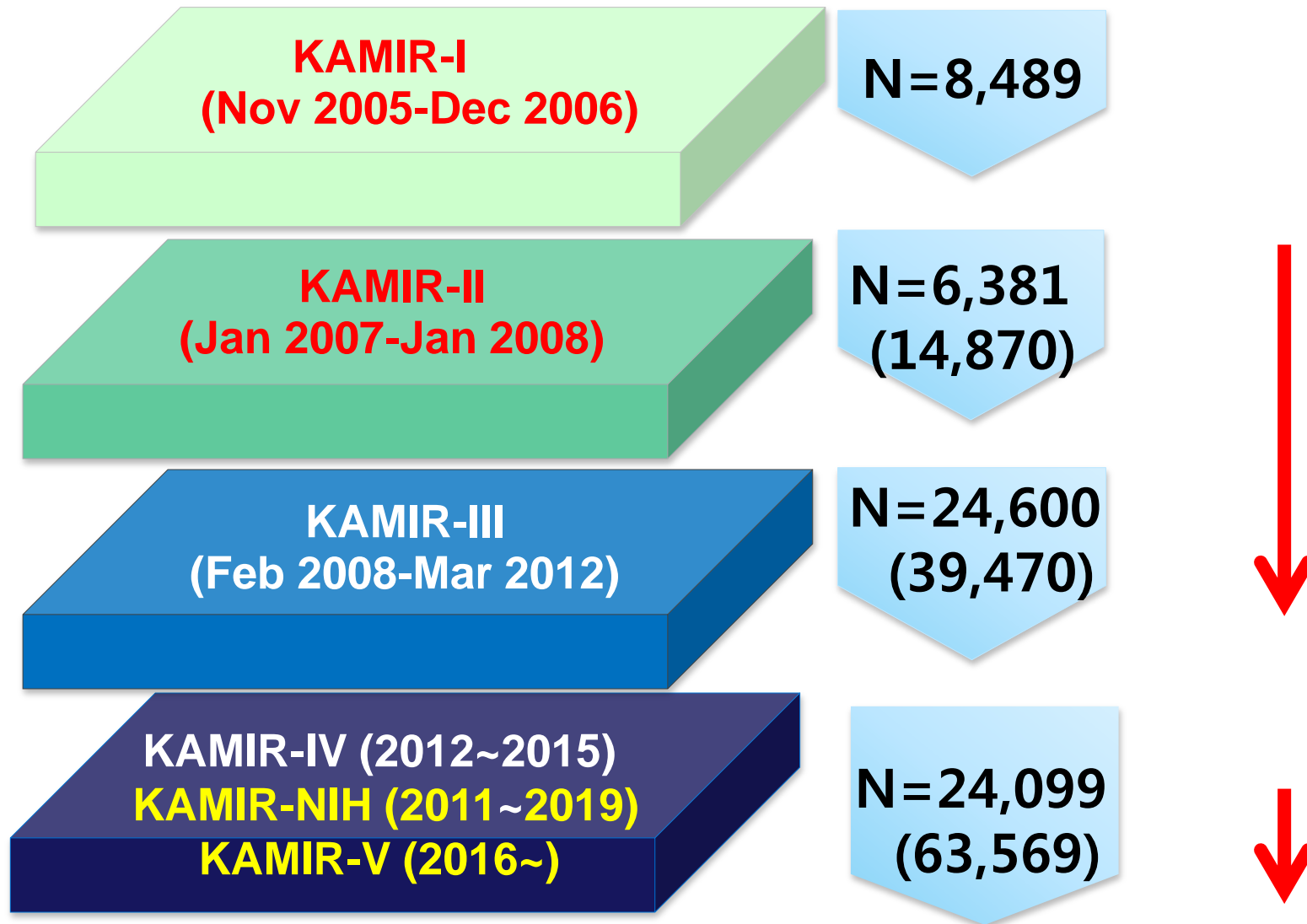
피험자 041-0001 1 JSA AMI 2011-11-17 Enrolled/Active

iCReaT Merged with KAMIR
Set Up Clone Sites Including all KAMIR sites

	2011-11-17	2011-11-17	변경	Initial Therapy	Done	변경	이력	●	Initial Therapy	☐
	2011-11-17	2011-11-17	변경	PCI procedures	Done	변경	이력	●	PCI	☐
	2011-11-17	2011-11-17	변경	Other tests	Done	변경	이력	●	Echocaradiographic findings	☐
	2011-11-17	2011-11-17	변경	Laboratory Values(Baseline)	Done	변경	이력	●	Lab findings	☐
	2011-11-17	2011-11-17	변경	Medication History(Baseline)	Done	변경	이력	●	Medication from admission	☐
⊟ Discharge										☐
	2011-11-24	2011-11-17	변경	Complications	Done	변경	이력	●	Complications	☐
	2011-11-24	2011-11-19	변경	Discharge	Done	변경	이력	●	Discharge evaluation	☐
⊟ F/W 6M										☐
	2012-05-24	2012-05-19	변경	Follow up	Not Done	변경	이력		Vital signs and Echocaradiographic findings	☐
⊟ F/W 1Year										☐
	2012-11-24	2012-11-19	변경	Follow up	Not Done	변경	이력		Vital signs and Echocaradiographic findings	☐
	2012-11-24	2012-11-19	변경	Laboratory Values	Not Done	변경	이력		F/U Laboratory findings	☐
	2012-11-24	2012-11-19	변경	Medication History	Not Done	변경	이력		F/U Medication	☐

연구 수행 체계

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┌─────────────────┐  ┌─────────────────┐  ┌─────────────────┐
│   질병관리본부    │  │   전남대학교병원  │  │   공동연구기관    │
│   심혈관희귀질환과 │  │ 총관책임자: 정명호 │  │                 │
└─────────────────┘  └─────────────────┘  └─────────────────┘

┌──────────┐ ┌──────────┐ ┌──────────┐ ┌──────────┐ ┌──────────┐
│ 연구조정센터 │ │ 자문위원회 │ │ 운영위원회 │ │ 실행위원회 │ │ 감사위원회 │
└──────────┘ └──────────┘ └──────────┘ └──────────┘ └──────────┘
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KAMIR Supported by Korean Society of Cardiology and Korea NIH

KAMIR-I
(Nov 2005-Dec 2006)

N=8,489

KAMIR-II
(Jan 2007-Jan 2008)

N=6,381
(14,870)

KAMIR-III
(Feb 2008-Mar 2012)

N=24,600
(39,470)

KAMIR-IV (2012~2015)
KAMIR-NIH (2011~2019)
KAMIR-V (2016~)

N=24,099
(63,569)

KAMIR-NIH 네트워크 (총 20개 기관)

KAMIR-V 네트워크 (총 44개 기관)

가천의대
가톨릭의대
고려의대
서울의대
서울대분당병원
성균관의대
강동 경희대

부천성모병원
성빈센트병원
아주대병원
경희대병원
고대 안산병원
성바오로병원
인하대병원
보라매병원
일산백병원
상계백병원

강원대병원
대전을지대병원
건양대병원
순천향대 천안병원
강릉아산병원
청주성모병원

원주기독병원

＋

충남의대
충북의대

광주기독병원
광주보훈병원
순천성가롤로병원
전주예수병원
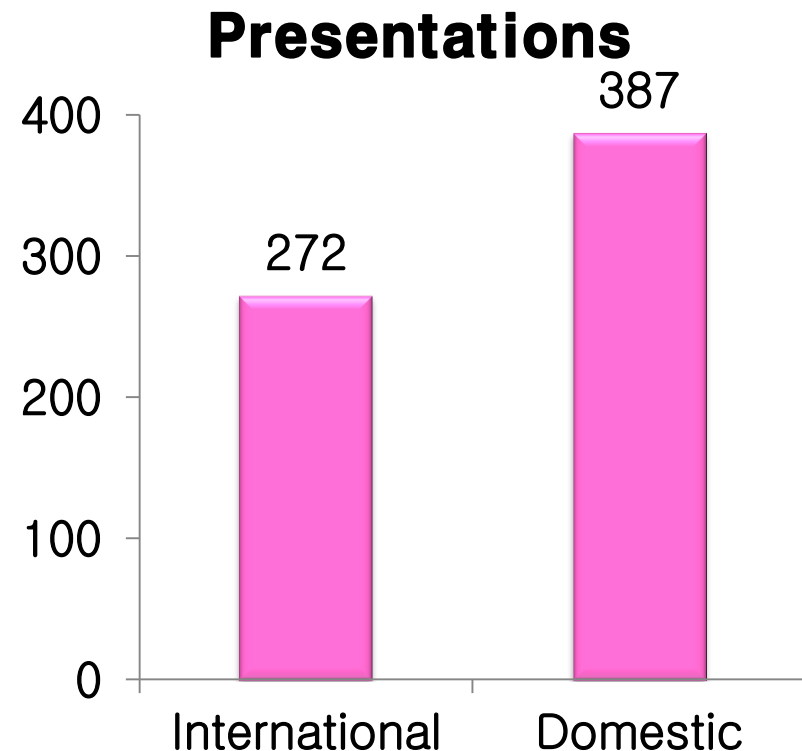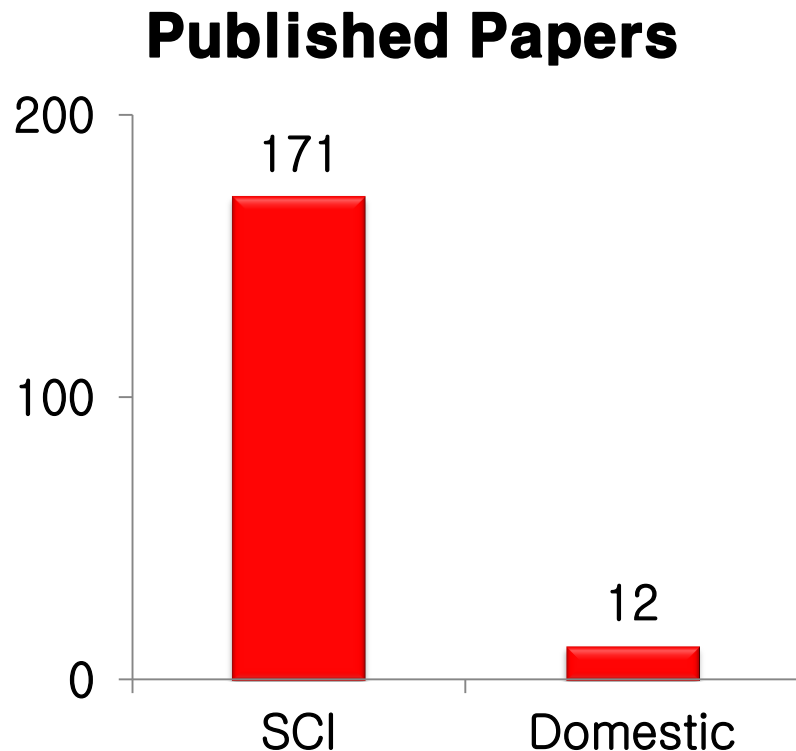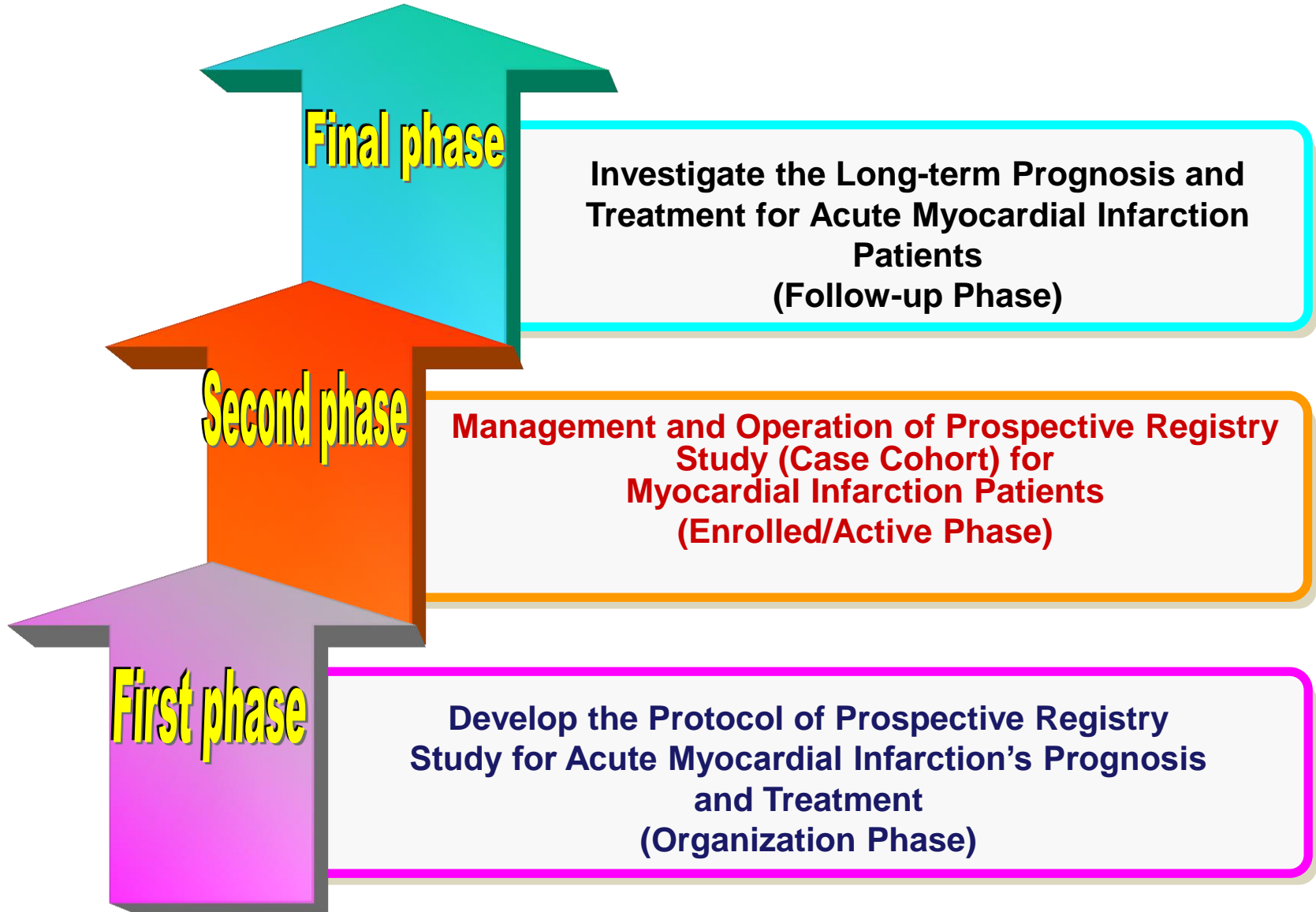
동아대병원
대구카톨릭병원
동국대 경주병원
창원삼성병원

전남의대
전북의대
원광의대

＋

제주의대

영남의대
경북의대
계명의대
부산의대
경상의대
인제의대

한국 실정에 알맞은 심근경색증 예방 및 치료법 연구
KAMIR Publications and Presentations
(2005~2017): AMI Registry 중 세계 최다 논문 발표

Published Papers

- SCI: 171
- Domestic: 12

Presentations

- International: 272
- Domestic: 387

Special Invited lectures at 2015, 2016 and 2017 Japanese Circulation Society and abstract s at
2016 American College of Cardiology and Best Poster Award from 2015 European Society of Cardiology

KAMIR Study Design

Final phase

Investigate the Long-term Prognosis and Treatment for Acute Myocardial Infarction Patients
(Follow-up Phase)

Second phase

Management and Operation of Prospective Registry Study (Case Cohort) for
Myocardial Infarction Patients
(Enrolled/Active Phase)

First phase

Develop the Protocol of Prospective Registry Study for Acute Myocardial Infarction's Prognosis and Treatment
(Organization Phase)

Research Committee

Research Committee

Steering Committee
- Take the overall responsibility for the prospective Korean Registry of Acute Myocardial infarction

Executive Committee
- Handle everything about research progress

Advisory Committee
- Take responsible for checking the progress of inspection and consultation of research evaluation and result (multidisciplinary research group included **statistician, epidemiologist and rehabilitation specialist**)

Research Coordinating Center
- Monitoring and analyzing the data for improving data quality

Audit Committee
- Do the regular audit, evaluation and verifying result by the **head of NIH, statistician, epidemiologist, medical ethicist and clinical researchers of cardiology and preventive medicine**

Conducting Research System

Minimize bias between research institutions
- **Periodic training on site for all clinical research coordinators**
- **Educate the manual to all participants**
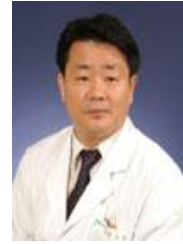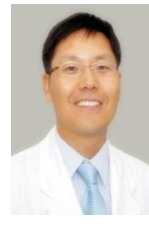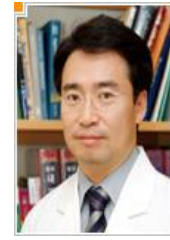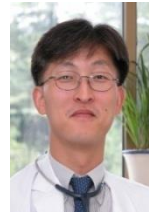- **Personal education in detail**
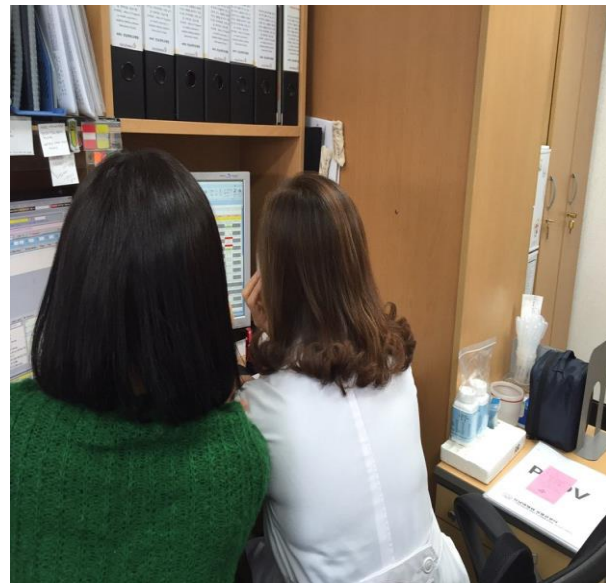
Conducting Research System
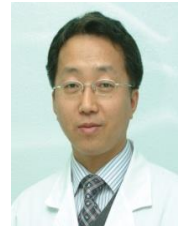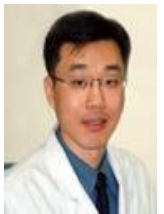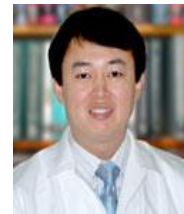

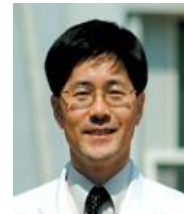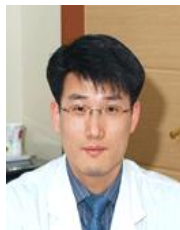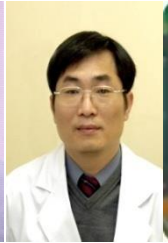**Periodic meetings between primary researchers**
- Discuss the opinion
- Improve the network system
- Update dBASE regularly (such as new anti-platelets and DES, etc)

Korea Acute Myocardial Infarction Research Group
Nov 19th 2007

KAMIR
Korea Acute Myocardial Infarction Registry
한국인 급성 심근경색증의 현황에 대한 등록연구

Myocardial
Infarction
Symposium

심근경색증 연구회
제1회 심포지움

심근경색증 연구회

● 일 시: 2008년 2월 23일(토) 09:00~17:20   ● 장 소: 김대중컨벤션센터 컨벤션홀Ⅲ (4F)   ● 후

제1회 심근경색증 연구회 심포지움

Agenda

시 간	구 분	프로그램	
08:50~09:00	공식행사	사회자 개회사	김효수 (학술위원장) 김영조 (심근경색증연구회 회장)
09:00~11:00	Session 1	Epidemiology & Pathophysiology of AMI /ACS KORMI 사업 경과 보고 심근경색증 발병의 환경적 요인 (역학자의 시각) Epidemiology & Prognostic factors of AMI in KORMI Time delay issue of AMI care Mechanism of Arrhythmogenesis in AMI Remodeling & heart failure after MI Panel discussion	좌장: 김권배 (계명대), 채성철 (경북대) 홍윤철 (서울대 예방의학과) 나승운 (고려대) 오동진 (한림대) 정중화 (조선대) 최동주 (서울대)
11:00~11:15	Coffee Break	로비 운영	
11:15~12:30	Session 2	Diagnosis of AMI / ACS - Classic & New Biomarkers in patients with AMI The role of Echocardiography in AMI/OMI IVUS/VH/OCT in patients with AMI Cardiac MRI & Coronary CT in AMI/OMI Panel discussion	좌장: 안태훈 (가천대), 윤정한 (원주기독) 배장호 (건양대) 박승우 (성균관의대) 김상욱 (중앙대) 최연현 (성균관의대)
12:30~13:30	Luncheon session	Value of statin & ARB for AMI/OMI Landmark trials of statin in patients with MI Landmark trials of ARB in patients with MI	좌장 : 김영조 (영남대), 정명호 (전남대) 안영근 (전남대) : rosuvastatin & other statin trials 박종선 (영남대) : candisartan & other ARB trials
13:30~14:20	Interesting cases of AMI	Interesting cases of AMI / ACS or OMI	좌장: 김기식 (대구가톨릭), 조명찬 (충북대)
14:20~14:20	Coffee Break	로비 운영	
14:30~15:45	Session 3	Treatment of AMI / ACS Management of intractable heart failure in AMI, PCPS Antithrombotic agents, new drugs Treatment of arrhythmias in AMI Cell therapies in AMI Panel discussion	좌장: 김종진 (경희대), 주승재 (제주대) 권현철 (성균관의대) 김효수 (서울대) 김윤년 (계명대) 강현재 (서울대)
15:45~17:15	Session 4	Debates on the treatment of AMI/ACS Complete revascularization vs. culprit-only revascularization - complete revascularization - culprit only - Panel discussion Routine use of Gp IIb/IIIa inhibitors vs. bail : out use in primary PCI - routine use - selective use - Panel discussion Thrombolytic therapy vs. Primary PCI - Thrombolytic therapy is still useful - Cons - Panel discussion	좌장: 홍택종 (부산대), 박시훈 (이화대) 정우영 (서울대) 김두일 (인제대) 이상록 (전북대) 한규록 (한림대) 황경국 (충북대) 허승호 (계명대)
17:15~17:20	폐회사		김영조 (심근경색증연구회 회장)

주최 : 심근경색증 연구회

심근경색증 연구회 정식 승인
(2013년 7월 8일)

KAMIR 연구를 기반으로 심근경색증의 폭넓은 연구를 위해 대한심장학회 산하 정식연구회로 승인

제1회 심근경색증연구회 심포지움

일시 : 2014년 2월 28일 2시   장소 : 대구인터불고 호텔   주최 : 대한심장학회 심근경색증연구회

1st Meeting of Korea Society of Myocardial Infarction
Feb 28th 2014

3ʳᵈ Meeting of Korea Society of Myocardial Infarction supported by KSC
Jan 30-31ᵗʰ 2015

MYOCARDIAL INFARCTION

심근경색증
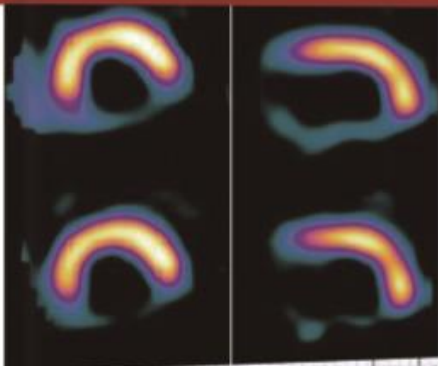
대한심장학회 심근경색연구회 지음

도서
출판 대한의학

서 문

부록

한국 급성 심근경색증
등록연구에서 얻은 결과

심근경색증은 국가 대표질환의 하나로서 이 질환의 예방 및 관리는 국민건강에 지대한 영향을 미칠 것이다. 우리나라에서 심근경색증은 1960년대 이전에는 거의 없었던 질환에서 현재 종합병원에서는 일상적으로 접하는 흔한 질환이 되었다. 따라서 의사들, 특히 내과의사들에게는 심근경색증의 예방, 원인, 병태 생리, 치료 및 관리를 적절히 하기 위한 지식들이 절실히 필요하게 되었다.

그동안 우리나라에서 심근경색증에 대한 단편적인 연구들이 있었지만 체계적으로 많은 수의 환자들을 대상으로 한 연구는 없었다. 다행히 2005년 대한심장학회에서 학회 창립 50주년 사업의 일환으로 급성심근경색증 환자의 등록사업을 후원하여 그동안 많은 수의 환자들이 등록되고 이 자료를 바탕으로 많은 자료들이 생산되고 있음은 매우 고무적인 일이다. 그리고 2014년

KAMIR 연구를 기반으로 심근경색증 교과서를 편찬하여 한국 실정에 알맞은 진단, 치료, 예방법을 정리

데 어려움이 있지만, 국내 환자들 대상으로 한 대규모 자료이고 치료 지침의 근간이 되는 무작위 연구에서 제외되는 고 위험군 환자나 특정 질환을 가진 환자들의 경과도 살펴볼 수 있기 때문에 이들 환자 치료 시에 참고해볼 가치가 있을 것으로 생각된다. 최근까지 KAMIR 연구의 주요 결과들을 예전에 발표한 종설의 분류처럼 예후 예측 인자, 치료, 그리고 특수 환자군으로 나누어 기술하기로 한다.[1]

2016년 4월
대한심장학회 심근경색연구회
교재편찬위원회

小島　淳 先生　　小菅　雅美 先生　　木村　一雄 先

61th Japanese College of Cardiology, Sep 20-22 2013, Kumamoto, Japan

Current Status of Acute Myocardial Infarction in Japan and Korea

Chairpersons	Satoshi Yasuda, Young-Jo Kim	
Panel	Seung Woon Rha, Young-Keun Ahn, Sang Rok Lee, Jang Hoon Lee, Kwang Soo Cha, Kyoo-Rok Han	
10:00-10:12	Korea AMI Registry	Myung-Ho Jeong/ Chonnam Univ., Korea
10:12-10:24	AMI Registry Study in Urban Japan	Makoto Suzuki/ Sakakibara Heart Institute, Japan
10:24-10:36	AMI Registry Study in Rural Japan Miyagi AMI Registry	Jun Takahashi/ Tohoku Univ., Japan

58th Korean Society of Cardiology, Apr 18-19 2014, Gwangju, Korea

The 79th Annual Scientific Meeting of the Japanese Circulation Society Fireside Seminar 34

第79回 日本循環器学会学術集会　ファイアサイドセミナー34

JAMIR-KAMIR Joint Symposium in JCS 2015
抗血栓療法の国際比較を目指して

Dr.Myung Ho Jeong

2015 JAMIR-KAMIR Joint Symposium Osaka, Japan 2015.4.25

The Korean Society of Myocardial Infarction Symposium

대한심장학회 심근경색증 연구회 동계 Symposium

– KAMIR 10주년 기념 / KAMIR-JAMIR Joint Symposium –

2015년 11월 27일 (금) WALKERHILL 서울 워커힐W호텔

JAMIR-KAMIR JOINT SYMPOSIUM in JCS 2016

Date: Sat. March 19, 2016
Time: 19:40-20:50
Venue: Koyo Grand Hotel, Sendai, Miyagi.

KAMIR-JAMIR Joint Symposium
Chonnam National University Hospital

KAMIR-JAMIR Joint Symposium

Sat. 19. Nov. 2016

2017 JAMIR-KAMIR Joint Symposium

Kanazawa, Japan. Mar 18 2017

2016년 중국 길림성 심장중재술학회 및 순환기학회 특강
중국도 CHAMIR 결성하여 공동연구 제안 (KAMIR-CHAMIR)

- 주제 강의 : 새로운 심장혈관 스텐트 개발 연구와 한국인 심근경색증 등록연구 경험
- 장소 : 중국 길림성 연길
- 일자 : 2016.5.13 - 2016. 5. 14

- 주제 강의 : 한국인 심근경색증 등록연구의 경험/전남대병원 타이거 스텐트 소개
  장소 : 중국 길림성 장춘시 쉐라톤 호텔
- 일자 : 2016. 9. 02 - 2016. 9. 03

Multicenter Cohort Study of Acute Myocardial Infarction in Korea

– Interim Analysis of the Korea Acute Myocardial Infarction Registry-National Institutes of Health Registry –

Ju Han Kim, MD, PhD; Shung-Chull Chae, MD, PhD; Dong Joo Oh, MD, PhD;
Hyo-Soo Kim, MD, PhD; Young Jo Kim, MD, PhD; Youngkeun Ahn, MD, PhD;
Myeong Chan Cho, MD, PhD; Chong Jin Kim, MD, PhD; Jung-Han Yoon, MD, PhD;
Hyun-Young Park, MD, PhD; Myung Ho Jeong, MD, PhD;
Korea Acute Myocardial Infarction-National Institutes of Health Registry Investigators

Background: The Korea Acute Myocardial Infarction Registry (KAMIR)-National Institutes of Health (NIH) registry has the aim of evaluating the clinical characteristics, management, and long-term outcomes of patients with acute myocardial infarction (AMI) in Korea.

Methods and Results: Patients hospitalized for AMI in 20 tertiary university hospitals in Korea have been enrolled since November 2011. The study is expected to complete the scheduled enrollment of approximately 13,000 patients in October 2015, and follow-up duration is up to 5 years for each patient. As of October 2015, an interim analysis of 13,623 subjects was performed to understand the baseline clinical profiles of the study population. The mean age was 64.1 years; 73.5% were male; and 48.2% were diagnosed with ST-segment elevation AMI. Hypertension is a leading cause of AMI in Korea (51.2%), followed by smoking (38.5%) and diabetes mellitus (28.6%). Percutaneous coronary intervention was performed in 87.4% and its success rate was very high (99.4%). In-hospital, 1-year, and 2-year mortality rates were 3.9%, 4.3%, and 8.6%, respectively. The rates of major adverse cardiac events at 1 and 2 years were 9.6% and 18.8%, respectively.

Conclusions: This analysis demonstrated the clinical characteristics of Korean AMI patients in comparison with those of other countries. It is necessary to develop guidelines for Asian populations to further improve their prognosis. (*Circ J* 2016; 80: 1427–1436)

KAMR Investigators, Circ J 2016;80:1427-36

KAMIR Compared with Western Registries

Table 1. Clinical Characteristics of Patients With Acute MI in Korea Compared With Other Registries

	KMAIR-NIH	KAMIR[5]	GRACE[10]	SCAAR[11]	NRMI[12]	MINAP[13]	SWEDEHEART/RIKS-HIA[13]
Region	South Korea	South Korea	Europe, America	Sweden	US	UK	Sweden
Time period	Nov 2011–Oct 2015	Nov 2005–Oct 2010	2004–2007	Jan 2003–Dec 2004	1994–2006	Jan 2004–Dec 2010	Jan 2004–Dec 2010
Sample size	13,624	27,852	28,449	19,771	542,008	391,077	119,786
Follow-up rate (%)	97.1*	NA	89.8	95.2	NA	NA	NA
Follow-up duration	525.6 days	231.6 days	2 years	3 years	NA	NA	NA
Demographics							
Mean or median age (years)	64.1	63.2	65.0	65.7	64.0	69.5	71.2
Male (%)	73.5	75.0	68.4	72.0	59.0	65.2	63.7
Comorbidities (%)							
Hypertension	51.2	45.9	64.7	44.5	52.3	47.3	45.2
DM	28.6	24.6	25.2	18.1	22.4	17.6	22.7
Dyslipidemia	11.2	9.5	53.0	NA	28.0	NA	NA
Smoking	38.5	62.8	59.8	20.4	31.3	29.5	23.3
Previous MI	8.1	11.1	30.3	37.4	NA	18.3	22.4
Family history of CAD	6.3	7.9	NA	NA	28.0	NA	NA
CVA	6.2	5.6	NA	6.0	NA	8.5	10.1
HF	1.8	1.1	8.8	7.4	NA	5.3	9.7
Vital signs							
SBP (mmHg)	129.9	126.8	NA	NA	147.0	139.0	145.0
DBP (mmHg)	78.4	78.0	NA	NA	NA	NA	NA
Pulse rate (/min)	78.7	76.4	NA	NA	86.0	79.0	78.0
STEMI (%)	48.2	56.6	35.9	22.6	41.8	40.3	32.1
Multivessel disease (%)	54.3	52.7	NA	50.0	NA	NA	NA
Culprit artery (%)							
LM	2.3	1.2	NA	1.8	NA	NA	NA
LAD	46.7	52.7	NA	44.7	NA	NA	NA
LCX	17.5	9.5	NA	21.5	NA	NA	NA
RCA	33.7	36.6	NA	28.8	NA	NA	NA
PCI rate (%)	87.4	84.2	NA	NA	64.0	39.7	87.9
DES (%)	96.9	91.1	NA	30.5	NA	NA	NA
PCI success rate (%)	99.4	99.0	NA	NA	NA	NA	NA
In-hospital mortality (%)	3.9	2.0	NA	NA	8.0	10.6	7.7
1-year mortality (%)	4.3	3.1	NA	NA	NA	NA	NA
2-year mortality (%)	8.6	NA	5.7	NA	NA	NA	NA
3-year mortality (%)	NA	NA	NA	7.2	NA	NA	NA

KAMR Investigators, Circ J 2016;80:1427-36

Current Trend of KAMIR - *Dec 2014 Am J Cardiol*

Current Trend of Acute Myocardial Infarction in Korea (from the Korea Acute Myocardial Infarction Registry from 2006 to 2013)

Hyun Yi Kook, RN[a], Myung Ho Jeong, MD[a,*], Sangeun Oh, RN, PhD[b], Sung-Hee Yoo, RN, PhD[b], Eun Jung Kim, RN[a], Youngkeun Ahn, MD[a], Ju Han Kim, MD[a], Leem Soon Chai, RN[c], Young Jo Kim, MD[d], Chong Jin Kim, MD[e], and Myeong Chan Cho, MD[f], other Korea Acute Myocardial Infarction Registry Investigators

Although the incidence of acute myocardial infarction (AMI) in Korea has been rapidly changed because of westernization of diet, lifestyle, and aging of the population, the recent trend of the myocardial infarction have not been reported by classification. We investigated recent trends in the incidence and mortality associated with the 2 major types of AMI. We reviewed 39,978 patients registered in the Korea Acute Myocardial Infarction Registry for either ST-segment elevation acute myocardial infarction (STEMI) or non–ST-segment elevation acute myocardial infarction (NSTEMI) from 2006 to 2013. When the rate for AMI were investigated according to each year, the incidence rates of STEMI decreased markedly from 60.5% in 2006 to 48.1% in 2013 (p <0.001). In contrast, a gradual increase in the incidence rates of NSTEMI was observed from 39.5% in 2006 to 51.9% in 2013 (p <0.001). As risk factors, hypertension, diabetes mellitus, and dyslipidemia were much more common in patients with NSTEMI than STEMI. Among medical treatments, the use of β blockers, angiotensin receptor blocker, and statin were increased from 2006 to 2013 in patients with STEMI and NSTEMI. Patients with STEMI and NSTEMI were more inclined to be increasingly treated by invasive treatments with percutaneous coronary intervention. In conclusion, this study demonstrated that the trend of myocardial infarction has been changed rapidly in the aspect of risk factors, ratio of STEMI versus NSTEMI, and therapeutic strategies during the recent 8 years in Korea. © 2014 Elsevier Inc. All rights reserved. (Am J Cardiol 2014;■:■−■)

KAMR Investigators, Am J Cardiol 2014;114:1817-22

Current Trend of KAMIR

		2006	2007	2008	2009	2010	2011	2012	2013	*p* for trend
Risk factors										
HT	STEMI	1,753 (45.3)	1,453 (45.4)	1,670 (47.6)	1,456 (46.5)	1,206 (47.5)	1,172 (49.1)	920 (62.8)	760 (66.7)	<0.001
	NSTEMI	1,365 (53.9)	1,118 (54.3)	1,392 (56.3)	1,382 (56.0)	1,094 (56.1)	1,169 (57.6)	1,097 (69.4)	979 (73.4)	<0.001
DM	STEMI	951 (24.6)	794 (24.8)	878 (25.0)	771 (24.6)	616 (24.3)	622 (26.1)	505 (34.5)	411 (36.1)	<0.001
	NSTEMI	821 (32.5)	664 (32.2)	788 (31.8)	772 (31.3)	644 (33.0)	637 (31.4)	667 (42.2)	553 (41.5)	<0.001
DL	STEMI	238 (6.2)	310 (9.7)	370 (10.6)	298 (9.5)	338 (13.4)	288 (12.1)	200 (13.7)	179 (15.7)	<0.001
	NSTEMI	265 (10.5)	281 (13.7)	366 (14.8)	298 (12.1)	287 (14.8)	279 (13.8)	227 (14.4)	224 (16.8)	<0.001

Current Trend of KAMIR

		2006	2007	2008	2009	2010	2011	2012	2013	*p* for trend
Smoking history	STEMI	2,380 (62.0)	1,922 (60.4)	1,653 (47.5)	1,475 (47.4)	1,166 (46.6)	1,129 (46.9)	871 (44.6)	728 (44.6)	<0.001
	NSTEMI	1,285 (51.1)	1,0848 (51.3)	963 (39.4)	889 (36.7)	674 (34.8)	671 (32.9)	690 (34.9)	608 (34.5)	<0.001
Previous angina	STEMI	1,467 (38.3)	1,170 (37.0)	1,233 (35.2)	953 (30.8)	826 (32.6)	804 (33.3)	461 (23.7)	364 (22.3)	<0.001
	NSTEMI	1,199 (47.7)	1081 (52.9)	1,134 (46.0)	1,015 (42.1)	888 (45.7)	964 (47.2)	671 (33.9)	560 (31.8)	<0.001

Current Trend of KAMIR

		2006	2007	2008	2009	2010	2011	2012	2013	*p* for trend
Aspirin	STEMI	3,508 (90.2)	2,838 (88.2)	3,047 (97.7)	2,792 (98.6)	2,211 (99.2)	2,084 (99.1)	1,837 (97.2)	1,570 (96.2)	<0.001
	NSTEMI	2,314 (91.0)	1,822 (87.9)	2,199 (96.5)	2,181 (97.4)	1,724 (97.8)	1,831 (97.1)	1,856 (96.6)	1,684 (95.6)	<0.001
Clopidogrel	STEMI	2,380 (62.0)	1,922 (60.4)	1,653 (47.5)	1,475 (47.4)	1,166 (46.6)	1,129 (46.9)	871 (44.6)	728 (44.6)	<0.001
	NSTEMI	1,285 (51.1)	1,084 (51.3)	963 (39.4)	889 (36.7)	674 (34.8)	671 (32.9)	690 (34.9)	608 (34.5)	<0.001
Cilostazol	STEMI	1,374 (35.3)	865 (26.9)	803 (27.4)	874 (32.9)	525 (24.4)	454 (22.2)	365 (19.4)	122 (7.5)	<0.001
	NSTEMI	771 (30.3)	469 (22.6)	556 (26.2)	561 (26.6)	365 (21.4)	414 (22.4)	374 (19.5)	168 (9.5)	<0.001

KAMR Investigators, Am J Cardiol 2014;114:1817-22

Current Trend of KAMIR

		2006	2007	2008	2009	2010	2011	2012	2013	*p* for trend
Beta blocker	STEMI	2,500 (64.3)	2,120 (65.9)	2,386 (67.0)	2,375 (74.3)	1,938 (74.9)	1,797 (72.9)	1,614 (82.2)	1,352 (82.8)	<0.001
	NSTEMI	1,684 (66.2)	1,329 (64.1)	1,703 (67.8)	1,803 (72.1)	1,448 (72.5)	1,511 (72.4)	1,559 (78.4)	1,440 (81.7)	<0.001
ACEi	STEMI	2,411 (62.0)	1,938 (60.2)	2,066 (58.0)	1,721 (53.8)	1,364 (52.7)	1,053 (42.7)	941 (47.9)	961 (58.9)	<0.001
	NSTEMI	1,505 (59.2)	1,205 (58.2)	1,337 (53.2)	1,247 (49.8)	963 (48.2)	874 (41.9)	757 (38.1)	834 (47.3)	<0.001
ARB	STEMI	607 (15.6)	376 (11.7)	523 (14.7)	685 (21.4)	502 (19.4)	631 (25.6)	596 (30.4)	345 (21.1)	<0.001
	NSTEMI	1,060 (16.5)	662 (12.5)	998 (16.4)	1,306 (22.9)	962 (21.0)	1,257 (27.6)	1,336 (33.8)	903 (26.6)	<0.001
Statin	STEMI	2,718 (69.9)	2,128 (66.1)	2,380 (66.8)	2,188 (68.4)	1,731 (66.9)	1,799 (73.0)	1,635 (83.3)	1,460 (89.5)	<0.001
	NSTEMI	1,693 (66.6)	1,362 (65.7)	1,609 (64.0)	1,622 (64.8)	1,315 (65.9)	1,601 (76.7)	1,634 (82.2)	1,558 (88.4)	<0.001

Incidence Rate for STEMI and NSTEMI
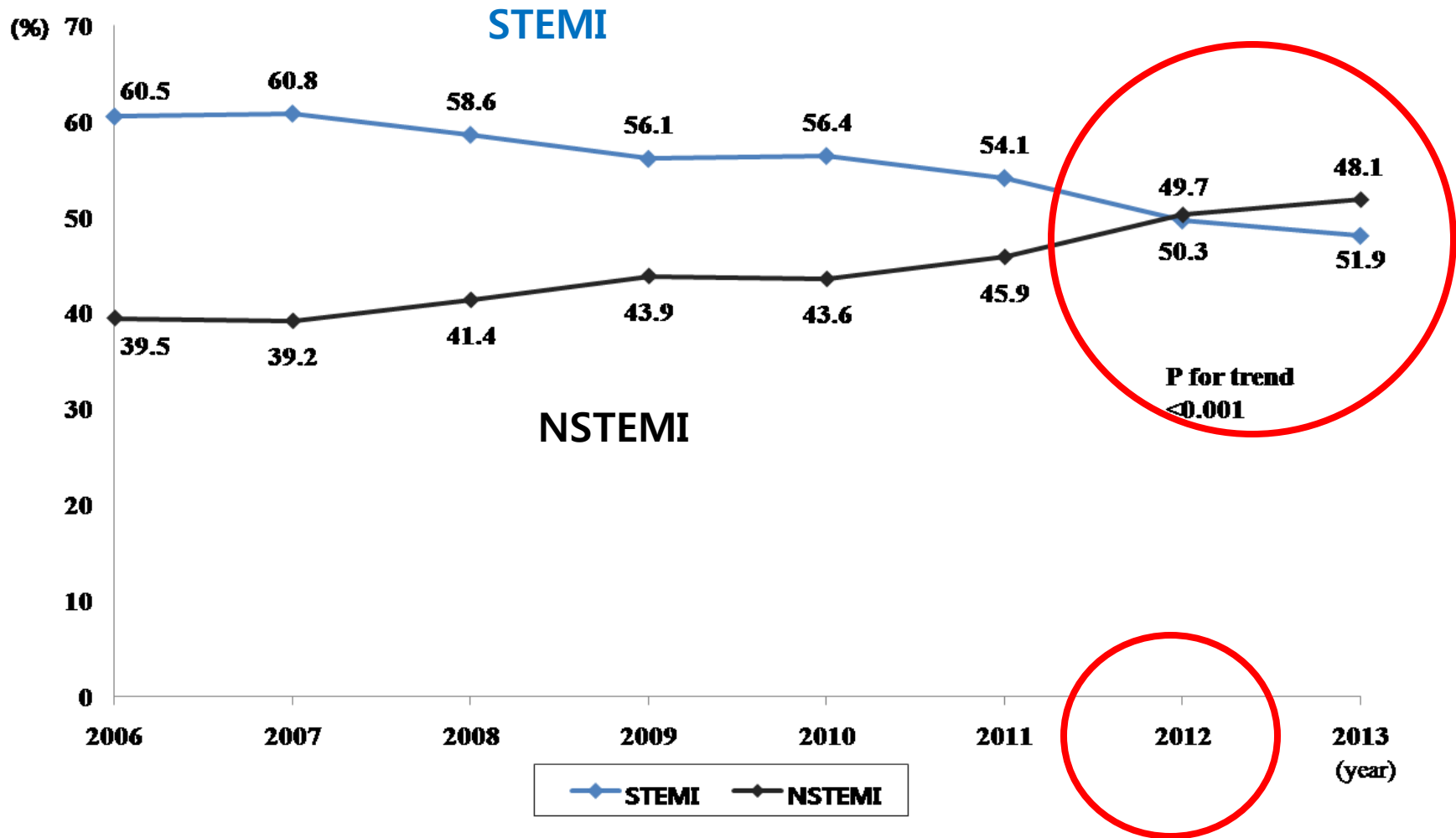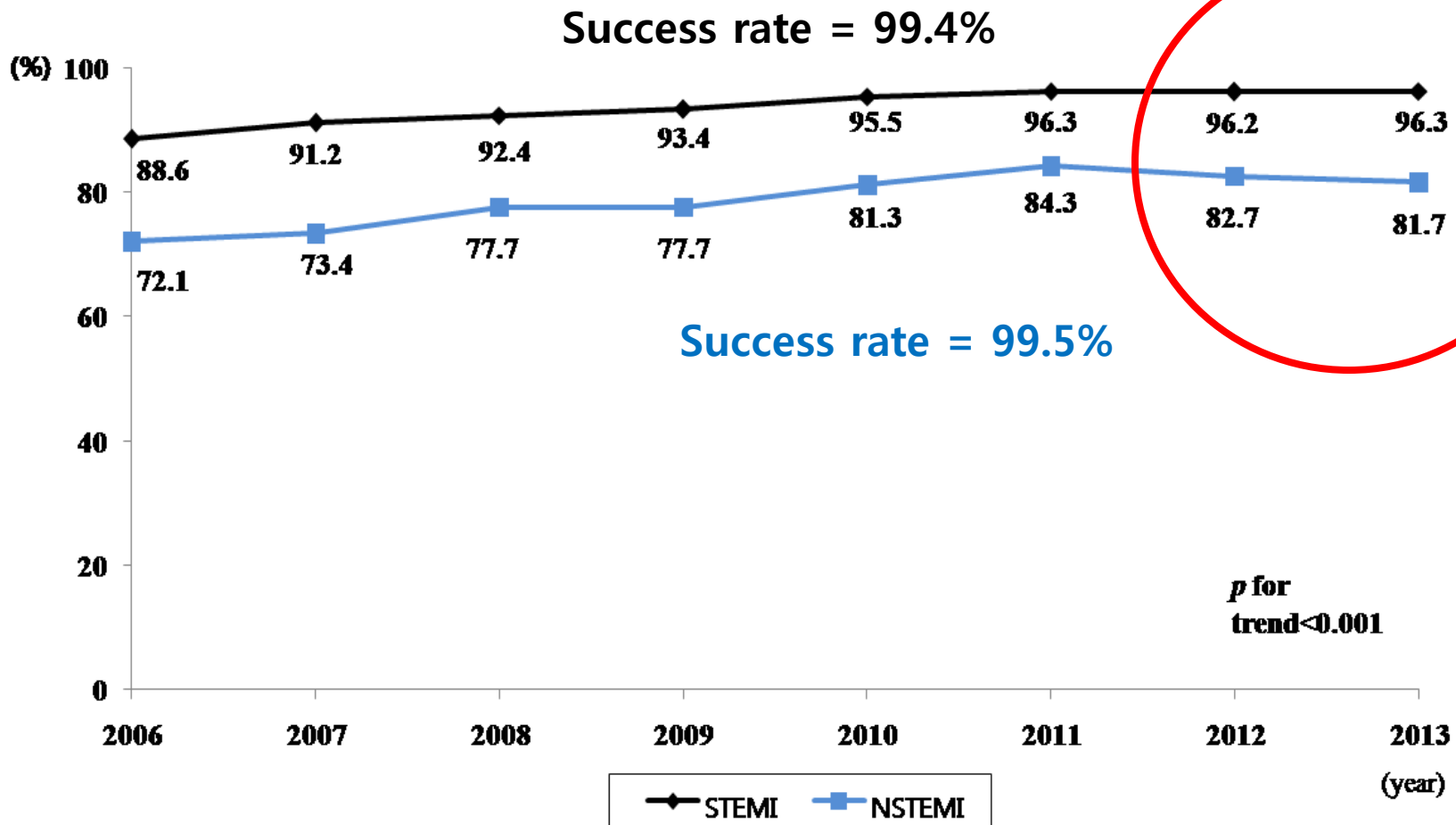
KAMR Investigators, Am J Cardiol 2014;114:1817-22

PCI Rate for STEMI and NSTEMI

Success rate = 99.4%

Success rate = 99.5%

STEMI: 88.6, 91.2, 92.4, 93.4, 95.5, 96.3, 96.2, 96.3

NSTEMI: 72.1, 73.4, 77.7, 77.7, 81.3, 84.3, 82.7, 81.7

p for trend<0.001

Years: 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013 (year)

STEMI — NSTEMI

KAMR Investigators, Am J Cardiol 2014;114:1817-22

What Are Different From Western Countries?

1. Risk Factor
2. Risk Stratification
3. Medical Treatment
4. Interventional Treatment

동양인과 서양인의 이상지질혈증 차이

No Target

Only Statin

High Intensity

2013 ACC/AHA

Circulation 2014;129:S1

LDL-C < 100mg/dL

Others Possible

Low Intensity

동양인에서는 LDL-C 높지 않고 TG가 비교적 높고 HDL-C 낮아서 새로운 치료법 요구됨

Differential Benefit of Statin in Secondary Prevention of Acute Myocardial Infarction according to the Level of Triglyceride and High Density Lipoprotein Cholesterol

Kyung Hwan Kim, MD[1]*, Cheol Hwan Kim, MD[1]*, Myung Ho Jeong, MD[1], Youngkeun Ahn, MD[1], Young Jo Kim, MD[2], Myeong Chan Cho, MD[3], Wan Kim, MD[4], Jong Jin Kim, MD[5], and Other Korea Acute Myocardial Infarction Registry Investigators

[1]Chonnam National University Hospital, Gwangju, [2]Yeungnam University Hospital, Busan, [3]Chungbuk National University Hospital, Cheongju, [4]Gwangju Veterans Hospital, Gwangju, [5]Kyunghee University College of Medicine, Seoul, Korea

Background and Objectives: The differential benefit of statin according to the state of dyslipidemia has been sparsely investigated. We sought to address the efficacy of statin in secondary prevention of myocardial infarction (MI) according to the level of triglyceride and high density lipoprotein cholesterol (HDL-C) on admission.

Subjects and Methods: Acute MI patients (24653) were enrolled and the total patients were divided according to level of triglyceride and HDL-C on admission: group A (HDL-C≥40 mg/dL and triglyceride<150 mg/dL; n=11819), group B (HDL-C≥40 mg/dL and triglyceride≥150 mg/dL; n=3329), group C (HDL-C<40 mg/dL and triglyceride<150 mg/dL; n=6062), and group D (HDL-C<40 mg/dL & triglyceride≥150 mg/dL; n=3443). We evaluated the differential efficacy of statin according to the presence or absence of component of dyslipidemia. The primary end points were major adverse cardiac events (MACE) for 2 years.

Results: Statin therapy significantly reduced the risk of MACE in group A (hazard ratio =0.676; 95% confidence interval: 0.582-0.785; p<0.001). However, the efficacy of statin was not prominent in groups B, C, or D. In a propensity-matched population, the result was similar. In particular, the benefit of statin in group A was different compared with group D (interaction p=0.042)

Conclusion: The benefit of statin in patients with MI was different according to the presence or absence of dyslipidemia. In particular, because of the insufficient benefit of statin in patients with MI and dyslipidemia, a different lipid-lowering strategy is necessary in these patients. **(Korean Circ J 2016;46(3):324–334)**
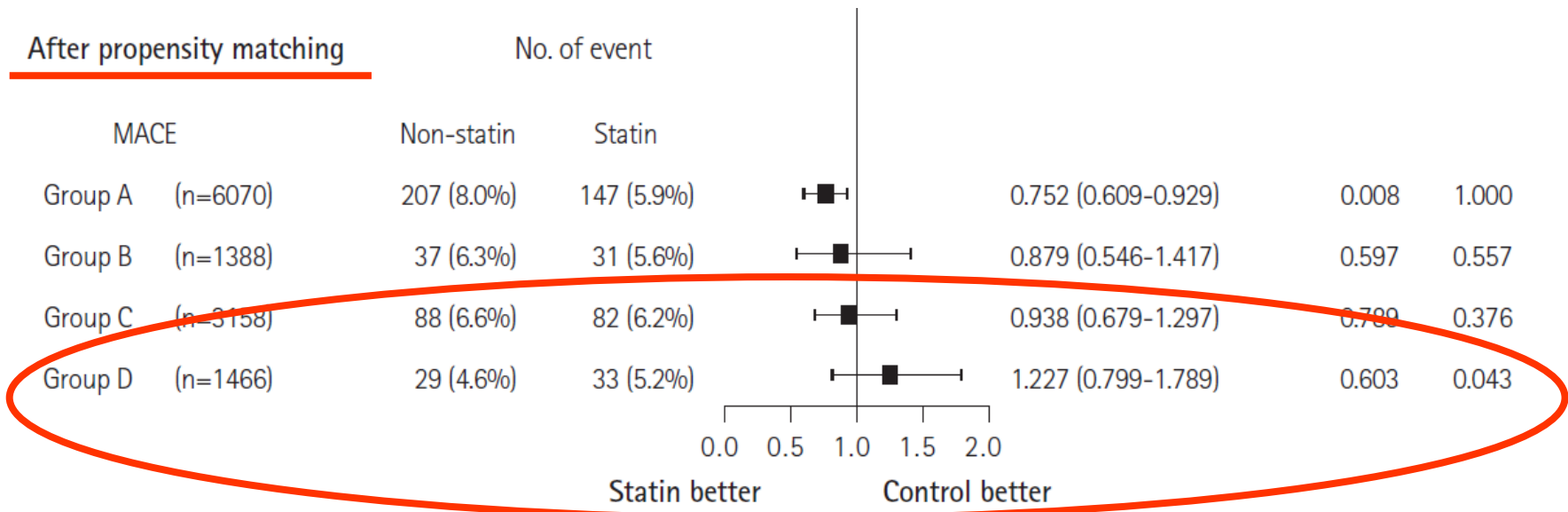
KAMIR Investigators. *Kor Circulation J 2016;46: 324-34*

After propensity matching		No. of event					
MACE		Non-statin	Statin				
Group A	(n=6070)	207 (8.0%)	147 (5.9%)		0.752 (0.609-0.929)	0.008	1.000
Group B	(n=1388)	37 (6.3%)	31 (5.6%)		0.879 (0.546-1.417)	0.597	0.557
Group C	(n=3158)	88 (6.6%)	82 (6.2%)		0.938 (0.679-1.297)	0.799	0.376
Group D	(n=1466)	29 (4.6%)	33 (5.2%)		1.227 (0.799-1.789)	0.603	0.043

0.0 0.5 1.0 1.5 2.0

Statin better   Control better

Fig. 1. The benefit of statin on MACE before and after propensity matching in each of the 4 groups, which were divided according to the baseline level of high density lipoprotein cholesterol and triglyceride. Group A (HDL-C≥40 mg/dL and triglyceride<150 mg/dL; n=11819), group B (HDL-C≥40 mg/dL and triglyceride≥150 mg/dL; n=3329), group C (HDL-C<40 mg/dL and triglyceride<150 mg/dL; n=6062) and group D (HDL-C<40 mg/dL and triglyceride≥150 mg/dL; n=3443). MACE: major adverse cardiac event, HDL-C: high density lipoprotein cholesterol, HR: hazard ratio, CI: confidence interval.

KAMIR Investigators. *Kor Circulation J 2016;46: 324-34*
Best Poster Award at 2015 ESC

Impact of high admission blood pressure without history of hypertension on clinical outcomes of patients with acute myocardial infarction: From Korea Acute Myocardial Infarction Registry

CrossMark

Jae Yeong Cho [a], Myung Ho Jeong [a,*], Youngkeun Ahn [a], Hae Chang Jeong [a], Su Young Jang [a], Sung Soo Kim [a], Shi Hyun Rhew [a], Young Wook Jeong [a], Ki Hong Lee [a], Keun-Ho Park [a], Doo Sun Sim [a], Nam Sik Yoon [a], Hyun Ju Yoon [a], Kye Hun Kim [a], Young Joon Hong [a], Hyung Wook Park [a], Ju Han Kim [a], Jeong Gwan Cho [a], Jong Chun Park [a], Young Jo Kim [b], Chong Jin Kim [c], Myeong Chan Cho [d], Kyoo Rok Han [e], Hyo Soo Kim [f], the Korea Acute Myocardial Infarction Registry Investigators

KAMIR Investigators. *Int J Cardiol 2014;172:e54-8*

A

MACE (%)

SBP <100 100-110 110-120 120-130 130-140 140-150 150-160 160-170 >170 (mmHg)

■ STEMI
□ NSTEMI

B

MACE (%)

DBP <60 60-70 70-80 80-90 90-100 >100 (mmHg)

■ STEMI
□ NSTEMI

KAMIR Investigators. *Int J Cardiol 2014;172:e54-8*
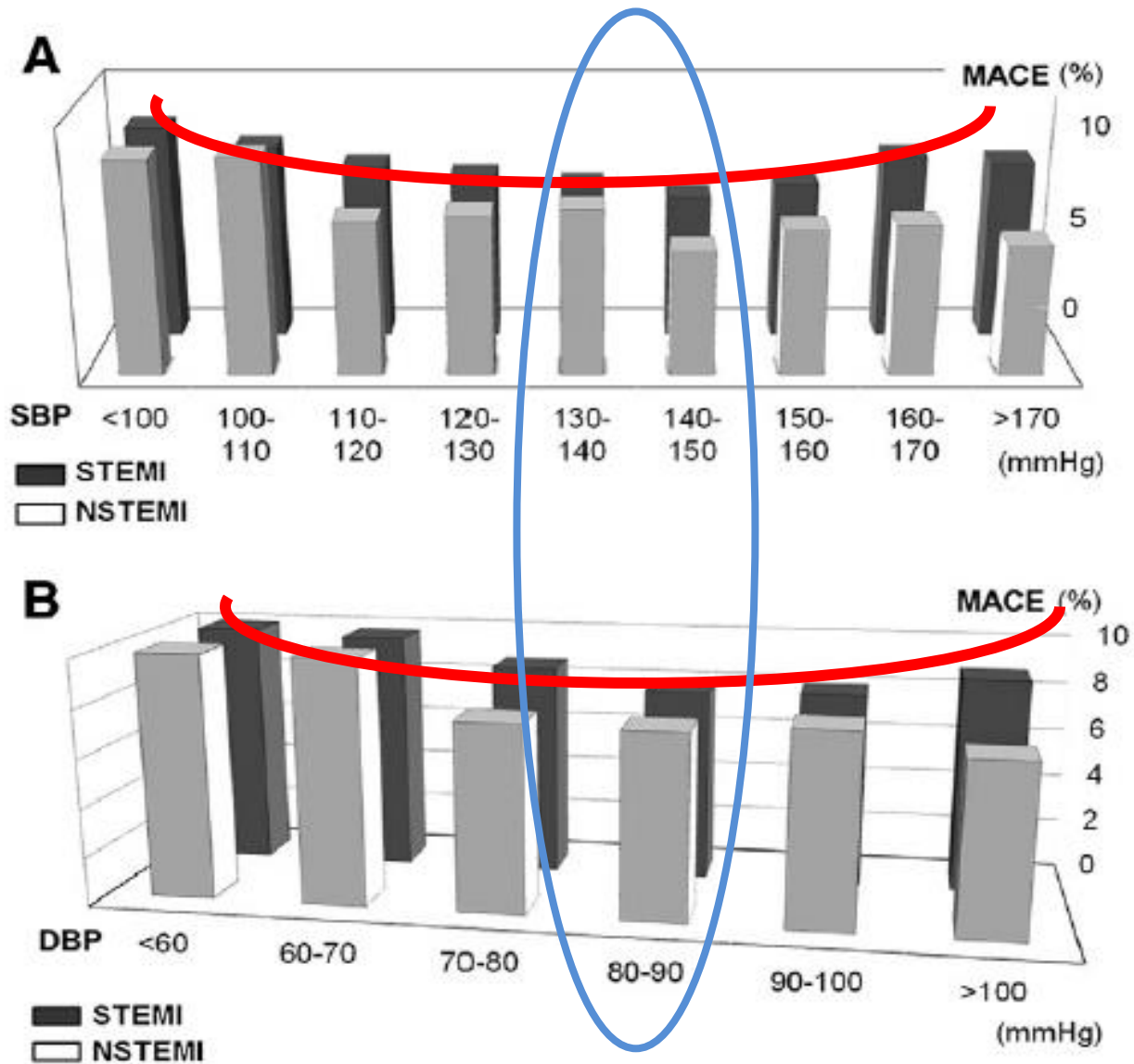
Hypoglycemia at Admission in Patients With Acute Myocardial Infarction Predicts a Higher 30-Day Mortality in Patients With Poorly Controlled Type 2 Diabetes Than in Well-Controlled Patients

Sang Ah Lee,[1] Suk Ju Cho,[2] Myung Ho Jeong,[3] Young Jo Kim,[4] Chong Jin Kim,[5] Myeong Chan Cho,[6] Hyo-Soo Kim,[7] Youngkeun Ahn,[3] Gwanpyo Koh,[1] Jeong mi Lee,[8] Seok Kyu Oh,[9] Kyeong Ho Yun,[9] Ha Young Kim,[9] Chung Gu Cho,[9] and Dae Ho Lee,[9] on behalf of the KAMIR/KorMI Registry*

**KAMIR Investigators.** *Diabetic Care 2014;37:2366-73*
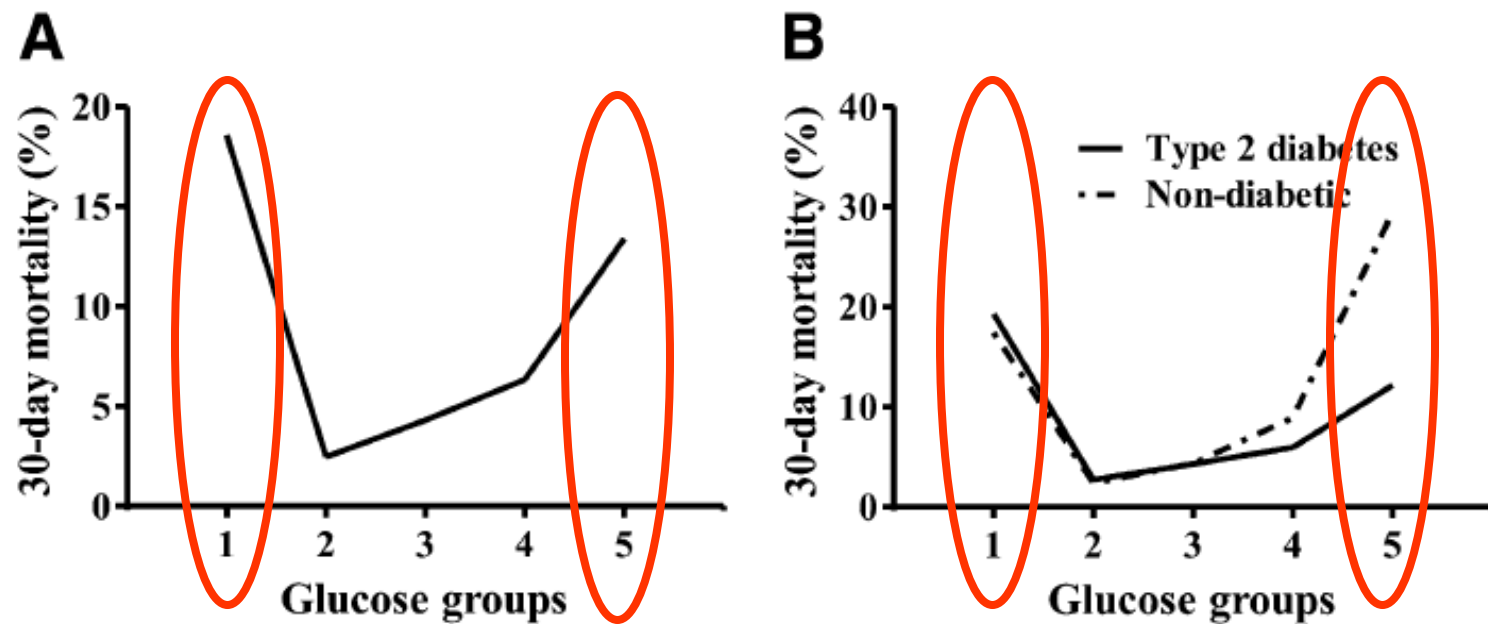
Figure 1—The 30-day mortality rates of the five glucose-based groups among the total AMI patient cohort ($n = 34{,}943$) (A) and the AMI patients with ($n = 20{,}714$) and without type 2 diabetes ($n = 14{,}229$) (B). The five glucose subgroups of AMI patients were categorized according to the admission serum-glucose levels, as follows: group 1, <3.9 mmol/L (<70 mg/dL); group 2, 3.9–7.72 mmol/L (70–139 mg/dL); group 3, 7.78–11.06 mmol/L (140–199 mg/dL); group 4, 11.11–14.39 mmol/L (200–259 mg/dL); and group 5, ≥14.44 mmol/L (≥260 mg/dL).

KAMIR Investigators. *Diabetic Care 2014;37:2366-73*

What Are Different From Western Countries?

1. Risk Factor
2. Risk Stratification
3. Medical Treatment
4. Interventional Treatment
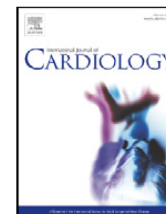
A new risk score system for the assessment of clinical outcomes in patients with non-ST-segment elevation myocardial infarction

Hyun Kuk Kim [a], Myung Ho Jeong [a,*], Youngkeun Ahn [a], Jong Hyun Kim [b], Shung Chull Chae [c], Young Jo Kim [d], Seung Ho Hur [e], In Whan Seong [f], Taek Jong Hong [g], Dong Hoon Choi [h], Myeong Chan Cho [i], Chong Jin Kim [j], Ki Bae Seung [k], Wook Sung Chung [k], Yang Soo Jang [h], Seung Woon Rha [l], Jang Ho Bae [m], Jeong Gwan Cho [a], Seung Jung Park [n]
other Korea Acute Myocardial Infarction Registry Investigators
Korea Acute Myocardial infarction Registry (KAMIR) Study Group of Korean Circulation Society

ABSTRACT

Background and objectives: Prediction for long-term clinical outcomes in patients with non-ST elevation acute coronary syndrome is important as well as early risk stratification. The aim of this study is to develop a simple assessment tool for better early bedside risk stratification for both short- and long-term clinical outcomes.
Subjects and methods: 2148 patients with non-ST-segment elevation myocardial infarction (NSTEMI) (64.9 ± 12.2 years, 35.0% females) were enrolled in a nationwide prospective Korea Acute Myocardial Infarction Registry (KAMIR). A new risk score was constructed using the variables related to one year mortality: TIMI risk index (17.5–30: 1 point, >30: 2 points), Killip class (II: 1 point, >II: 2 points) and serum creatinine (≥ 1.5 mg/dL: 1 point), based on the multivariate-adjusted risk relationship. The new risk score system was compared with the Global Registry of Acute Coronary Events (GRACE) and TIMI risk scores during a 12-month clinical follow-up.
Results: During a one year follow-up, all causes of death occurred in 362 patients (14.3%), and 184 (8.6%) patients died in the hospital. The new risk score showed good predictive value for one year mortality. The accuracy for in-hospital and one year post-discharge mortality rates, the new risk score demonstrated significant differences in predictive accuracy when compared with TIMI and GRACE risk scores.
Conclusion: A new risk score in the present study provides simplicity with accuracy simultaneously for early risk stratification, and also could be a powerful predictive tool for long-term prognosis in NSTEMI.

KAMIR Investigators. Int J Cardiol *2010;145:450-4*

Table 3

Independent predictors of one year mortality.

Characteristics	β coefficiency	P value	HR (95% CI)
TIMI risk index			
17.5–30	0.708	0.009	2.03 (1.19–3.46)
>30	1.631	<0.001	5.11 (3.07–8.05)
Killip class			
II	0.952	<0.001	2.59 (1.84–2.77)
III–IV	1.456	<0.001	4.29 (3.20–5.75)
Serum creatinine ≥ 1.5 mg/dL	1.091	<0.001	2.97 (2.32–3.83)

CI = confidence interval; HR = hazard ratio; TIMI = thrombolysis in myocardial infarction.
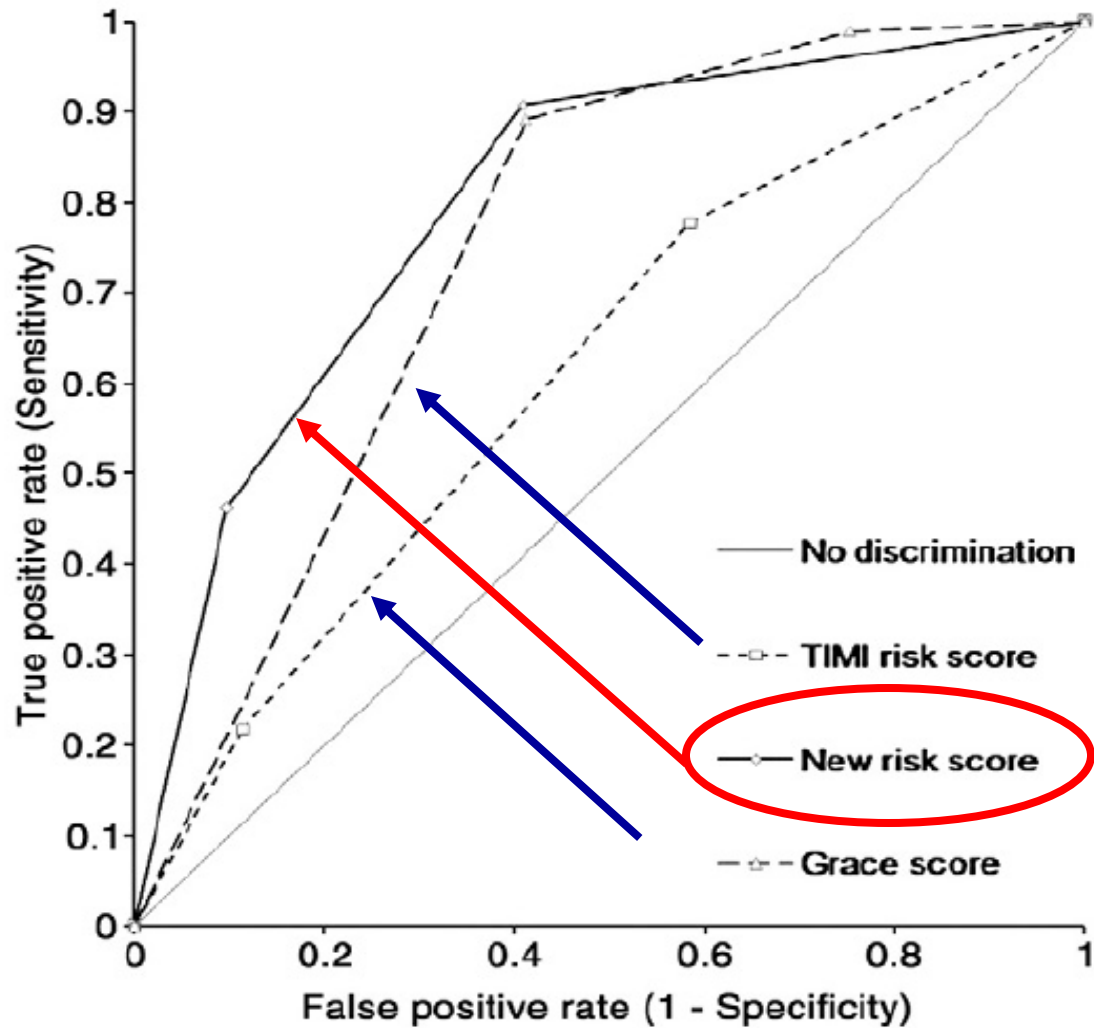
Fig. 4. Receiver-operating characteristic curves of the new risk score, GRACE and TIMI risk scores for post-discharge for one year mortality.

Hospital Discharge Risk Score System for the Assessment of Clinical Outcomes in Patients With Acute Myocardial Infarction (Korea Acute Myocardial Infarction Registry [KAMIR] Score)

Hyun Kuk Kim, MD[a], Myung Ho Jeong, MD[a,*], Youngkeun Ahn, MD[a], Jong Hyun Kim, MD[b], Shung Chull Chae, MD[c], Young Jo Kim, MD[d], Seung Ho Hur, MD[e], In Whan Seong, MD[f], Taek Jong Hong, MD[g], Dong Hoon Choi, MD[h], Myeong Chan Cho, MD[i], Chong Jin Kim, MD[j], Ki Bae Seung, MD[k], Wook Sung Chung, MD[k], Yang Soo Jang, MD[h], Seung Woon Rha, MD[l], Jang Ho Bae, MD[m], Jeong Gwan Cho, MD[a], and Seung Jung Park, MD[n], and Other Korea Acute Myocardial Infarction Registry Investigators

Assessment of risk at time of discharge could be a useful tool for guiding postdischarge management. The aim of this study was to develop a novel and simple assessment tool for better hospital discharge risk stratification. The study included 3,997 hospital-discharged patients with acute myocardial infarction who were enrolled in the nationwide prospective Korea Acute Myocardial Infarction Registry-1 (KAMIR-1) from November 2005 through December 2006. The new risk score system was tested in 1,461 hospital-discharged patients who were admitted from January 2007 through January 2008 (KAMIR-2). The new risk score system was compared to the Global Registry of Acute Coronary Events (GRACE) postdischarge risk model during a 12-month clinical follow-up. During 1-year follow-up, all-cause death occurred in 228 patients (5.7%) and 81 patients (5.5%) in the development and validation cohorts, respectively. The new risk score (KAMIR score) was constructed using 6 independent variables related to the primary end point using a multivariable Cox regression analysis: age, Killip class, serum creatinine, no in-hospital percutaneous coronary intervention, left ventricular ejection fraction, and admission glucose based on multivariate-adjusted risk relation. The KAMIR score demonstrated significant differences in its predictive accuracy for 1-year mortality compared to the GRACE score for the developmental and validation cohorts. In conclusion, the KAMIR score for patients with acute myocardial infarction is a simpler and better risk scoring system than the GRACE hospital discharge risk model in prediction of 1-year mortality. © 2011 Elsevier Inc. All rights reserved. (Am J Cardiol 2011;107:965–971)

Table 3

Multivariate analysis for predictors of one-year mortality

| Characteristics	Beta Coefficient	p Value	HR (95% CI)
Age (years)			
65–74	0.871	0.001	2.39 (1.44–3.97)
>75	1.468	<0.001	4.34 (2.59–7.28)
Killip class			
II	0.850	0.001	2.34 (1.39–3.94)
III to IV	1.401	<0.001	4.06 (2.54–6.50)
No percutaneous coronary intervention	0.797	<0.001	2.22 (1.65–2.98)
Serum creatinine ≥1.5 mg/dl	0.580	0.012	1.79 (1.13–2.81)
Left ventricular ejection fraction <40%	0.805	<0.001	2.24 (1.47–3.41)
Admission glucose >180 mg/dl	0.417	0.040	1.52 (1.02–2.26)
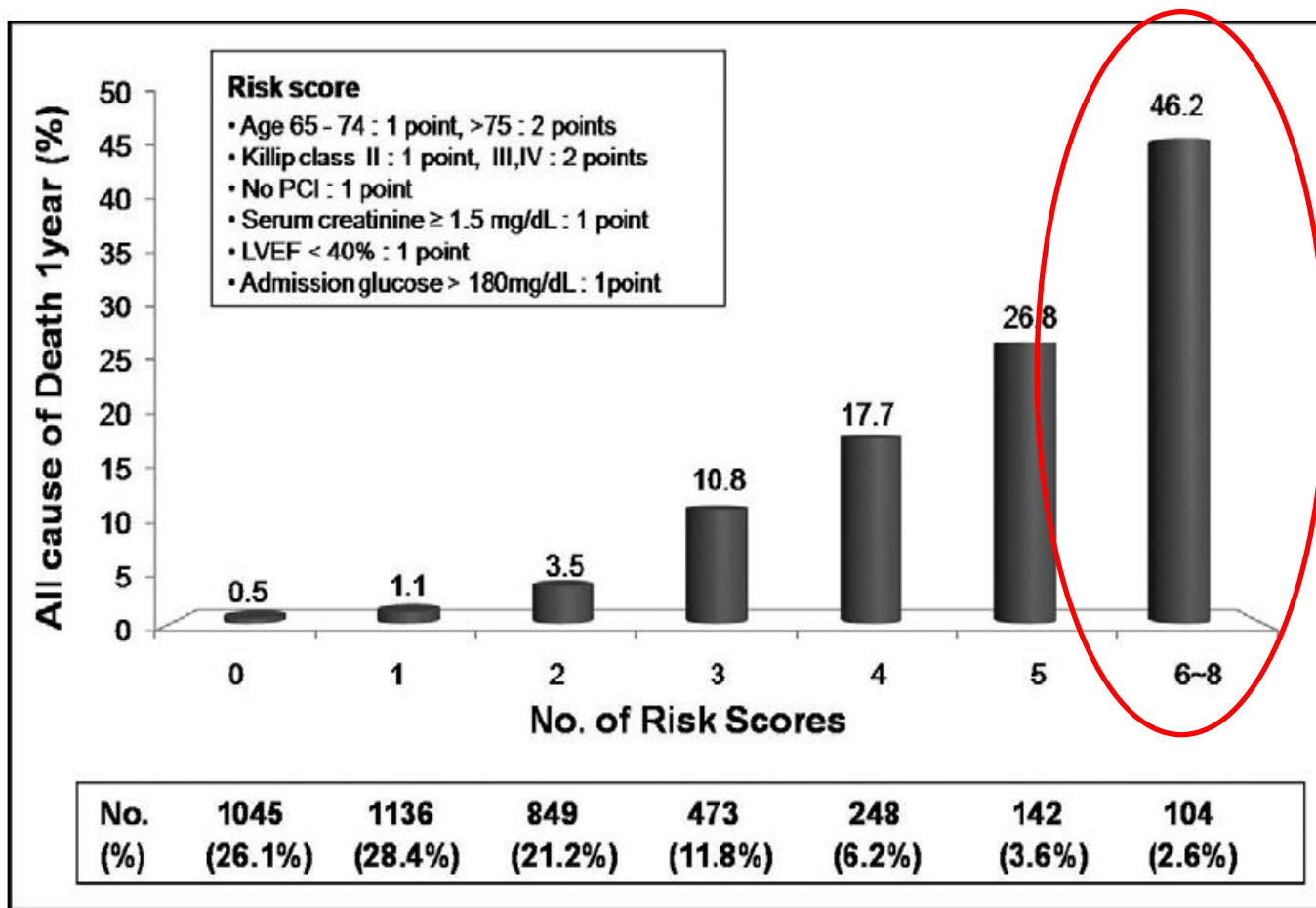
Figure 1. A new risk score predicting 1-year death from acute myocardial infarction. LVEF = left ventricular ejection fraction.
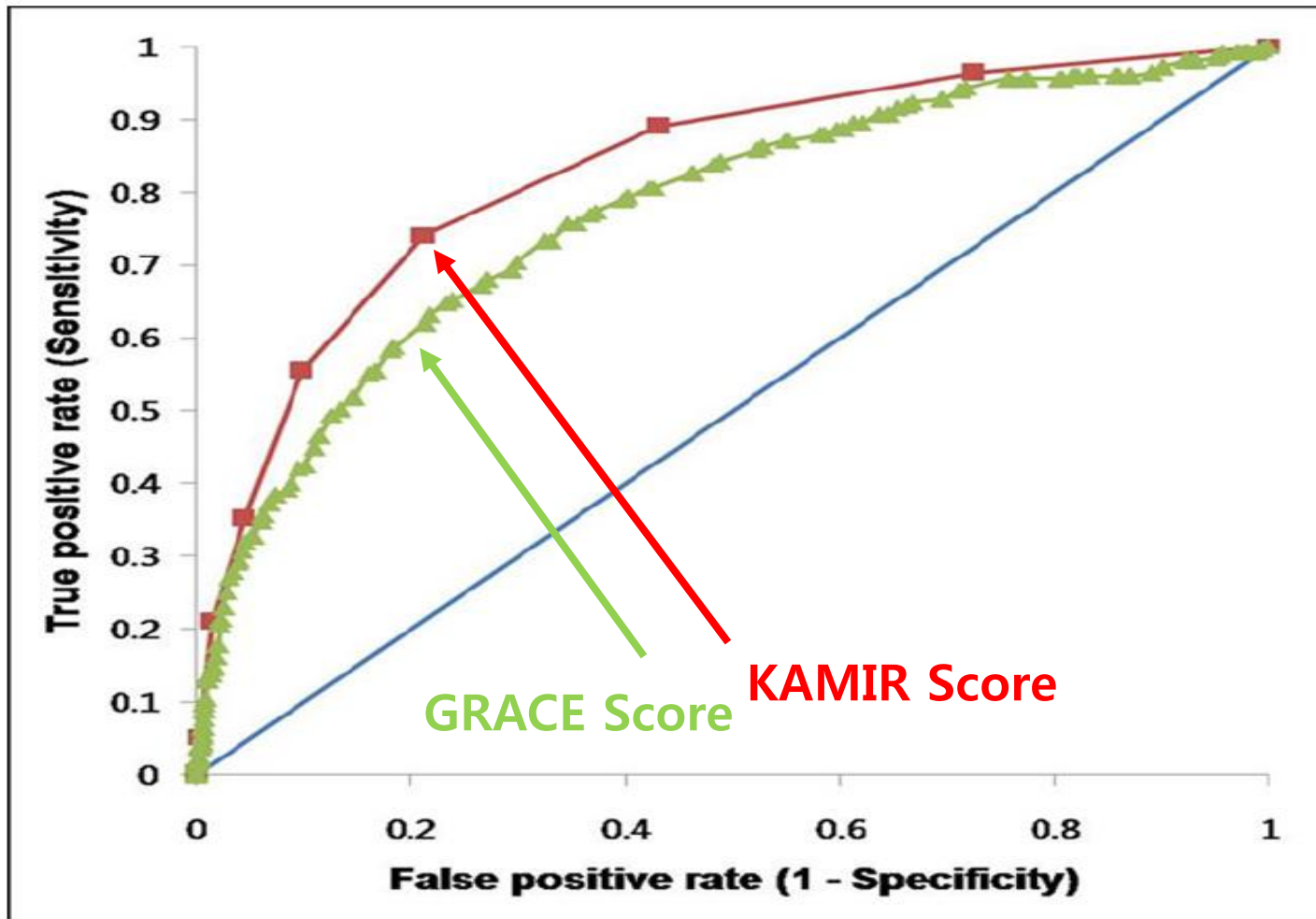
Figure 2. Receiver operator characteristic curves of no discrimination *(solid line)*, new risk score *(squares)*, and Global Registry of Acute Coronary Events score *(triangles)* for 1-year mortality in patients with acute myocardial infarction.

KAMIR Investigators. *Am J Cardiol 2011;107:965-71*

What Are Different From Western Countries?

1. Risk Factor
2. Risk Stratification
3. Medical Treatment
4. Interventional Treatment

Triple Versus Dual Antiplatelet Therapy in Patients With Acute ST-Segment Elevation Myocardial Infarction Undergoing Primary Percutaneous Coronary Intervention
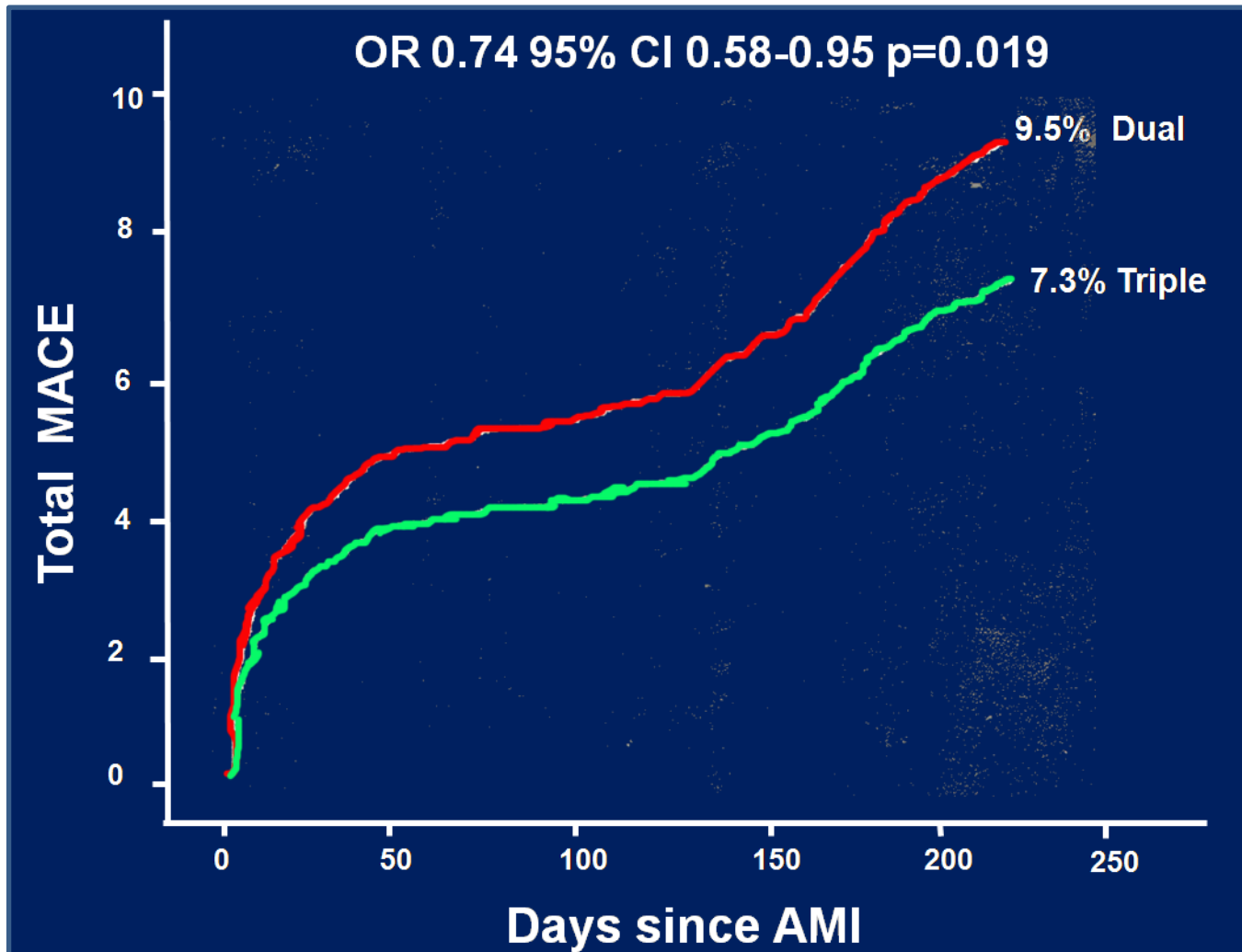
Kang-Yin Chen, MD; Seung-Woon Rha, MD; Yong-Jian Li, MD; Kanhaiya L. Poddar, MBBS; Zhe Jin, MD; Yoshiyasu Minami, MD; Lin Wang, MD; Eung Ju Kim, MD; Chang Gyu Park, MD; Hong Seog Seo, MD; Dong Joo Oh, MD; Myung Ho Jeong, MD; Young Keun Ahn, MD; Taek Jong Hong, MD; Young Jo Kim, MD; Seung Ho Hur, MD; In Whan Seong, MD; Jei Keon Chae, MD; Myeong Chan Cho, MD; Jang Ho Bae, MD; Dong Hoon Choi, MD; Yang Soo Jang, MD; In Ho Chae, MD; Chong Jin Kim, MD; Jung Han Yoon, MD; Wook Sung Chung, MD; Ki Bae Seung, MD; Seung Jung Park, MD; for the Korea Acute Myocardial Infarction Registry Investigators

Background—Whether triple antiplatelet therapy is superior or similar to dual antiplatelet therapy in patients with acute ST-segment elevation myocardial infarction undergoing primary percutaneous coronary intervention in the era of drug-eluting stents remains unclear.
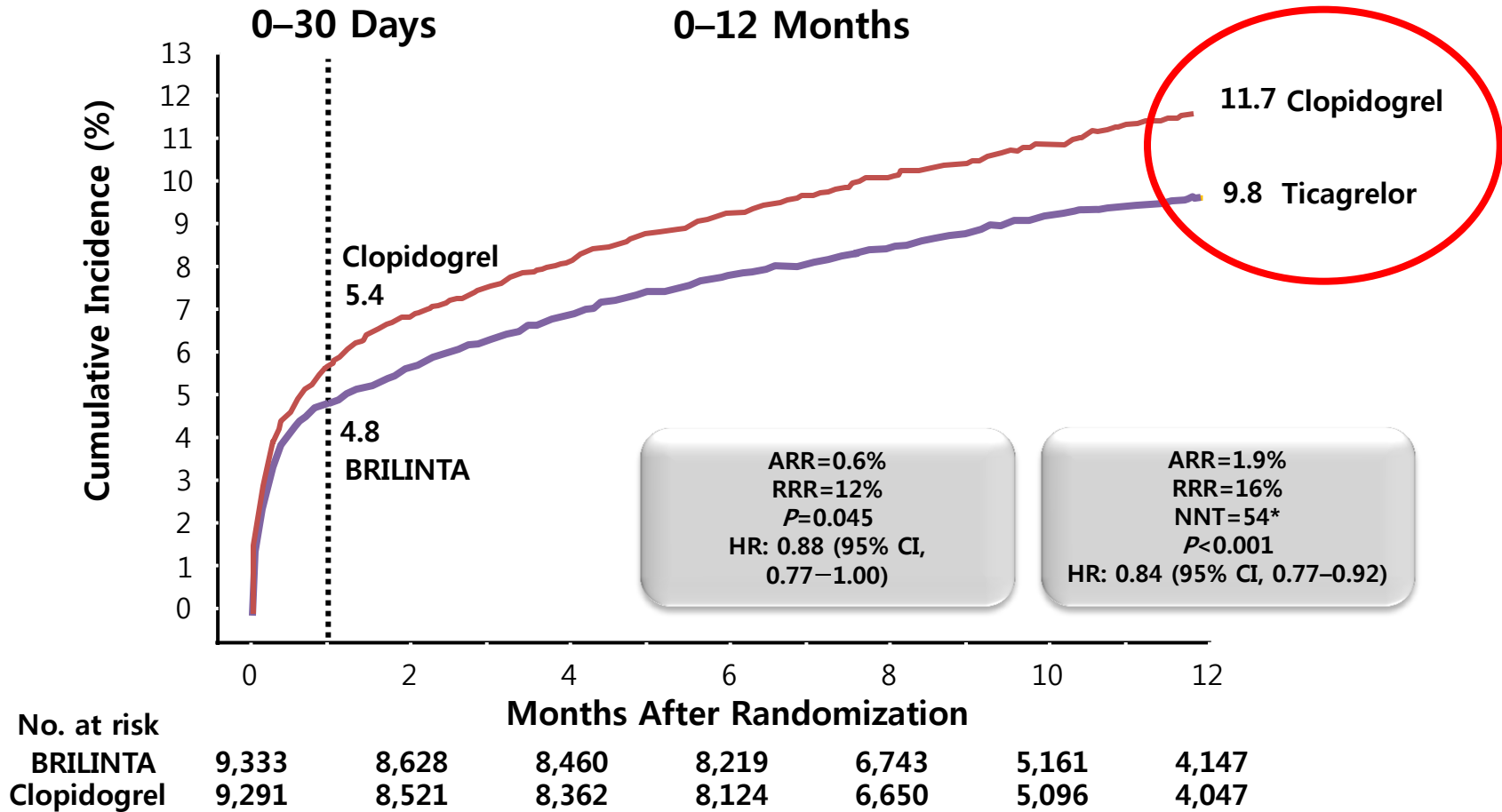
Methods and Results—A total of 4203 ST-segment elevation myocardial infarction patients who underwent primary percutaneous coronary intervention with drug-eluting stents were analyzed retrospectively in the Korean Acute Myocardial Infarction Registry (KAMIR). They received either dual (aspirin plus clopidogrel; dual group; n=2569) or triple (aspirin plus clopidogrel plus cilostazol; triple group; n=1634) antiplatelet therapy. The triple group received additional cilostazol at least for 1 month. Various major adverse cardiac events at 8 months were compared between these 2 groups. Compared with the dual group, the triple group had a similar incidence of major bleeding events but a significantly lower incidence of in-hospital mortality. Clinical outcomes at 8 months showed that the triple group had significantly lower incidences of cardiac death (adjusted odds ratio, 0.52; 95% confidence interval, 0.32 to 0.84; *P*=0.007), total death (adjusted odds ratio, 0.60; 95% confidence interval, 0.41 to 0.89; *P*=0.010), and total major adverse cardiac events (adjusted odds ratio, 0.74; 95% confidence interval, 0.58 to 0.95; *P*=0.019) than the dual group. Subgroup analysis showed that older (>65 years old), female, and diabetic patients got more benefits from triple antiplatelet therapy than their counterparts who received dual antiplatelet therapy.

Conclusions—Triple antiplatelet therapy seems to be superior to dual antiplatelet therapy in patients with ST-segment elevation myocardial infarction undergoing primary percutaneous coronary intervention with drug-eluting stents. These results may provide the rationale for the use of triple antiplatelet therapy in these patients. (*Circulation*. 2009;119:3207-3214.)

KAMIR Investigators. *Circulation* 2009;119:3207-14

Triple vs. Dual antiplatelet therapy in AMI Pts

KAMIR Investigators. *Circulation* 2009;119:3207-14

동양인과 서양인의 약물 반응 차이

0–30 Days　　　　**0–12 Months**

Cumulative Incidence (%)

- Clopidogrel 5.4
- 4.8 BRILINTA
- 11.7 Clopidogrel
- 9.8 Ticagrelor

ARR=0.6%
RRR=12%
P=0.045
HR: 0.88 (95% CI, 0.77−1.00)

ARR=1.9%
RRR=16%
NNT=54*
P<0.001
HR: 0.84 (95% CI, 0.77–0.92)

Months After Randomization

No. at risk	0	2	4	6	8	10	12
BRILINTA	9,333	8,628	8,460	8,219	6,743	5,161	4,147
Clopidogrel	9,291	8,521	8,362	8,124	6,650	5,096	4,047

Wallentin L, et al. *N Engl J Med*. 2009;361:1045–57

동양인과 서양인의 약물 반응 차이

Wallentin L, et al. *N Engl J Med*. 2009;361:1045–57.
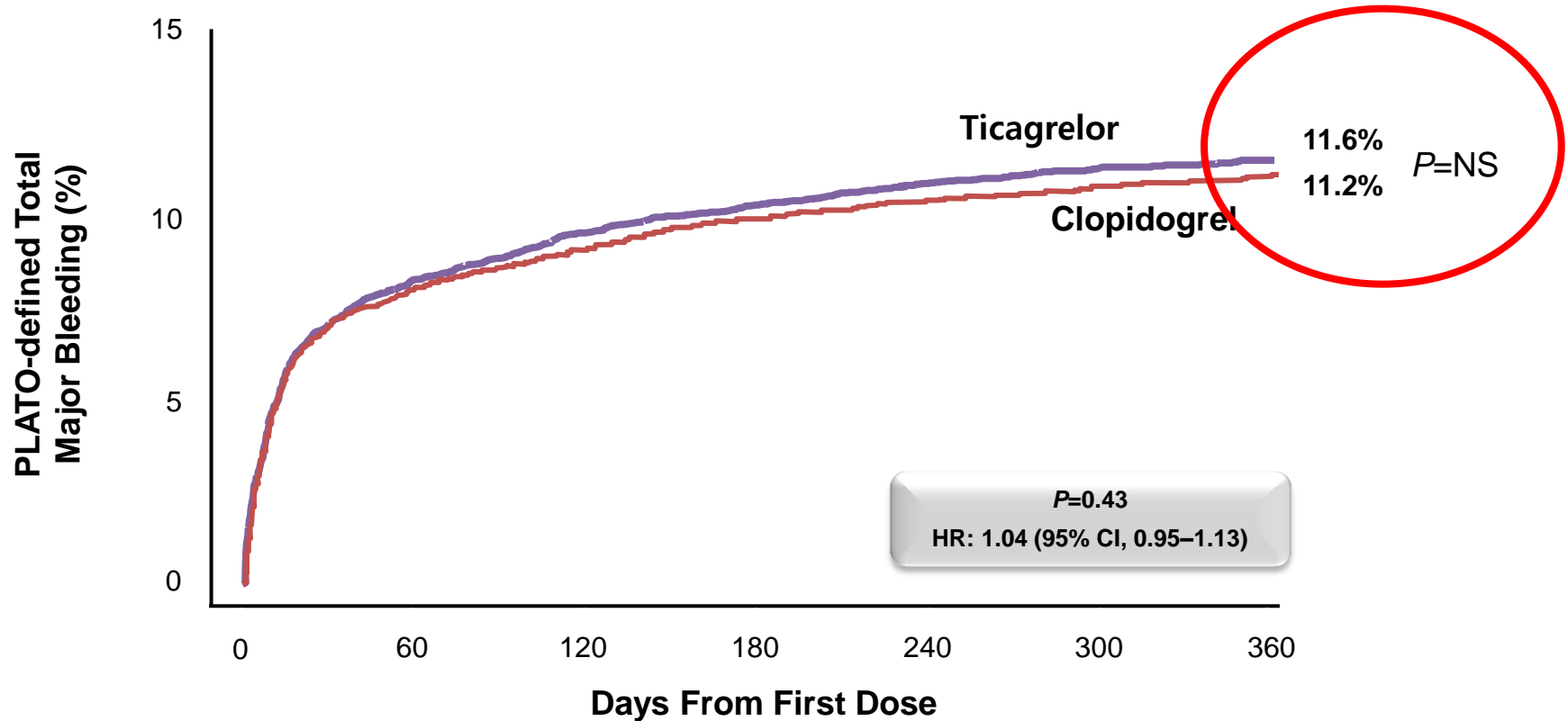
동양인과 서양인의 약물 반응 차이
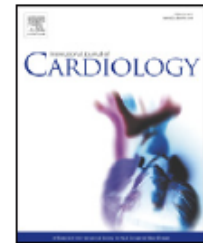
Comparison of short-term clinical outcomes between ticagrelor versus clopidogrel in patients with acute myocardial infarction undergoing successful revascularization; from Korea Acute Myocardial Infarction Registry—National Institute of Health

Keun-Ho Park [a], Myung Ho Jeong [b,*,1], Youngkeun Ahn [b], Tae Hoon Ahn [c], Ki Bae Seung [d], Dong Joo Oh [e], Dong-Joo Choi [f], Hyo-Soo Kim [g], Hyeon Cheol Gwon [h], In Whan Seong [i], Kyung Kuk Hwang [j], Shung Chull Chae [k], Kwon-Bae Kim [l], Young Jo Kim [m], Kwang Soo Cha [n], Seok Kyu Oh [o], Jei Keon Chae [p], on behalf of KAMIR-NIH registry investigators:

KAMIR Investigators, Int J Cardiol 2016;215:193-200

동양인과 서양인의 약물 반응 차이

KAMIR Investigators, Int J Cardiol 2016;215:193-200

동양인과 서양인의 약물 반응 차이

Ticagrelor **Clopidogrel**

p=0.249   p=0.020   p=1.000   p=0.004   p=0.254   p=0.043
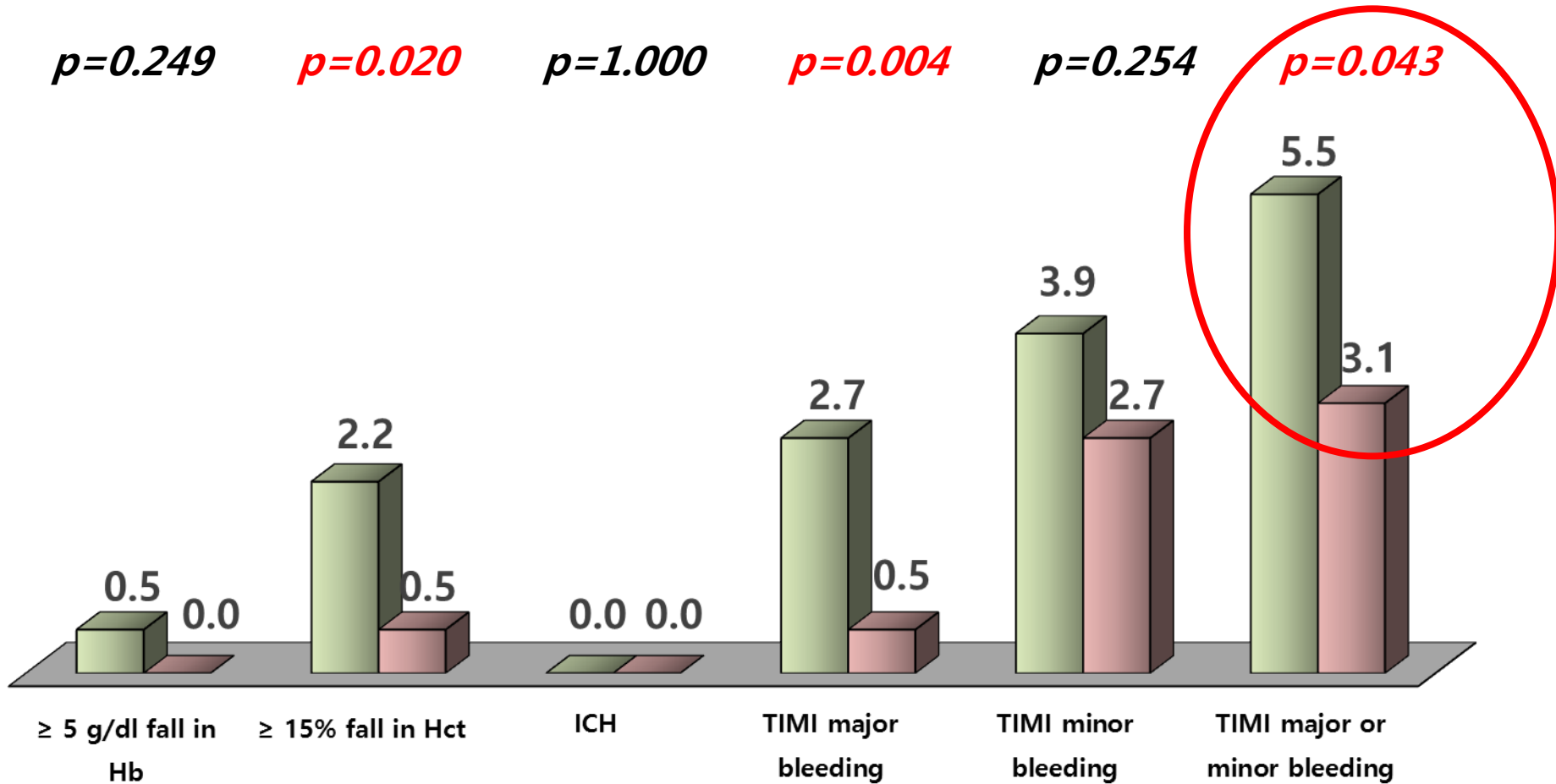
0.5	2.2	0.0	2.7	3.9	5.5
0.0	0.5	0.0	0.5	2.7	3.1

≥ 5 g/dl fall in Hb   ≥ 15% fall in Hct   ICH   TIMI major bleeding   TIMI minor bleeding   TIMI major or minor bleeding

KAMIR Investigators, Int J Cardiol 2016;215:193-200

Efficacy and Safety of Prasugrel in Patients with Acute Myocardial infarction Undergoing Successful Revascularization

Keun-Ho Park[1], Myung Ho Jeong[2], Tae Hoon Ahn, MD[3], Ki Bae Seung[4], Dong Joo Oh[5], Dong-Joo Choi[6], Hyo-Soo Kim[7], Hyeon Cheol Gwon[8], In Whan Seong[9], Kyung Kuk Hwang[10], Shung Chull Chae[11], Kwon-Bae Kim[12], Young Jo Kim[13], Kwang Soo Cha[14], Seok Kyu Oh[15], Jei Keon Chae[16]

[1]Chosun University Hospital, Gwangju; [2]Chonnam National University Hospital, Gwangju; [3]Gachon University Gil Medical Center, Incheon; [4]The Catholic University of Korea Seoul St. Mary's Hospital, Seoul; [5]Korea University Guro Hospital, Seoul; [6]Seoul National University Bundang Hospital, Seoul; [7]Seoul National University Hospital, Seoul; [8]Sungkyunkwan Universtiy Samsung Medical Center, Seoul; [9]Chungnam National Universtiy Hospital, Daejeon; [10]Chungbuk National University Hospital, Cheongju; [11]Kyungpook National University Hospital, Daegu; [12]Keimyung University Dongsan Medical Center, Daegu;[13]Yeungnam University Hospital, Daegu; [14]Pusan National University Hospital, Busan; [15]Wonkwang University Hospital, Iksan; [16]Chonbuk National University Hospital, Jeonju, Republic of Korea

In-hospital Clinical Outcomes

Six-month Clinical Outcomes

96.3% of total patients follow up.

■ Prasugrel (n=615)　　　■ Clopidogrel (n=612)
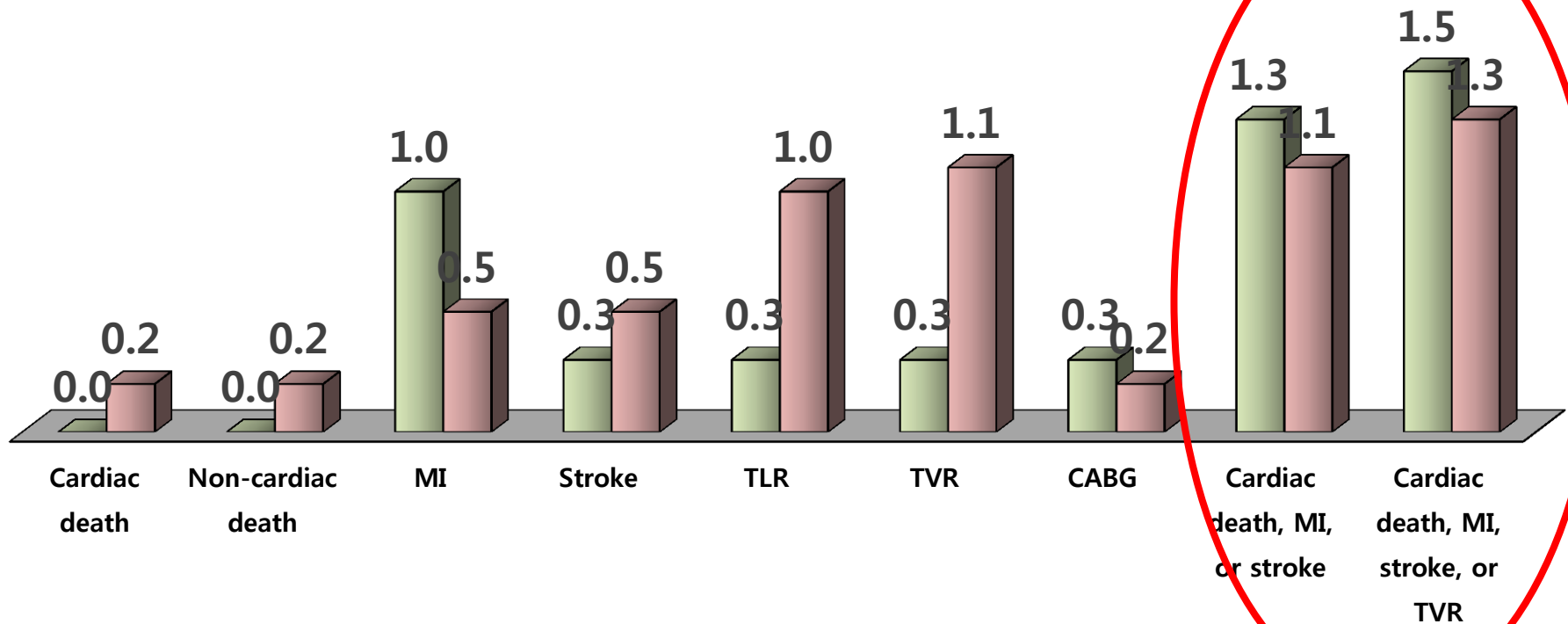
In-hospital Bleeding Complications

■ **Prasugrel** (n=637) ■ **Clopidogrel** (n=637)

p=0.624   *p=0.071*   *p=1.000*   *p=0.058*   *p=0.007*   *p=0.015*

0.5 0.2
2.2 0.9
0.0 0.0
2.5 1.1
4.1 1.6
5.3 2.7

≥ 5 g/dl fall in Hb ≥ 15% fall in Hct ICH TIMI major bleeding TIMI minor bleeding TIMI major or minor bleeding
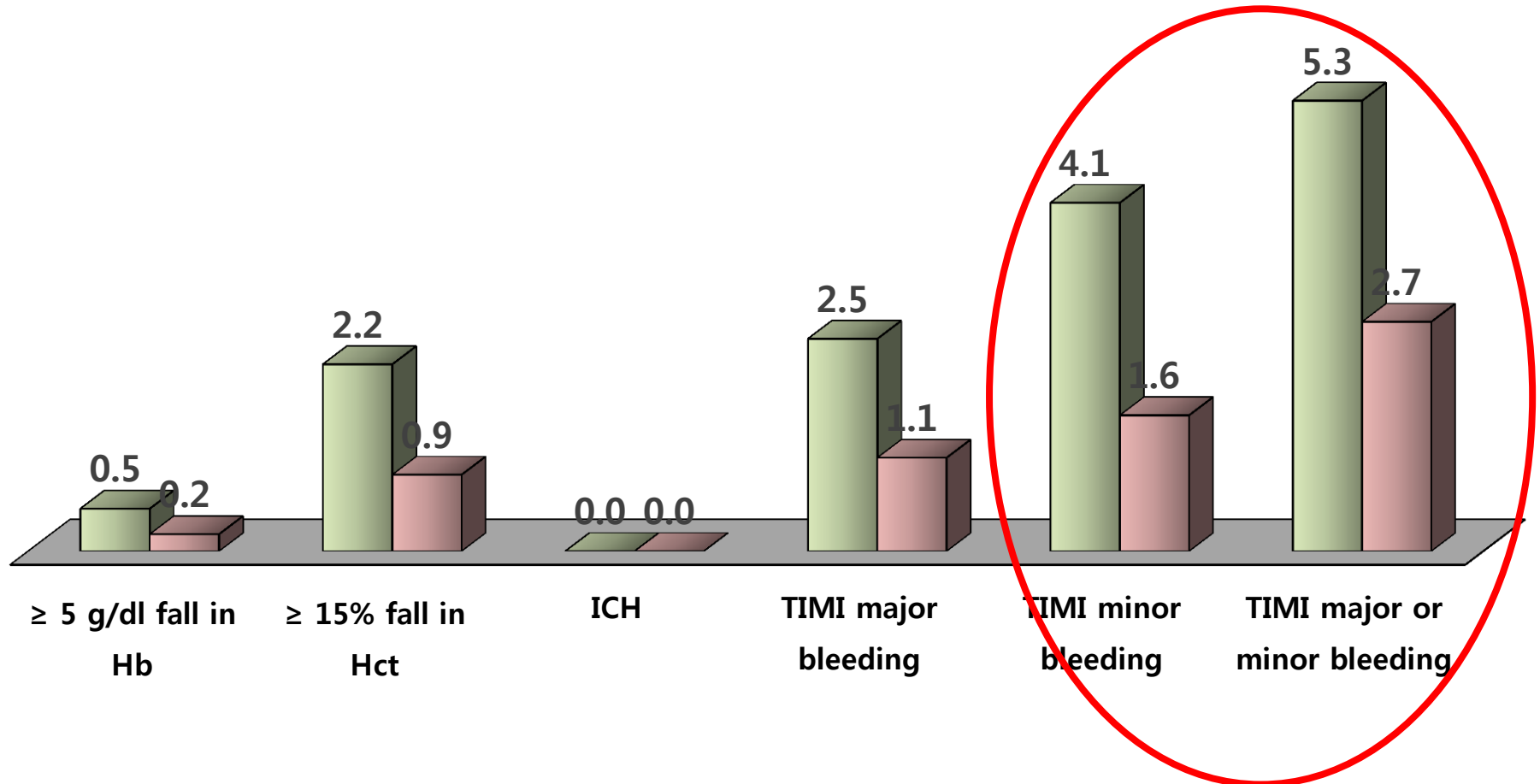
새로운 항혈소판제 New P2Y$_{12}$ Inhibitor

- 미국 및 유럽 심장학회 지침 Class I drug

    (new anti-platelets = ticagrelor, prasugrel)

 - Ischemic events reduction

    without increasing major bleeding events

* KAMIR data

 - Just increasing major bleeding events

    without any clinical benefit

 → 한국인에서는 감량 / 고위험군에서만 제한적 사용

Acute Myocardial Infarction

Benefit of Early Statin Therapy in Patients With Acute Myocardial Infarction Who Have Extremely Low Low-Density Lipoprotein Cholesterol

Ki Hong Lee, MD,* Myung Ho Jeong, MD, PHD,* Ha Mi Kim, RN,* Youngkeun Ahn, MD, PHD,*
Jong Hyun Kim, MD,† Shung Chull Chae, MD, PHD,‡ Young Jo Kim, MD, PHD,§
Seung Ho Hur, MD, PHD,‖ In Whan Seong, MD, PHD,¶ Taek Jong Hong, MD, PHD,#
Dong Hoon Choi, MD, PHD,** Myeong Chan Cho, MD, PHD,†† Chong Jin Kim, MD, PHD,‡‡
Ki Bae Seung, MD, PHD,§§ Wook Sung Chung, MD, PHD,§§ Yang Soo Jang, MD, PHD,‖‖
Seung Woon Rha, MD, PHD,¶¶ Jang Ho Bae, MD, PHD,## Jeong Gwan Cho, MD, PHD,*
Seung Jung Park, MD, PHD,*** for the KAMIR (Korea Acute Myocardial Infarction Registry)
Investigators

KAMIR Investigators. *J Am Coll Cardiol 2011;58:1664-71*

Statin therapy in AMI patients with LDL-C levels < 70 mg/dL
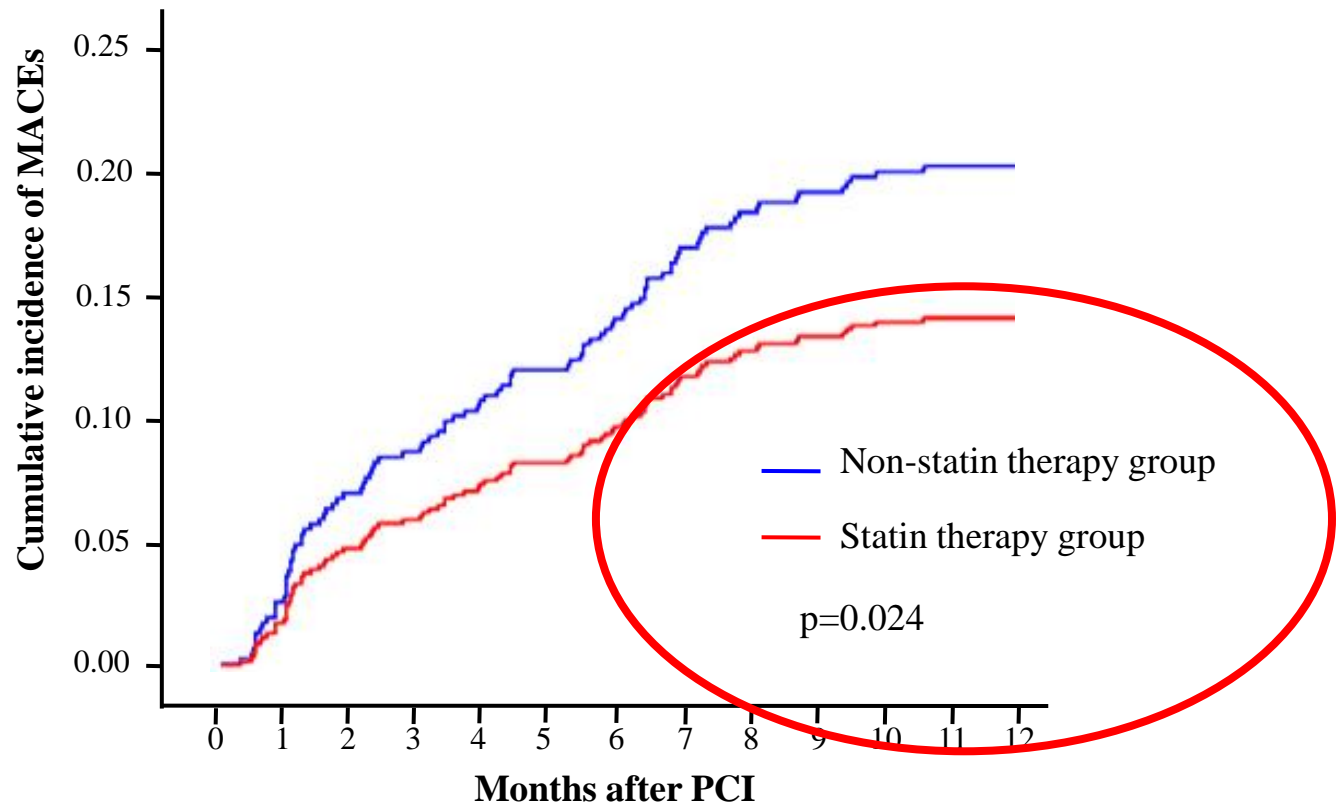
No.at risk

No.at risk	1,054	894	780	680
Statin therapy group	607	529	457	400
Non-statin therapy group	447	365	323	280

KAMIR Investigators. *J Am Coll Cardiol 2011;58:1664-71*

Clinical outcome of statin plus ezetimibe versus high-intensity statin therapy in patients with acute myocardial infarction propensity-score matching analysis☆

CrossMark

Mi Seon Ji [a], Myung Ho Jeong [a,*], Young keun Ahn [a], Sang Hyung Kim [a], Young Jo Kim [b], Shung Chull Chae [c], Taek Jong Hong [d], In Whan Seong [e], Jei Keon Chae [f], Chong Jin Kim [g], Myeong Chan Cho [h], Seung-Woon Rha [i], Jang Ho Bae [j], Ki Bae Seung [k], Seung Jung Park [l], other Korea Acute Myocardial Infarction Registry Investigators:

A R T I C L E   I N F O

A B S T R A C T

Background: It is unclear whether simvastatin–ezetimibe could be an alternative therapy to high-intensity statin therapy in high-risk patients. The aim of this study was to compare the clinical outcomes of simvastatin–ezetimibe and high-intensity statin therapy in patients with acute myocardial infarction (AMI), and especially in those with high-risk factor.

Methods: A total of 3520 AMI patients in the KAMIR (Korea Acute Myocardial Infarction Registry) were classified into simvastatin–ezetimibe group (n = 1249) and high-intensity statin group (n = 2271). Multivariate analysis and propensity-score matching analysis were performed. The primary endpoint was major adverse cardiac events (MACE) at 12-months follow-up.

Results: In overall AMI patients, MACE occurred in 116 patients (9.3%) in simvastatin–ezetimibe group and 116 patients (5.1%) in high-intensity statin group. The difference in MACE between groups was driven by repeat revascularization (5.9% vs. 2.2%). After propensity matching analysis, simvastatin–ezetimibe was associated with a higher incidence of MACE than high-intensity statin therapy (adjusted hazard ratio: 3.090, 95% confidence interval: 1.715 to 5.566, p < 0.001). However, in patients with high-risk factors, such as diabetes, old age, or heart failure, simvastatin-ezetimibe had similar incidence of MACE compared with high-intensity statin therapy in further adjusted analysis.

Conclusions: In overall AMI patients, high-intensity statin therapy had better clinical outcomes than simvastatin–ezetimibe. However, in patients with high-risk factor, simvastatin–ezetimibe had comparable clinical outcomes to high-intensity statin therapy. Therefore, simvastatin–ezetimibe could be used as an alternative to high-intensity statin therapy in such patients.

Propensity-Matched Population

A Primary endpoint

HR 2.311 (1.478-3.613)
P < 0.001

Simva-Ez
HI-Statins

Cumulative rate (%)
Duration of follow-up (Days)

No. at Risk					
HI-Statins	671	523	492	450	256
Simva-Ez	671	547	508	434	338

B All-cause death

HR 1.321 (0.666-2.620)
P = 0.425

Simva-Ez
HI-Statins

Cumulative rate (%)
Duration of follow-up (Days)

No. at Risk					
HI-Statins	671	526	495	454	257
Simva-Ez	671	548	515	456	362

C Myocardial Infarction

HR 0.601 (0.131-2.768)
P = 0.510

Simva-Ez
HI-Statins

Cumulative rate (%)
Duration of follow-up (Days)

No. at Risk					
HI-Statins	671	525	494	452	256
Simva-Ez	671	537	514	455	360

D Repeat revascularization

HR 3.654 (1.940-6.883)
P < 0.001

Simva-Ez
HI-Statins

Cumulative rate (%)
Duration of follow-up (Days)

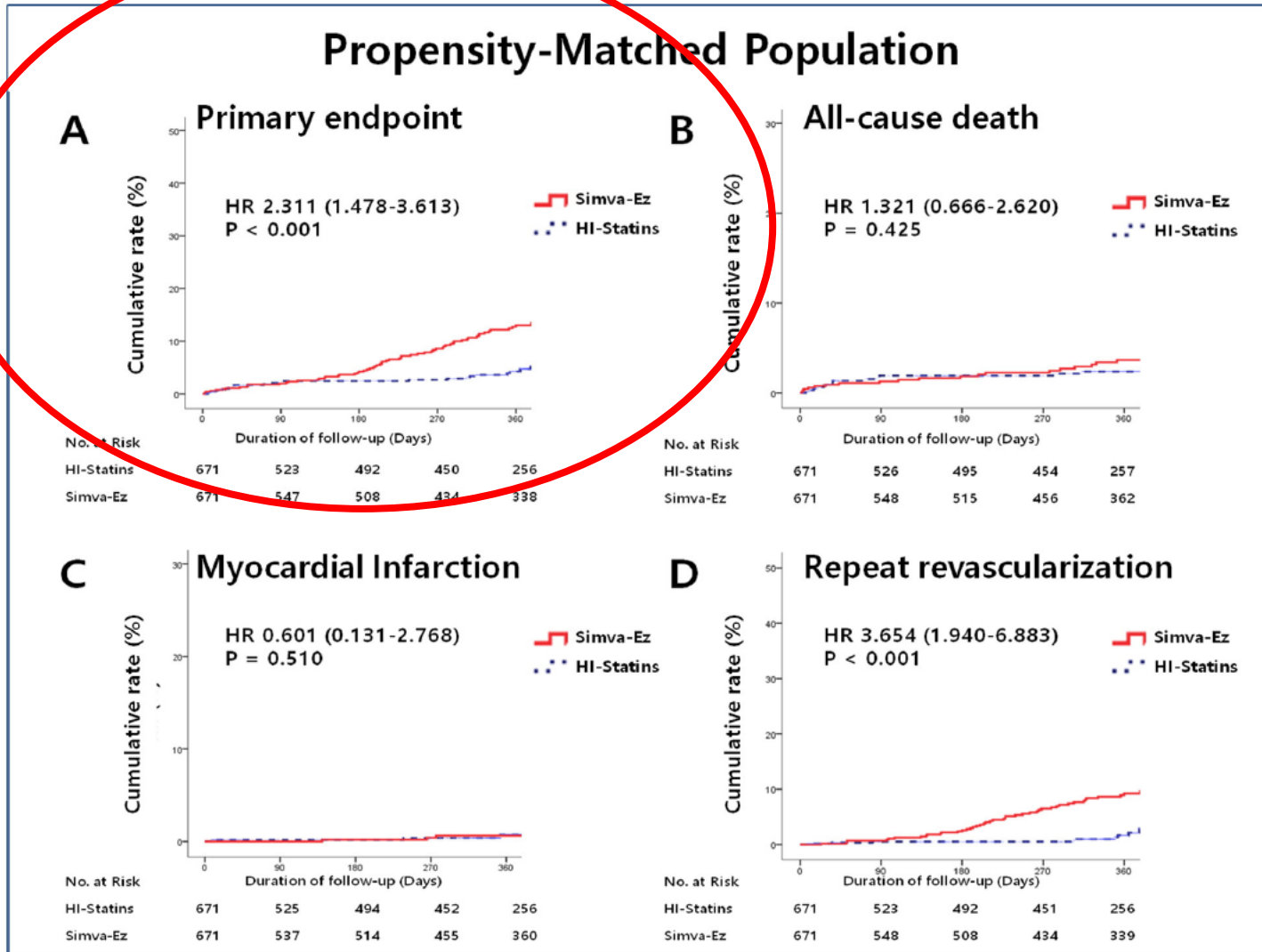| No. at Risk					
HI-Statins	671	523	492	451	256
Simva-Ez	671	548	508	434	339

Fig. 3. Clinical outcomes in the propensity-matched population. Similar results were observed in the propensity-matched patients. (A) MACE, (B) all-cause death, (C) myocardial infarction, (D) repeat revascularization. Abbreviations as in Fig. 2.
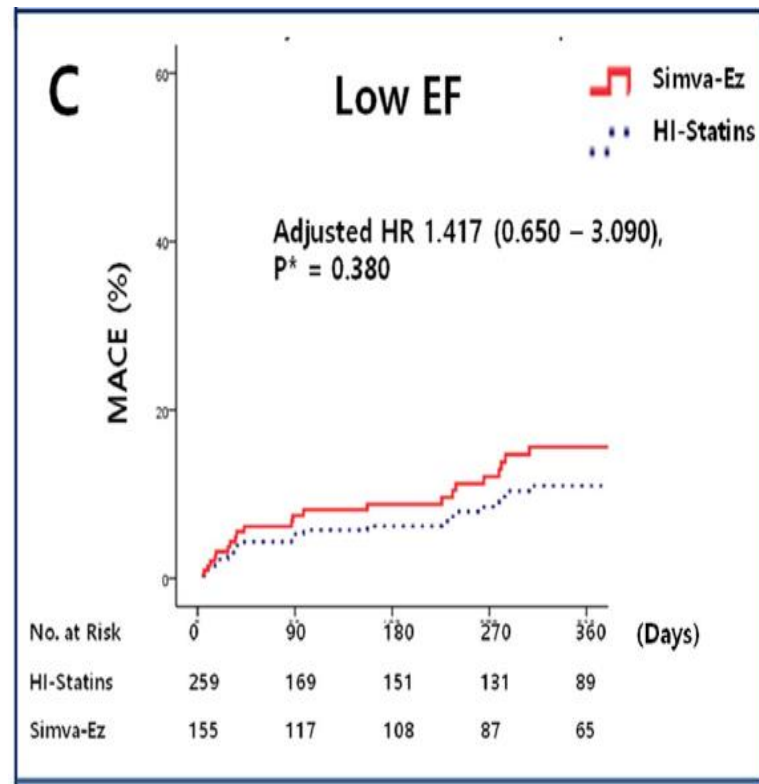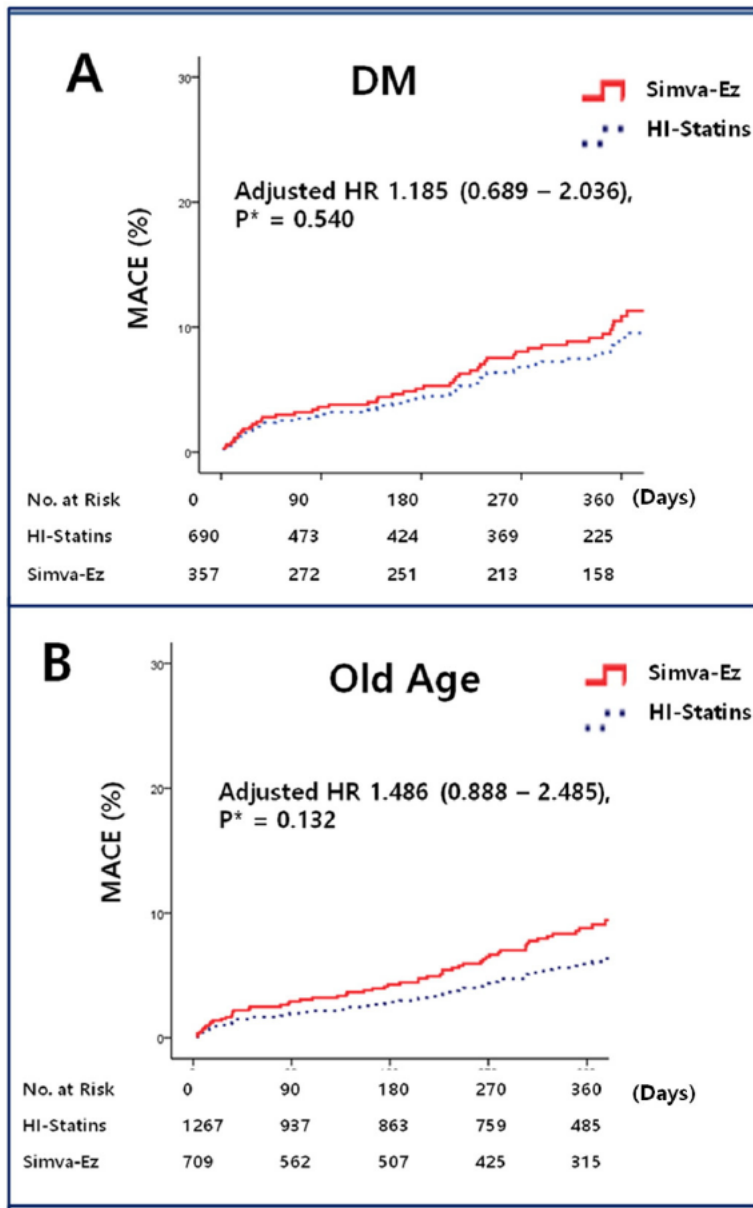
KAMIR Investigators, int J Cardiol 2016;225:50-59

A — DM

Adjusted HR 1.185 (0.689 – 2.036), P* = 0.540

No. at Risk	0	90	180	270	360	(Days)
HI-Statins	690	473	424	369	225	
Simva-Ez	357	272	251	213	158	

B — Old Age

Adjusted HR 1.486 (0.888 – 2.485), P* = 0.132

No. at Risk	0	90	180	270	360	(Days)
HI-Statins	1267	937	863	759	485	
Simva-Ez	709	562	507	425	315	

C — Low EF

Adjusted HR 1.417 (0.650 – 3.090), P* = 0.380

No. at Risk	0	90	180	270	360	(Days)
HI-Statins	259	169	151	131	89	
Simva-Ez	155	117	108	87	65	

Fig. 5. Multivariate-adjusted analysis in high-risk AMI patients. In adjusted analysis, simvastatin-ezetimibe had similar MACE rate to high-intensity statin therapy in diabetic patients (A), older patients (B), and patients with systolic heart failure (C).
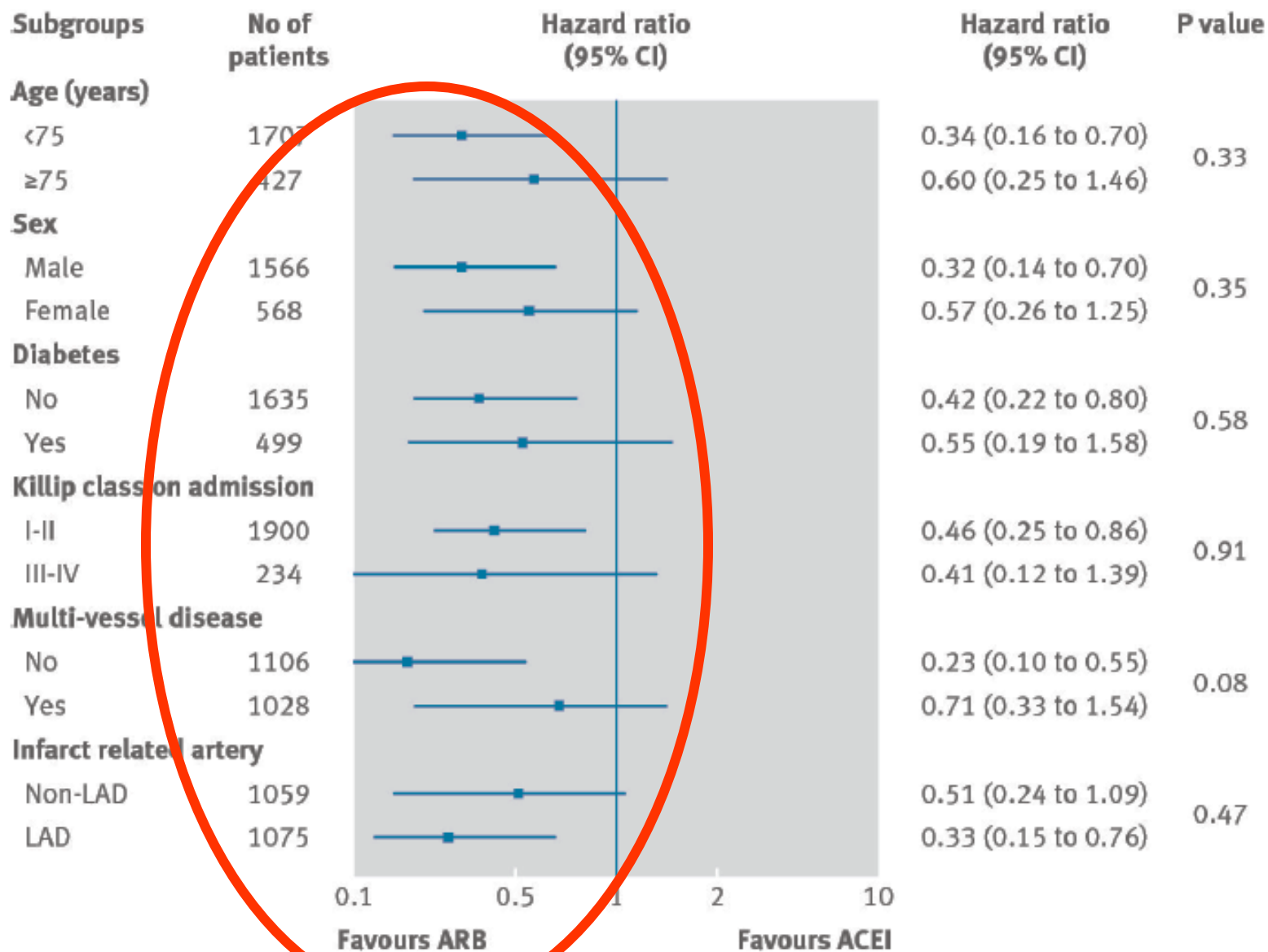
RESEARCH

Angiotensin receptor blocker in patients with ST segment elevation myocardial infarction with preserved left ventricular systolic function: prospective cohort study

OPEN ACCESS

Jeong Hoon Yang *clinical assistant professor*[1][2], Joo-Yong Hahn *associate professor*[1], Young Bin Song *assistant professor*[1], Seung-Hyuk Choi *professor*[1], Jin-Ho Choi *associate professor*[1], Sang Hoon Lee *professor*[1], Myung-Ho Jeong *professor*[3], Dong-Joo Choi *professor*[4], Jong Seon Park *professor*[5], Hun Sik Park *professor*[6], Hyeon-Cheol Gwon *professor*[1]

ARB in STEMI with Preserved LV Function

Subgroups	No of patients	Hazard ratio (95% CI)	Hazard ratio (95% CI)	P value
Age (years)				
<75	1707		0.34 (0.16 to 0.70)	0.33
≥75	427		0.60 (0.25 to 1.46)	
Sex				
Male	1566		0.32 (0.14 to 0.70)	0.35
Female	568		0.57 (0.26 to 1.25)	
Diabetes				
No	1635		0.42 (0.22 to 0.80)	0.58
Yes	499		0.55 (0.19 to 1.58)	
Killip class on admission				
I-II	1900		0.46 (0.25 to 0.86)	0.91
III-IV	234		0.41 (0.12 to 1.39)	
Multi-vessel disease				
No	1106		0.23 (0.10 to 0.55)	0.08
Yes	1028		0.71 (0.33 to 1.54)	
Infarct related artery				
Non-LAD	1059		0.51 (0.24 to 1.09)	0.47
LAD	1075		0.33 (0.15 to 0.76)	

0.1   0.5   1   2   10

Favours ARB   Favours ACEI

KAMIR Investigators. BMJ 2014;7:g6650

Comparative assessment of angiotensin ii type 1 receptor blockers in the treatment of acute myocardial infarction: surmountable vs. insurmountable antagonist

Hae Chang Jeong [a,*], Myung Ho Jeong [a], Youngkeun Ahn [a], Shung Chull Chae [b], Seung Ho Hur [c], Taek Jong Hong [d], Young Jo Kim [e], In Whan Seong [f], Jei Keon Chae [g], Jay Young Rhew [h], In Ho Chae [i], Myeong Chan Cho [j], Jang Ho Bae [k], Seung Woon Rha [l], Chong Jin Kim [m], Donghoon Choi [n], Yang Soo Jang [n], Junghan Yoon [o], Wook Sung Chung [p], Jeong Gwan Cho [a], Ki Bae Seung [p], Seung Jung Park [q]The Korea Acute Myocardial Infarction Registry Investigators

ARTICLE INFO

ABSTRACT

Background: The mechanisms of antagonism vary between the angiotensin II type 1 receptor blockers (ARBs): insurmountable antagonism and surmountable antagonism. Recent retrospective observational studies suggest that ARBs may not have equivalent benefits in various clinical situations. The aim of this study was to compare the effect of two categories of ARBs on the long-term clinical outcomes of patients with acute myocardial infarction (AMI).
Methods: We analyzed the large-scale, prospective, observational Korea Acute Myocardial Infarction Registry study, which enrolled 2740 AMI patients. They divided by the prescription of surmountable ARBs or insurmountable ARBs at discharge. Primary outcome was major adverse cardiac events (MACEs), defined as a composite of cardiac death, nonfatal MI, and re-percutaneous coronary intervention, coronary artery bypass graft surgery.
Results: In the overall population, the MACEs rate in 1 year was significantly higher in the surmountable ARB group (14.3% vs. 11.2%, p = 0.025), which was mainly due to increased cardiac death (3.3% vs. 1.9%, p = 0.031). Matching by propensity-score showed consistent results (MACEs rate: 14.9% vs. 11.4%, p = 0.037). In subgroup analysis, the insurmountable ARB treatment significantly reduced the incidence of MACEs in patients with left ventricular ejection fraction greater than 40%, with a low killip class, with ST segment elevation MI, and with normal renal function.
Conclusions: In our study, insurmountable ARBs were more effective on long-term clinical outcomes than surmountable ARBs in patients with AMI.

KAMIR Investigators. *Int J Cardiol 2014;170:291-7*

A

$p=0.025$

HR 1.322 (1.035-1.688)
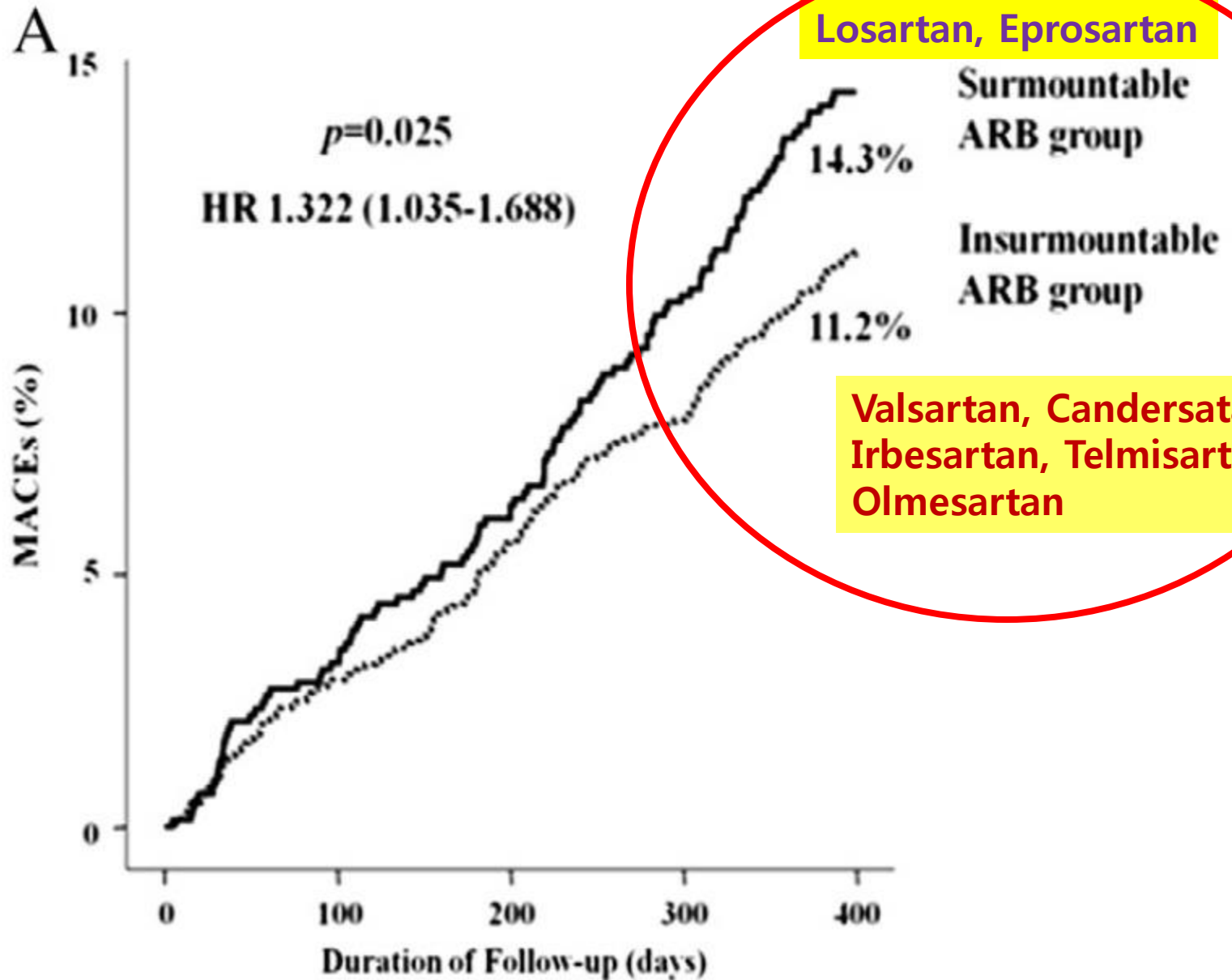
Losartan, Eprosartan

Surmountable ARB group

14.3%

Insurmountable ARB group

11.2%

Valsartan, Candersatan. Irbesartan, Telmisartan, Olmesartan

MACEs (%)

Duration of Follow-up (days)

KAMIR Investigators. *Int J Cardiol 2014;170:291-7*

What Are Different From Western Countries?

1. Risk Factor
2. Risk Stratification
3. Medical Treatment
4. Interventional Treatment

Original article

Relationship between time to treatment and mortality among patients undergoing primary percutaneous coronary intervention according to Korea Acute Myocardial Infarction Registry

Hyun Kuk Kim (MD)[a], Myung Ho Jeong (MD, PhD, FACC, FAHA, FESC, FSCAI)[b,*],
Youngkeun Ahn (MD)[b], Shung Chull Chae (MD)[c], Young Jo Kim (MD)[d], Seung Ho Hur (MD)[e],
In Whan Seong (MD)[f], Taek Jong Hong (MD)[g], Dong Hoon Choi (MD)[h],
Myeong Chan Cho (MD)[i], Chong Jin Kim (MD)[j], Ki Bae Seung (MD)[k], Yang Soo Jang (MD)[h],
Seung Woon Rha (MD)[l], Jang Ho Bae (MD)[m], Sung Soo Kim (MD)[n],
Seung Jung Park (MD)[o] other Korea Acute Myocardial Infarction Registry Investigators[1]

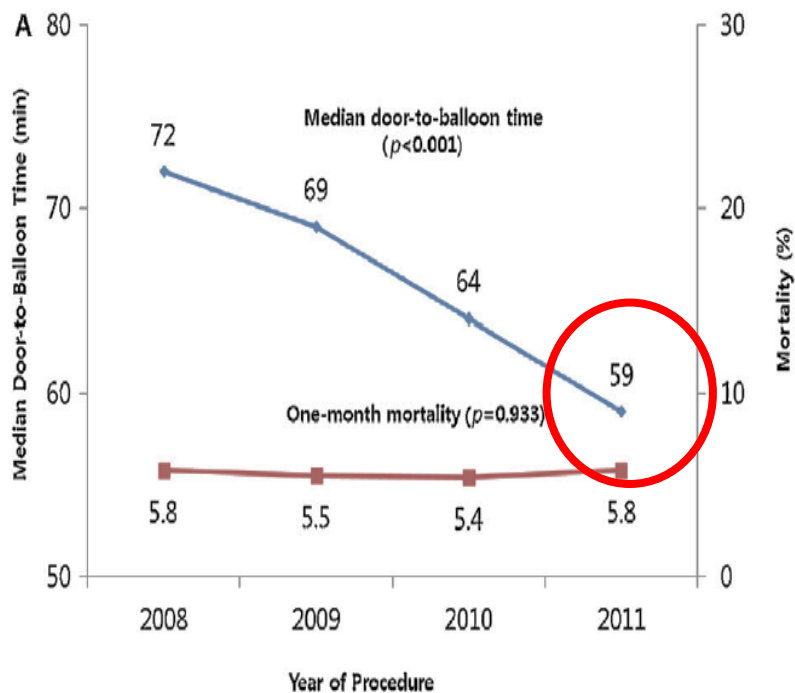**KAMIR Investigators, J Cardiol 2016 Oct 6 [Epub ahead of Print]**
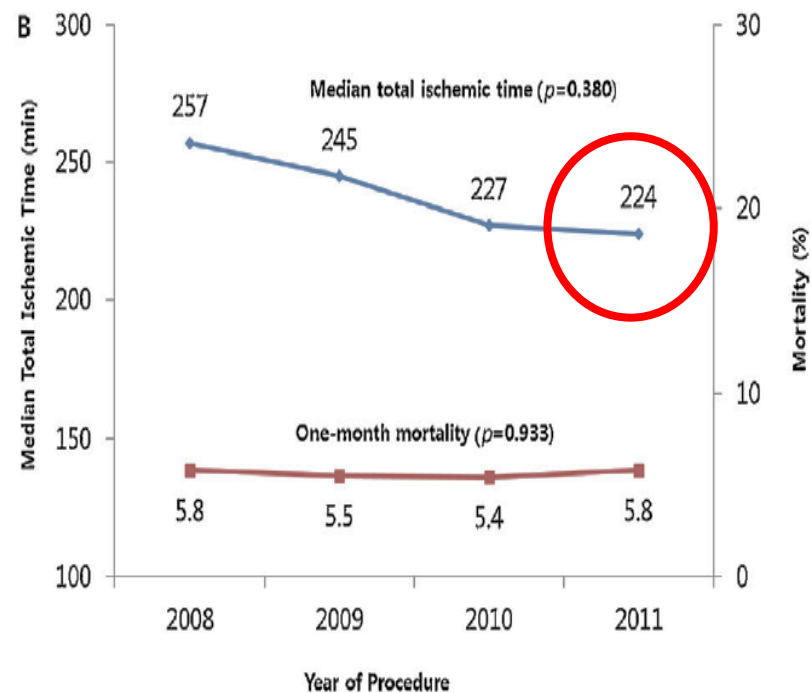
Fig. 2. Mortality rates according to the time to treatment, 2008–2011. The median time to treatment and 1-month mortality among patients with ST-segment elevation myocardial infarction who underwent primary percutaneous coronary intervention are shown between January 2008 and December 2011. Results between door-to-balloon time and 1-month mortality (A), and between total ischemic time and 1-month mortality (B).

Table 3

Door-to-balloon time, total ischemic time, and 1-month mortality.

	One-month mortality (%)		Unadjusted OR (95% CI)	p-Value	[a]Adjusted OR (95% CI)	p-Value
	Achieved goal	Not achieved goal				
Door-to-balloon time <90 min	5.1	7.6	0.65 (0.53–0.81)	<0.001	0.86 (0.66–1.12)	0.258
Symptom-to-door time <90 min	4.7	6.6	0.69 (0.57–0.84)	<0.001	0.82 (0.63–1.06)	0.136
Total ischemic time <180 min	4.2	6.3	0.64 (0.53–0.78)	<0.001	0.78 (0.62–0.99)	0.040

Total ischemic time = symptom-to-balloon time.

OR, odds ratio; CI, confidence interval.

[a] Adjusted by GRACE (Global Registry of Acute Coronary Events) risk score.

KAMIR Investigators, J Cardiol 2016 Oct 6 [Epub ahead of Print]

Myocardial Infarction

Pharmacoinvasive Strategy Versus Primary Percutaneous Coronary Intervention in Patients With ST-Segment–Elevation Myocardial Infarction
A Propensity Score–Matched Analysis

Doo Sun Sim, MD, PhD; Myung Ho Jeong, MD, PhD; Youngkeun Ahn, MD, PhD;
Young Jo Kim, MD, PhD; Shung Chull Chae, MD, PhD; Taek Jong Hong, MD, PhD;
In Whan Seong, MD, PhD; Jei Keon Chae, MD, PhD; Chong Jin Kim, MD, PhD;
Myeong Chan Cho, MD, PhD; Seung-Woon Rha, MD, PhD; Jang Ho Bae, MD, PhD;
Ki Bae Seung, MD, PhD; Seung Jung Park, MD, PhD;
on behalf of the Korea Acute Myocardial Infarction Registry (KAMIR) Investigators

Background—The Strategic Reperfusion Early After Myocardial Infarction trial and the French Registry of Acute ST-elevation or Non-ST-elevation Myocardial Infarction 2015 suggested that pharmacoinvasive strategy compares favorably with primary percutaneous coronary intervention (PPCI). We sought to assess the clinical impact of pharmacoinvasive strategy compared with PPCI in real-world patients with ST-segment–elevation myocardial infarction.

Methods and Results—We used the Korea Acute Myocardial Infarction Registry to identify ST-segment–elevation myocardial infarction patients receiving either pharmacoinvasive strategy defined as fibrinolysis followed by percutaneous coronary intervention (rescue/urgent or routine elective; n=708) or PPCI (n=8878). Patients receiving facilitated percutaneous coronary intervention within 3 hours from fibrinolysis were excluded. Propensity-matched 12-month clinical outcome was compared. In the propensity-matched cohort (n=706 in each group), the pharmacoinvasive group had shorter time to reperfusion therapy (165 versus 241 minutes; $P<0.001$) and higher rate of pre-percutaneous coronary intervention Thrombolysis in Myocardial Infarction grade 3 (50.4% versus 13.7%; $P<0.001$). Incidences of major bleeding and stroke during hospitalization were not different. Twelve-month rates of death and major adverse cardiac events (composite of death, recurrent myocardial infarction, target-vessel revascularization, and coronary artery bypass graft surgery) were similar between pharmacoinvasive strategy and PPCI: 4.4% versus 4.1% and 7.5% versus 7.8%, respectively. Equipoise between pharmacoinvasive strategy and PPCI for 12-month major adverse cardiac events occurred when percutaneous coronary intervention–related delay was ≈100 minutes.

Conclusions—ST-segment–elevation myocardial infarction patients receiving pharmacoinvasive treatment, compared with PPCI, had shorter time to reperfusion, higher culprit-vessel patency, and similar 12-month clinical outcome. (*Circ Cardiovasc Interv*. 2016;9:e003508. DOI: 10.1161/CIRCINTERVENTIONS.115.003508.)
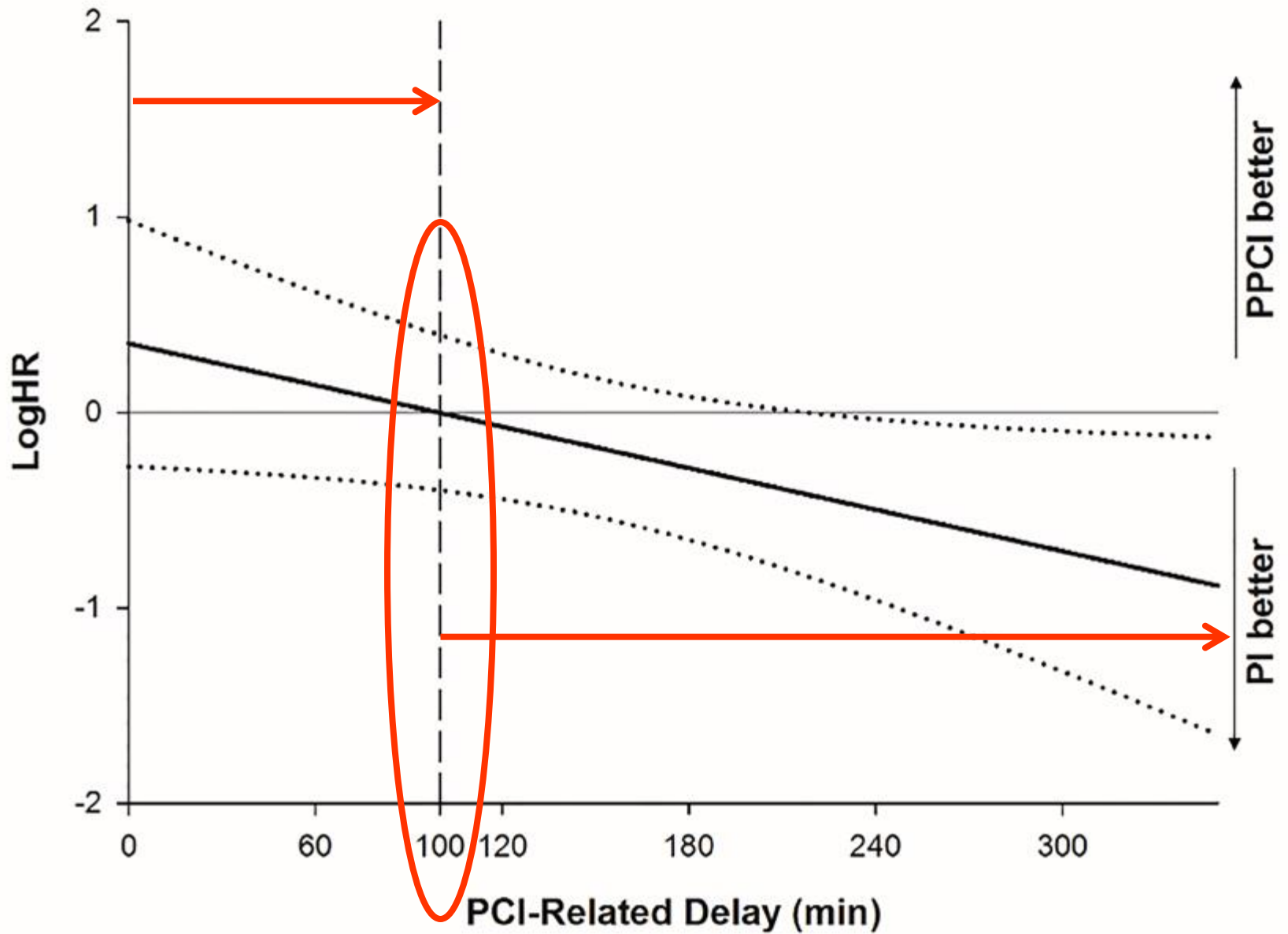
KAMIR Investigators, Circ Cardiovasc Interv 2016 Sep 9 [Epub ahead of Print]
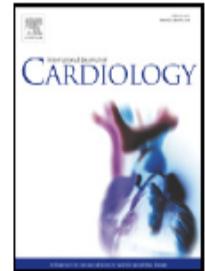
Revascularization in Multi-vessel Disease

What is optimal revascularization strategy in patients with multivessel coronary artery disease in non-ST-elevation myocardial infarction? Multivessel or culprit-only revascularization

Min Chul Kim [a], Myung Ho Jeong [a,*], Youngkeun Ahn [a], Jong Hyun Kim [b], Shung Chull Chae [c], Young Jo Kim [d], Seung Ho Hur [e], In Whan Seong [f], Taek Jong Hong [g], Dong Hoon Choi [h], Myeong Chan Cho [i], Chong Jin Kim [j], Ki Bae Seung [k], Wook Sung Chung [k], Yang Soo Jang [l], Seung Yun Cho [l], Seung Woon Rha [m], Jang Ho Bae [n], Jeong Gwan Cho [a], Seung Jung Park [o]
and Korea Acute Myocardial Infarction Registry Investigators

KAMIR Investigators, Int J Cardiol 2011;153:148-53

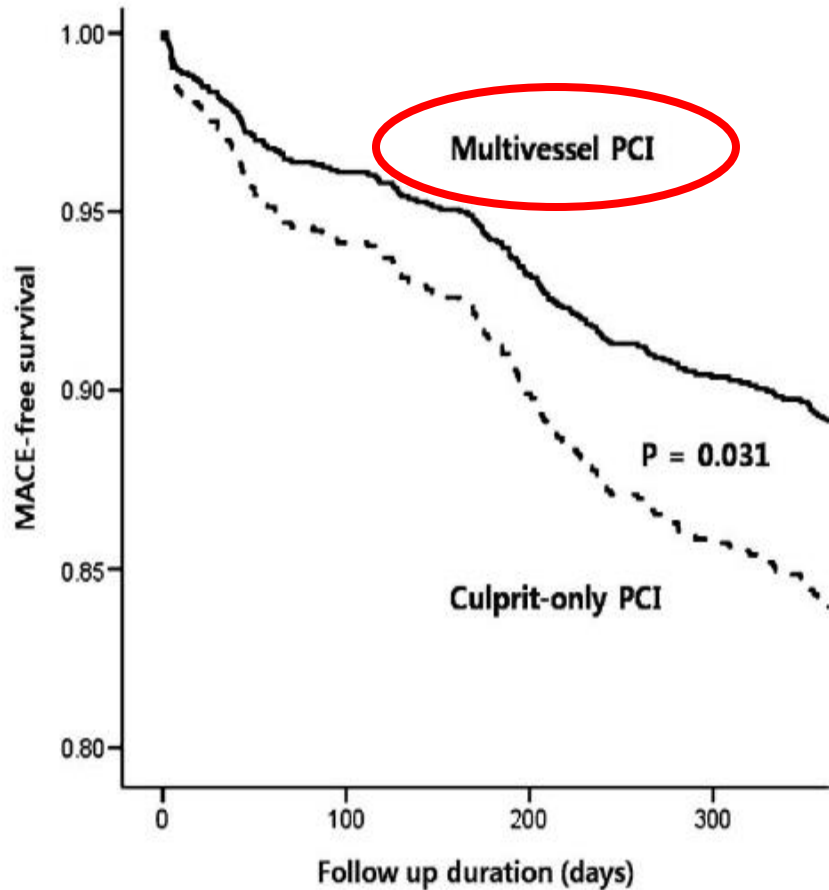# Revascularization in Multi-vessel Disease

Fig. 1. One-year major adverse cardiac event (MACE)-free survival in multivessel and culprit-only PCI groups.
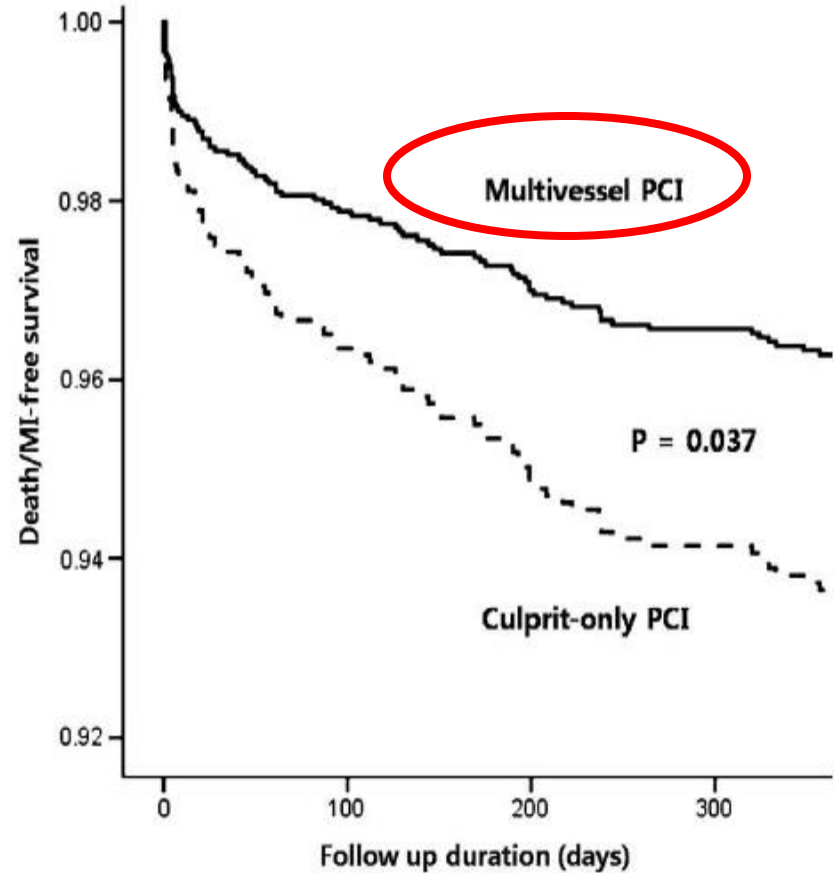
Fig. 2. One-year death or myocardial infarction (MI)-free survival in multivessel and culprit-only PCI groups.

KAMIR Investigators, Int J Cardiol 2011;153:148-53

Extent, Location, and Clinical Significance of Non–Infarct-Related Coronary Artery Disease Among Patients With ST-Elevation Myocardial Infarction

Duk-Woo Park, MD; Robert M. Clare, MS; Phillip J. Schulte, PhD; Karen S. Pieper, MS; Linda K. Shaw, MS; Robert M. Califf, MD; E. Magnus Ohman, MD; Frans Van de Werf, MD; Sameer Hirji, MD; Robert A. Harrington, MD; Paul W. Armstrong, MD; Christopher B. Granger, MD; Myung-Ho Jeong, MD; Manesh R. Patel, MD

+ Supplemental content at jama.com

IMPORTANCE Little information exists about the anatomical characteristics and clinical relevance of non–infarct-related artery (IRA) disease among patients with ST-segment elevation myocardial infarction (STEMI).

OBJECTIVES To investigate the incidence, extent, and location of obstructive non-IRA disease and compare 30-day mortality according to the presence of non-IRA disease in patients with STEMI.

DESIGN, SETTING, AND PARTICIPANTS Retrospective study of patients pooled from a convenience sample of 8 independent, international, randomized STEMI clinical trials published between 1993 and 2007. Follow-up varied from 1 month to 1 year. Among 68 765 patients enrolled in the trials, 28 282 patients with valid angiographic information were included in this analysis. Obstructive coronary artery disease was defined as stenosis of 50% or more of the diameter of a major epicardial artery. To assess the generalizability of trial-based results, external validation was performed using observational data for patients with STEMI from the Korea Acute Myocardial Infarction Registry (KAMIR) (between November 1, 2005, and December 31, 2013; n = 18 217) and the Duke Cardiovascular Databank (between January 1, 2005, and December 31, 2012; n = 1812).

KAMIR and Duke Data, JAMA 2014;312:2018-27

RESULTS Overall, 52.8% (14 929 patients) had obstructive non-IRA disease; 29.6% involved 1 vessel and 18.8% involved 2 vessels. There was no substantial difference in the extent and distribution of non-IRA disease according to the IRA territory. Unadjusted and adjusted rates of 30-day mortality were significantly higher in patients with non-IRA disease than in those without non-IRA disease (unadjusted, 4.3% vs 1.7%, respectively; risk difference, 2.7% [95% CI, 2.3% to 3.0%], $P < .001$; and adjusted, 3.3% vs 1.9%, respectively; risk difference, 1.4% [95% CI, 1.0% to 1.8%], $P < .001$). The overall prevalence and association of non-IRA disease with 30-day mortality was consistent with findings from the KAMIR registry (adjusted, 3.6% for patients with non-IRA disease vs 2.5% in those without it; risk difference, 1.1% [95% CI, 0.6% to 1.7%]; $P < .001$), but not with the Duke database (adjusted, 4.7% with non-IRA disease vs 4.3% without it; risk difference, 0.4% [95% CI, −1.4% to 2.2%], $P = .65$).

CONCLUSIONS AND RELEVANCE In a retrospective pooled analysis of 8 clinical trials, obstructive non-IRA disease was common among patients presenting with STEMI, and was associated with a modest statistically significant increase in 30-day mortality. These findings require confirmation in prospectively designed studies, but raise questions about the appropriateness and timing of non-IRA revascularization in patients with STEMI.

KAMIR and Duke Data, JAMA 2014;312:2018-27

Three-year Clinical Outcomes of Staged, ad hoc and Culprit-only PCI in STEMI (2006-2009)
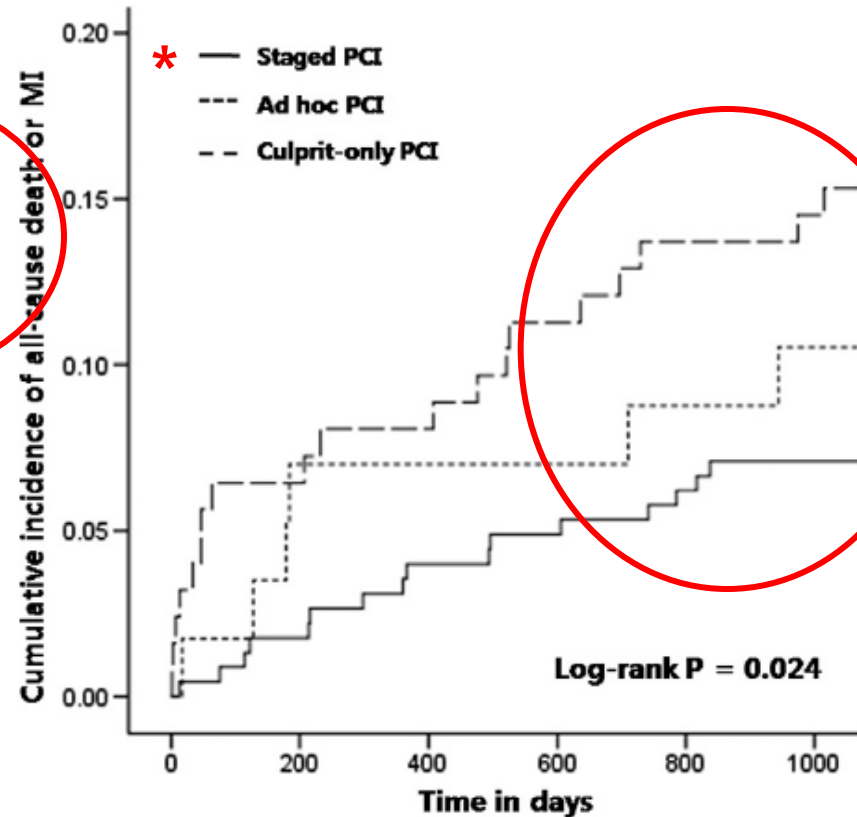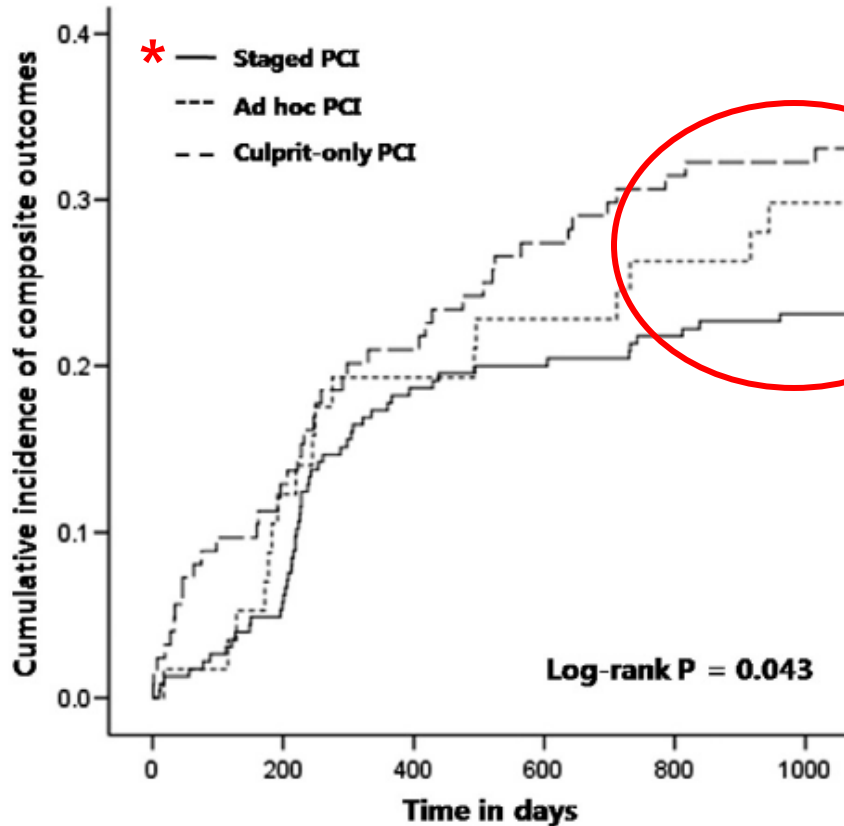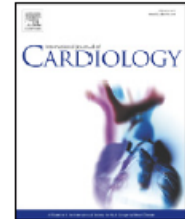
DES in Korean AMI Pts

Editorial

The efficacy and safety of drug-eluting stents in patients with acute myocardial infarction: Results from Korea Acute Myocardial Infarction (KAMIR)

Young Joon Hong, Myung Ho Jeong *, Youngkeun Ahn, Jung Chae Kang

Korea Cardiovascular Stent Research Institute, Heart Center of Chonnam National University Hospital, Gwangju, Republic of Korea

ARTICLE INFO

ABSTRACT

There are controversies about the use of drug-eluting stent (DES) in patients with acute myocardial infarction (AMI). Recent trials of DES in patients with AMI have shown the relative safety of DES. However, some physicians hesitate to use DES in AMI patients because of increased risk of stent thrombosis and death. We summarized in this article about the efficacy and safety of DES in AMI patients who were enrolled in Korea Acute Myocardial Infarction Registry (KAMIR).

KAMIR Investigators. *Int J Cardiol 2013;163:1-4*
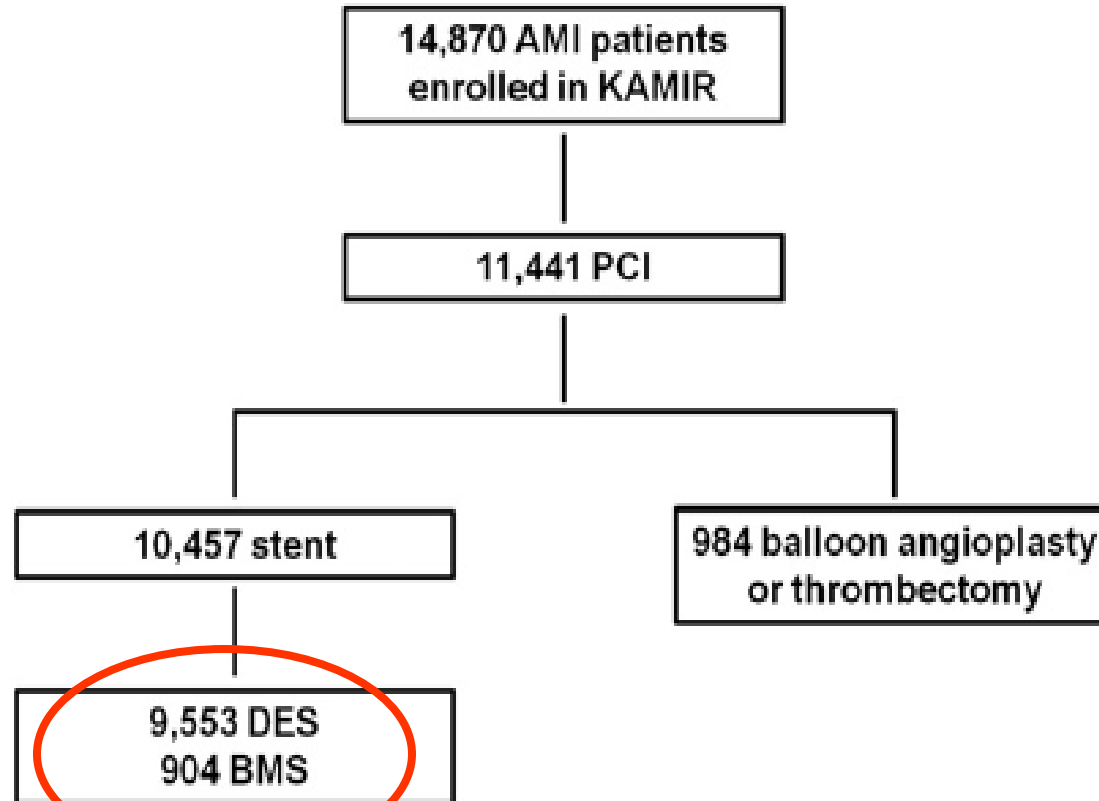
DES in Korean AMI Pts

Fig. 1. Study population diagram. AMI: acute myocardial infarction, KAMIR: Korea Acute Myocardial Infarction Registry, PCI: percutaneous coronary intervention, DES: drug-eluting stent, BMS: bare-metal stent.

KAMIR Investigators. *Int J Cardiol 2013;163:1-4*

DES in Korean AMI Pts

5. Conclusions

According to the KAMIR data, DES penetration rate is more than 90%. As compared with BMS, the event rates are lower after DES implantation in patients with AMI. There were no significant differences in the incidences of overall MACE according to the DES types except for the lower need for repeat revascularization in SES compared with PES or ZES. According to KAMIR data, DES can be used safely and effectively to treat AMI patients by reducing the need for repeat revascularizations and by not increasing the risks of mortality, MI, and stent thrombosis.
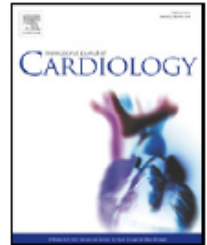
Comparison of second-generation drug-eluting versus bare-metal stents in octogenarian patients with ST-segment elevation myocardial infarction

CrossMark

Zhe Hao Piao [a,b], Myung Ho Jeong [a,*], Ying Li [b], Min Chul Kim [a], Kyung Hoon Cho [a], Keun-Ho Park [a], Doo Sun Sim [a], Kye Hun Kim [a], Young Joon Hong [a], Hyung Wook Park [a], Ju Han Kim [a], Youngkeun Ahn [a], Jeong Gwan Cho [a], Jong Chun Park [a], Young Jo Kim [c], Myeong Chan Cho [d], Chong Jin Kim [e], Hyo Soo Kim [f], Other Korea Acute Myocardial Infarction Registry (KAMIR) Investigators
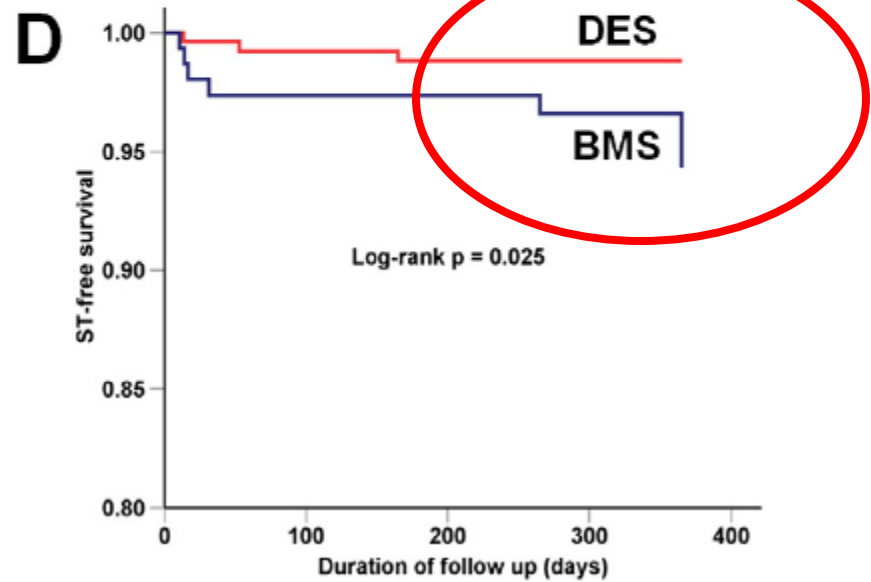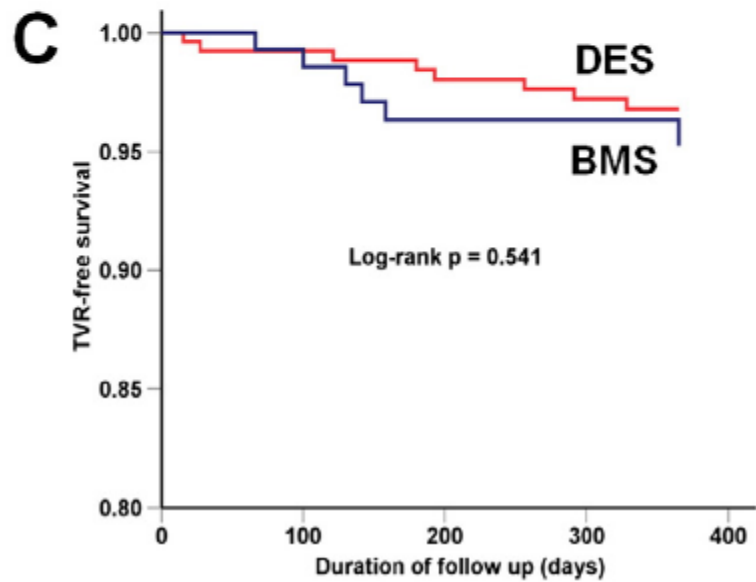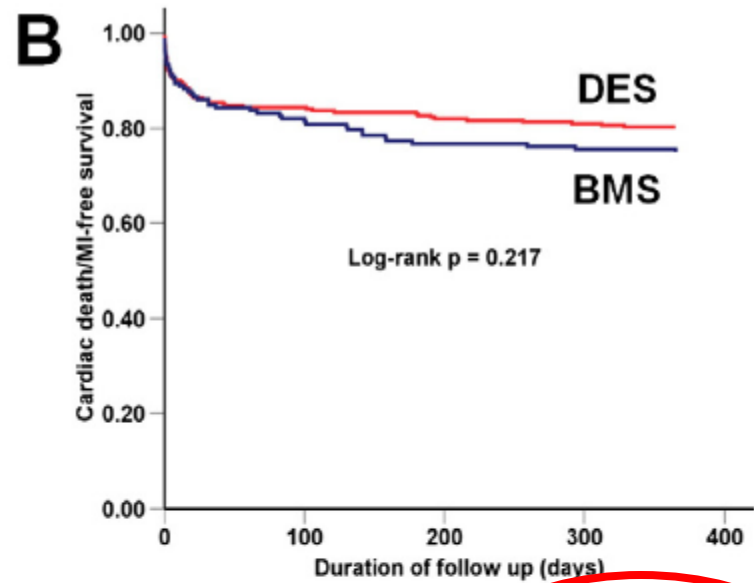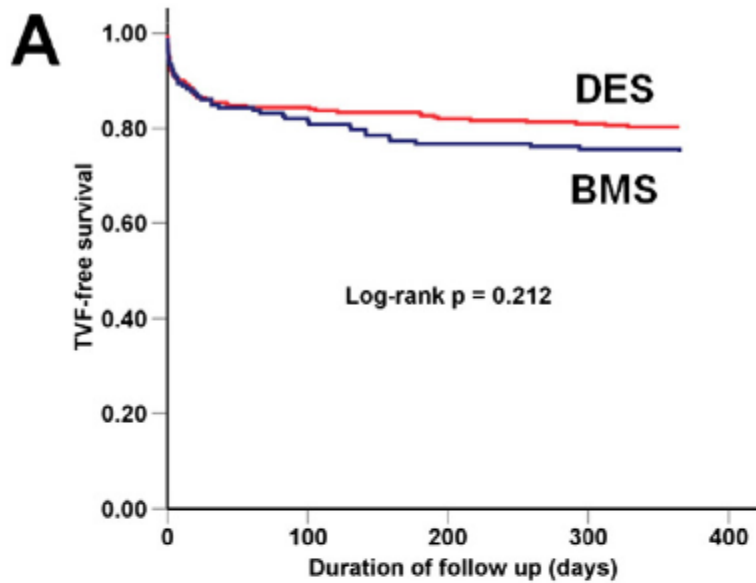
KAMIR Investigators. *Int J Cardiol 2014;177:1081-4*

KAMIR Investigators. *Int J Cardiol 2014;177:1081-4*
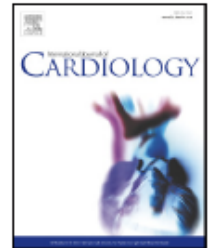
Clinical impact of immediate invasive strategy in patients with non-ST-segment elevation myocardial infarction

Doo Sun Sim [a], Myung Ho Jeong [a,*], Youngkeun Ahn [a], Young Jo Kim [b], Shung Chull Chae [c], Taek Jong Hong [d], In Whan Seong [e], Jei Keon Chae [f], Chong Jin Kim [g], Myeong Chan Cho [h], Seung-Woon Rha [i], Jang Ho Bae [j], Ki Bae Seung [k], Seung Jung Park [l], other Korea Acute Myocardial Infarction Registry (KAMIR) Investigators

Background: Immediate invasive approach for non-ST-segment elevation myocardial infarction (NSTEMI) may permit treatment of the underlying plaque rupture as early as possible with subsequent reduction of death and myocardial infarction (MI). We sought to assess clinical impact of immediate percutaneous coronary intervention (PCI) for NSTEMI.

Methods: A total of 6134 NSTEMI patients undergoing PCI from the Korea Acute Myocardial Infarction Registry were divided into group 1 (immediate PCI within 4 h, n = 1132) and group 2 (non-immediate PCI after 4 h, n = 5002). Propensity-matched 12-month clinical outcome was compared.

Results: In all patients and propensity-matched cohort (n = 1131 in each group), group 1 had higher peak troponin level, higher rate of pre-PCI Thrombolysis In Myocardial Infarction (TIMI) grade 0 or 1, higher use of glycoprotein IIb/IIIa inhibitor, and lower use of unfractionated heparin and nitrates. In all patients, 12-month rates of MI and death/MI were higher in group 1. No differences were observed in 12-month death and major adverse cardiac events (MACE: composite of death, MI, target-vessel revascularization, and coronary artery bypass graft surgery). In propensity-matched cohort, no significant differences were observed in 12-month rates of death, MI, death/MI or MACE. However, group 1 had less major bleeding (0.8% vs. 3.0%, p = 0.024) and shorter hospital stay.

Conclusions: Immediate PCI for patients with NSTEMI was associated with lower pre-PCI culprit vessel patency and not with improved 12-month clinical outcome.

KAMIR Investigators. *Int J Cardiol 2016;221:937-43*

Table 3

Unadjusted and adjusted clinical outcomes between immediate and non-immediate PCI groups before and after propensity score matching.

	All Patients				Propensity-matched patients			
	Immediate PCI (n = 1132)	Non-immediate PCI (n = 5002)	Unadjusted HR (95% CI)	p value	Immediate PCI (n = 1131)	Non-immediate PCI (n = 1131)	Adjusted HR (95% CI)	p value
In-hospital								
Death from any cause	14 (1.2%)	58 (1.2%)	1.13 (0.63–2.02)	0.688	14 (1.2%)	19 (1.7%)	0.67 (0.23–1.91)	0.449
MI	4 (0.4%)	20 (0.4%)	0.95 (0.19–4.74)	0.954	4 (0.4%)	3 (0.3%)	1.42 (0.13–15.69)	0.776
Stroke	15 (1.3%)	50 (1.0%)	1.34 (0.54–3.31)	0.524	15 (1.3%)	12 (1.1%)	1.24 (0.36–4.27)	0.731
Major bleeding	9 (0.8%)	105 (2.1%)	0.37 (0.13–1.04)	0.059	9 (0.8%)	34 (3.0%)	0.26 (0.08–0.84)	0.024
Hospital stay (days)	4.5 (3.0–7.0)	5.0 (3.3–7.0)		<0.001	4.5 (3.0–7.0)	5.0 (3.3–7.3)		<0.001
12 months								
Death from any cause	47 (4.2%)	166 (3.3%)	1.27 (0.92–1.75)	0.151	47 (4.2%)	36 (3.2%)	1.38 (0.75–2.55)	0.304
MI	30 (2.7%)	77 (1.5%)	1.78 (1.17–2.72)	0.007	30 (2.7%)	14 (1.2%)	1.47 (0.64–3.39)	0.369
Death from any cause or MI	74 (6.5%)	234 (4.7%)	1.43 (1.10–1.86)	0.007	74 (6.5%)	48 (4.2%)	1.27 (0.79–2.06)	0.326
TVR	48 (4.2%)	188 (3.8%)	1.15 (0.84–1.59)	0.375	48 (4.2%)	46 (4.1%)	0.94 (0.56–1.58)	0.821
CABG	5 (0.4%)	10 (0.2%)	2.28 (0.78–6.67)	0.133	5 (0.4%)	2 (0.2%)	2.00 (0.37–10.92)	0.423
MACE	110 (9.7%)	421 (8.4%)	1.19 (0.96–1.46)	0.113	110 (9.7%)	98 (8.7%)	1.11 (0.78–1.59)	0.570
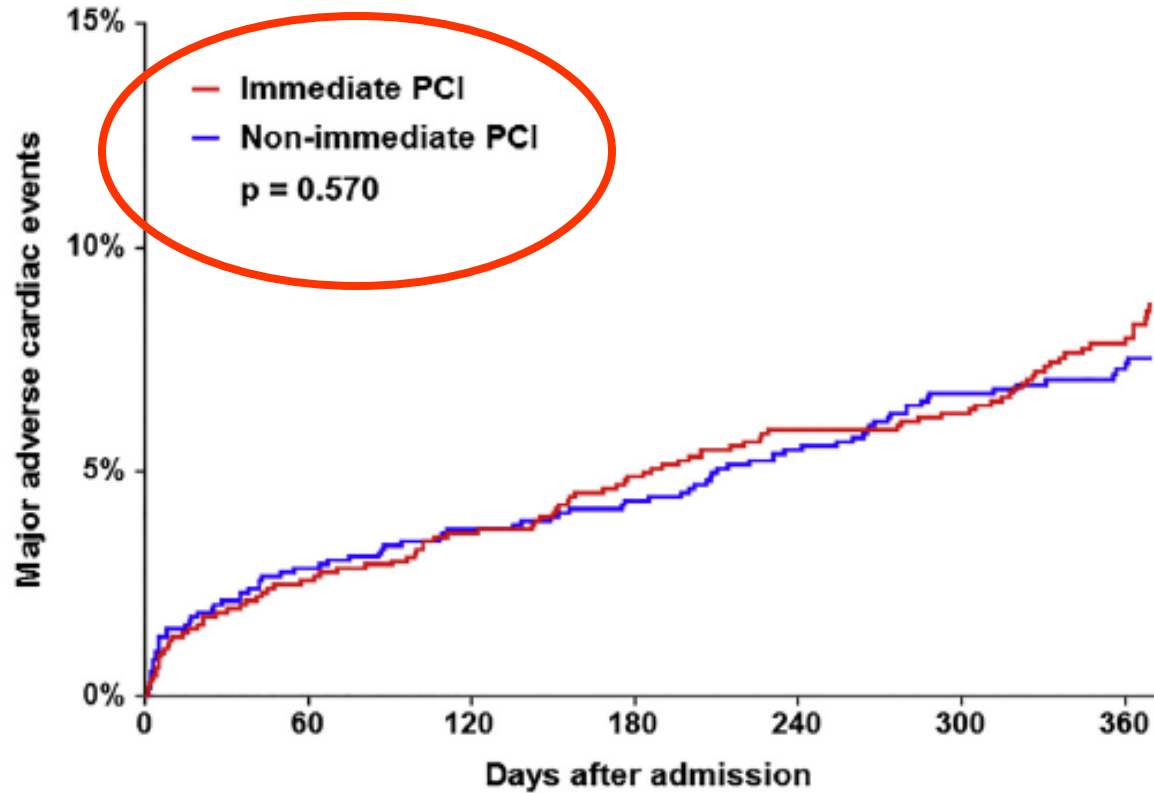
KAMIR Investigators. *Int J Cardiol 2016;221:937-43*

Original article

Clinical outcomes of the intra-aortic balloon pump for resuscitated patients with acute myocardial infarction complicated by cardiac arrest

Hyun Kuk Kim (MD)[a], Myung Ho Jeong (MD, PhD, FACC, FAHA, FESC, FSCAI)[a,*],
Youngkeun Ahn (MD)[a], Doo Sun Sim (MD)[a], Shung Chull Chae (MD)[b], Young Jo Kim (MD)[c],
Seung Ho Hur (MD)[d], In Whan Seong (MD)[e], Taek Jong Hong (MD)[f],
Dong Hoon Choi (MD)[g], Myeong Chan Cho (MD)[h], Chong Jin Kim (MD)[i], Ki Bae Seung (MD)[j],
Yang Soo Jang (MD)[g], Seung Woon Rha (MD)[k], Jang Ho Bae (MD)[l],
Jeong Gwan Cho (MD)[a], Seung Jung Park (MD)[m] and other Korea Acute Myocardial
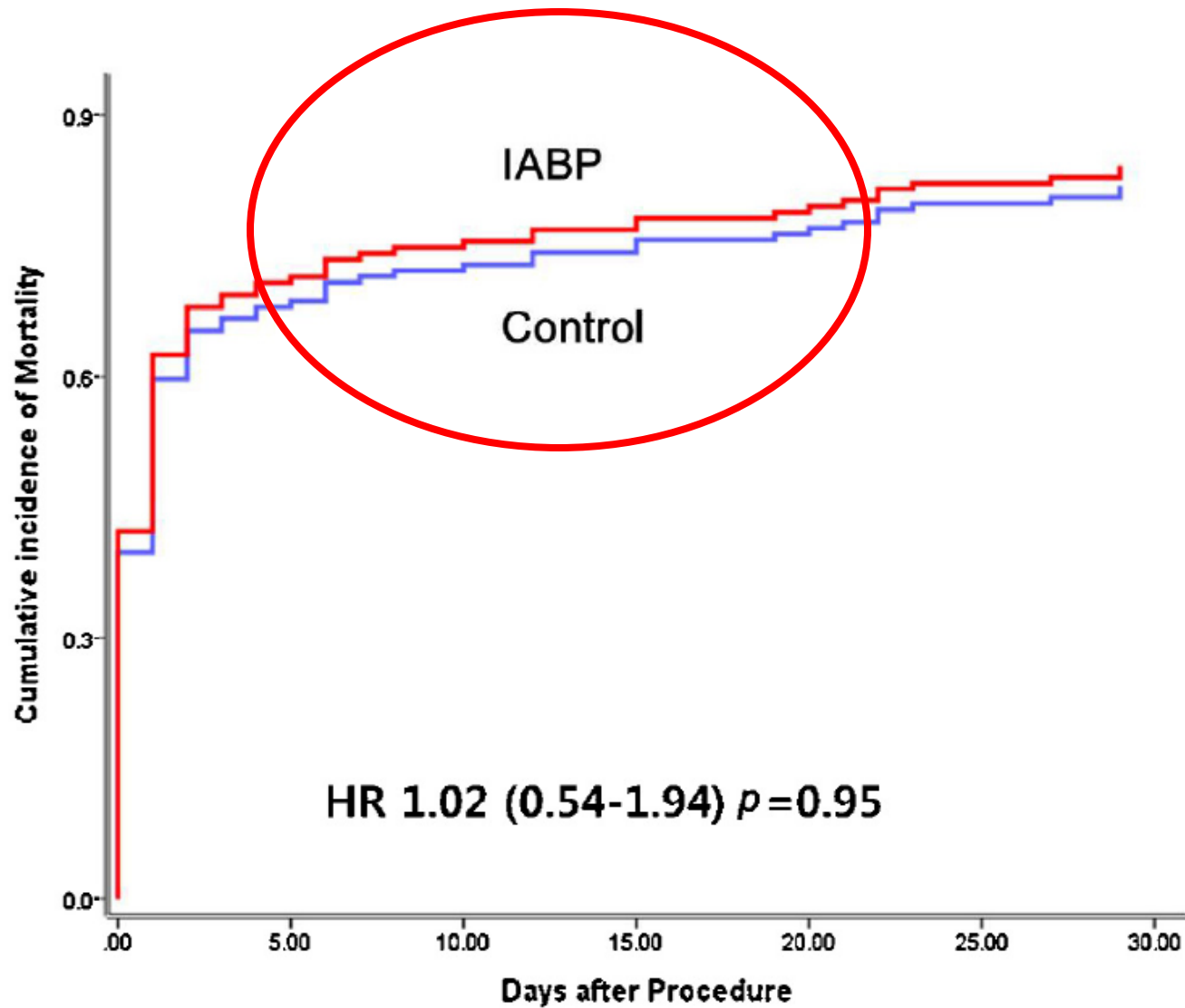Infarction Registry Investigators[1]

Fig. 3. Adjusted cumulative incidence of all causes of death at 1 month in propensity score matched patients without revascularization. HR, hazard ratio; IABP, intra-aortic balloon pump.

Role of Intravascular Ultrasound in Patients with Acute Myocardial Infarction Undergoing Percutaneous Coronary Intervention

Khurshid Ahmed, MD[a,b], Myung Ho Jeong, MD, PhD[a,*], Rabin Chakraborty, MD[b], Youngkeun Ahn, MD, PhD[a], Doo Sun Sim, MD[a], Keunho Park, MD[a], Young Joon Hong, MD[a], Ju Han Kim, MD[a], Kyung Hoon Cho, MD[a], Min Chol Kim, MD[a], Daisuke Hachinohe, MD[a], Seung Hwan Hwang, MD[a], Min Goo Lee, MD[a], Myeong Chan Cho, MD[c], Chong Jin Kim, MD[d], Young Jo Kim, MD[e], Jong Chun Park, MD[a], Jung Chae Kang, MD[a], and Other Korea Acute Myocardial Infarction Registry Investigators

Stent thrombosis and restenosis remain drawbacks of drug-eluting stents in patients with acute myocardial infarction (AMI). Intravascular ultrasound (IVUS) guidance for stent deployment helps optimize its results in stable patients. The aim of this study was to examine the utility of routine IVUS guidance in patients with AMI undergoing percutaneous coronary intervention (PCI). Employing data from Korea Acute Myocardial Infarction Registry (KAMIR), we analyzed 14,329 patients with AMI from April 2006 through September 2010. Patients with cardiogenic shock and rescue PCI after thrombolysis were excluded. Clinical outcomes of 2,127 patients who underwent IVUS-guided PCI were compared to those of 8,235 patients who did not. Mean age was 63.6 ± 13.5 years and 72.3% were men. Patients undergoing IVUS-guided PCI were younger, more often men, more hyperlipemic, and had increased body mass index and left ventricular ejection fraction. Number of treated vessels and stents used, stent length, and stent diameter were increased in the IVUS-guided group. Multivessel involvement was less frequent and American College of Cardiology/American Heart Association type C lesion was more frequent in the IVUS-guided group. Drug-eluting stents were more frequently used compared to bare-metal stents in the IVUS group. There was no significant relation of stent thrombosis between the 2 groups. Twelve-month all-cause death was lower in the IVUS group. After multivariate analysis and propensity score adjustment, IVUS guidance was not an independent predictor for 12-month all-cause death (hazard ratio 0.212, 0.026 to 1.73, p = 0.148). In conclusion, this study does not support routine use of IVUS guidance for stent deployment in patients who present with AMI and undergo PCI. © 2011 Elsevier Inc. All rights reserved. (Am J Cardiol 2011;108:8–14)
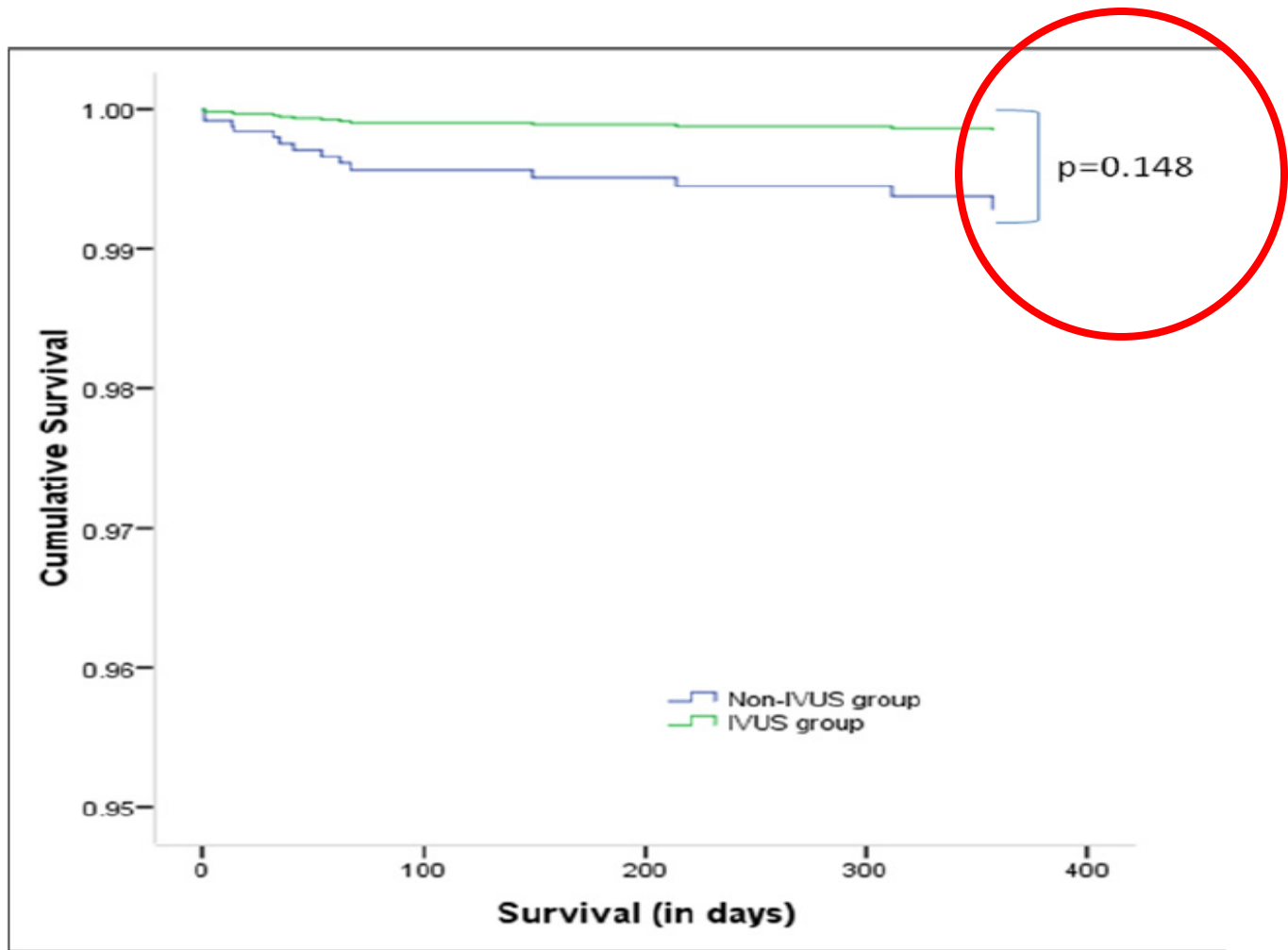
Figure 2. Propensity-adjusted survival curves illustrating independence of intravascular ultrasound use for 12-month all-cause death (p = 0.148).

KAMIR Investigators, Am J Cardiol 2011;108:8-14

Original article

Manual thrombus aspiration during primary percutaneous coronary intervention: Impact of total ischemic time

Doo Sun Sim (MD, PhD)[a], Myung Ho Jeong (MD, PhD, FACC, FAHA, FESC, FSCAI, FAPSIC)[a,*], Youngkeun Ahn (MD, PhD, FACC)[a], Young Jo Kim (MD, PhD)[b], Shung Chull Chae (MD, PhD)[c], Taek Jong Hong (MD, PhD)[d], In Whan Seong (MD, PhD)[e], Jei Keon Chae (MD, PhD)[f], Chong Jin Kim (MD, PhD)[g], Myeong Chan Cho (MD, PhD)[h], Seung-Woon Rha (MD, PhD, FACC)[i], Jang Ho Bae (MD, PhD, FACC)[j], Ki Bae Seung (MD, PhD, FACC)[k], Seung Jung Park (MD, PhD, FACC)[l] other Korea Acute Myocardial Infarction Registry (KAMIR) Investigators

KAMIR Investigators. J Cardiol 2017; 69: 428-35

Subgroup	n	Cumulative event rates (%)		HR (95% CI)	p Value for Interaction
		TA	PCI Only		
Sex					0.44
Female	549	30/275 (10.9)	35/274 (12.8)	0.96 (0.54-1.71)	
Male	1,775	59/887 (6.7)	58/888 (6.5)	0.93 (0.64-1.36)	
Age					0.91
≤75 yr	1,929	60/963 (6.2)	64/966 (6.6)	0.79 (0.54-1.15)	
>75 yr	395	29/199 (14.6)	29/196 (14.8)	1.34 (0.73-2.45)	
Diabetes					0.50
Yes	544	30/266 (11.3)	30/278 (10.8)	0.98 (0.54-1.79)	
No	1,780	59/896 (6.6)	63/884 (7.1)	0.78 (0.54-1.14)	
Smoking					0.66
Yes	1,118	28/552 (5.1)	33/566 (5.8)	0.73 (0.43-1.24)	
No	1,206	61/610 (10.0)	60/596 (10.1)	1.01 (0.69-1.47)	
Total ischemic time					0.01
≤2 hr	408	10/205 (4.9)	4/203 (2.0)	1.59 (0.35-7.15)	
2-4 hr	922	37/453 (8.2)	38/469 (8.1)	0.90 (0.55-1.47)	
4-6 hr	461	11/222 (5.0)	31/239 (13.0)	0.28 (0.12-0.66)	
>6 hr	533	31/282 (11.0)	20/251 (8.0)	1.23 (0.65-2.30)	
Infarct-related vessel					0.12
Left anterior descending artery	1,076	33/532 (6.2)	46/544 (8.5)	0.78 (0.49-1.22)	
Left circumflex artery	192	3/93 (3.2)	8/99 (8.1)	0.36 (0.09-1.45)	
Right coronary artery	1,030	48/523 (9.2)	34/507 (6.7)	1.45 (0.93-2.26)	
Left main coronary artery	26	5/14 (35.7)	5/12 (41.7)	0.78 (0.19-3.16)	
Pre-PCI TIMI flow grade					0.25
0-1	1,940	81/975 (8.3)	78/965 (8.1)	0.93 (0.67-1.28)	
2-3	384	8/187 (4.3)	15/197 (7.6)	0.34 (0.10-1.18)	
Glycoprotein IIb/IIIa blocker					0.20
Yes	810	36/395 (9.1)	47/415 (11.3)	0.84 (0.51-1.37)	
No	1,514	53/767 (6.9)	46/747 (6.2)	1.04 (0.68-1.58)	
Overall	2,324	89/1,162 (7.7)	93/1,162 (8.0)	0.88 (0.65-1.19)	

0.05 0.1 0.2 0.5 1 2 5 10

TA Better ← → PCI Only Better

Lessons From KAMIR: Differences from Western Registries

1. Risk factor of smoking is more common, but smoking has decreased
2. Patterns of DL and therapeutic responses to statin are different
3. KAMIR score is better than TIMI/GRACE
4. Statin Plus Ezetimibe are effective in selected AMI patients
5. PCI and its success rates for STEMI and NSTEMI are relatively higher

Lessons From KAMIR: Differences from Western Registries

6. Reduced dosage of prasugrel or ticagrelor may be beneficial

7. ARB, esp. insurmountable, is better than ACEI

8 Total ischemic time<180 min is important for reduction of mortality and PCI delay time > 100 min in pharmaco-invasive treatment

9. Immediate PCI was not beneficial in NSTEMI

10. Thrombus aspiration can be recommended in selected patients

Key Points to Success of KAMIR Study

1. On-line registry – Simple and Quick

   Good dBASE including Important information

2. Regular investigator & coordinator meetings

   Maintain good data quality

   Discuss problems and new idea

   CRA education

   Regular audit to maintain data quality and solve query

Key Points to Success of KAMIR Study

3. Open data and encourage writing paper

    – Improve data quality

       Proud of KAMIR

       Chance for young ambitious doctors

4. Presentations at international meetings

          Abstracts, Lectures, Review articles

5. Collaborative sub-study for KAMIR investigators

Key Points to Success of KAMIR Study

6. Good friendships with all KSC cardiologists

 - Korean Society of Myocardial Infarction

 - AMI symposium

 - AMI textbook and guideline

 - The largest number of papers in the world

 - Good national and international networks

7. Getting big funds from Korean Society of Cardiology and Korean government (NIH)

Future Development of KAMIR Study

1. Getting more funds for KSC and Korea NIH
2. Maintain good data quality
3. Establish KAMIR score and Korea guideline published in Lancet and/or NEJM
4. Provide data for future preventive, genetic and molecular researches
5. Good collaboration with Japan, China, Singapore, Sweden and USA
6. Setting up Asian guideline

The KAMIR is the Best AMI Registry in the World! I Hope KAMIR will be Successful in the Future!

심근경색증 연구위원회 구성

운영위원회

연구조정센터

감사위원회

자문위원회

실행위원회

운영위원회

목적	• 급성 심근경색증 전향적 추적 관찰연구를 총괄책임
구성	• 위원장 : 정명호 • 위원: 각 위원회 위원장 (4), 박현영, 권현철, 김권배, 승기배, 안태훈, 채성철 , 최동주
역할	• 연구설계, 프로토콜 개발 등 연구전반에 대한 과학적, 행정적 원칙을 수립하는 중추적인 기능 수행 • 연구진행에 대한 모니터링과 연구결과 발표를 포함한 제반 연구 절차에 대한 심의 및 결정 • 연구매뉴얼의 주요 변경사항에 대한 검토 및 승인 • 타 위원회 지원 및 자문, 연구 과정 중 발생하는 문제점 해결

실행위원회

목적	• 급성 심근경색증 전향적 추적 관찰연구의 진행을 책임
구성	• 위원장 : 안영근 • 위원: 나승운, 박종선, 박헌식, 오석규, 채제건, 차광수, 황경국
역할	• 연구의 효율적 진행을 위해 운영위원회 소집 이전 단계에 해결 가능한 안건을 처리하고 운영위원회에 정기적으로 보고 • 주요 연구일정에 대한 시한을 정하고, 운영위원회 안건을 개발

자문위원회

목적	• 급성심근경색증 전향적 추적관찰연구의 진행 상황 점검과 자문을 책임

구성	• 질환전문가, 통계전문가, 역학전문가 등 다학제로 구성 • 위원장: 김영조 • 위원: 탁승제, 권순석, 김헌창, 이태용, 신진호

역할	• 연구 진행, 성과, 데이터 검증 등에 대한 검토 및 자문을 시행. • 자료공개요청에 대한 중복성, 적합성 등 검토

연구조정센터

목적	• 자료 질관리에 대한 모니터와 자료 분석을 담당
구성	• 위원장 : 김주한 • 위원: 강웅철, 이상록, 이장훈, 이한철, 장기욱, 정진옥
역할	• 기타 프로토콜 및 매뉴얼 개발 • 통계 분석 디자인 개발 • 자료 입력과 관련된 양식 개발 • 하드웨어 및 소프트웨어 개발 및 교육 • 연구조사자를 포함한 인력에 대한 교육 • 수집된 자료에 대한 세부 결과 및 분석 결과 제공

감사위원회

구성	• 질병관리본부 주무부서장, 역학자, 통계학자, 의료윤리학자, 임상연구자 등으로 구성 • 위원장: 오동주 • 위원: 고재기, 홍순표, 정남식, 이재우
역할	• 급성 심근경색증 전향적 추적 관찰연구의 성과 검증, 데이터 검증, 회계 검증을 시행 • 연구조정센터로부터 주기적으로 제공된 수집데이터 모니터하고 연구 수행 정도 평가

연구 분담

분 담 내 용	책임연구원 및 연구원			연 구 보 조 원		
	소 속	직 위	성 명	소 속	직 위	성 명
전향적 추적관찰연구 총괄 관리	전남대	교수	정명호	전남대	부교수	안영근
급성심근경색 국외 등록연구 분석	가천 의대	교수	안태훈	가천 의대	조교수	강웅철
급성 심근경색 국내 등록연구 분석	가천 의대	교수	안태훈	가천 의대	조교수	강웅철
급성 심근경색 예후 및 관리지표 개발을 위한 전향전 추적 관찰 프로토콜 개발- 최근에 새로 개발된 약제 및 치료방법 연구	가톨릭 의대	교수	승기배	가톨릭 의대	교수	장기육

연구 분담

분 담 내 용	책임연구원 및 연구원			연 구 보 조 원		
	소 속	직 위	성 명	소 속	직 위	성 명
급성 심근경색 예후 및 관리지표 개발을 위한 전향적 추적 관찰 프로토콜 개발- 급성 심근경색증 위험요인 연구	고려대	교수	오동주	고려대	교수	나승운
급성 심근경색 예후 및 관리지표 개발을 위한 전향적 추적 관찰 프로토콜 개발- 네크 워크에 해당하는 의료기관 내원 전까지 필요한 항목 연구	전북대	부교수	채제건	전북대	조교수	이상록
급성 심근경색 예후 및 관리지표 개발을 위한 전향전 추적 관찰 프로토콜 개발- 급성기 응급실 치료 연구	원광대	부교수	오석규	원광대	조교수	이상재

연구 분담

| 분 담 내 용	책임연구원 및 연구원			연 구 보 조 원		
	소 속	직 위	성 명	소 속	직 위	성 명
급성 심근경색 예후 및 관리지표 개발을 위한 전향전 추적 관찰 프로토콜 개발- 입원 치료 연구 (관상동맥 중재술 이외 부분)	서울대	교수	김효수	서울대	교수	구본권
급성 심근경색 예후 및 관리지표 개발을 위한 전향전 추적 관찰 프로토콜 개발- 입원 치료 관상동맥 중재술 부분	충북대	부교수	배장환	충북대	조교수	김상민
급성 심근경색 예후 및 관리지표 개발을 위한 전향전 추적 관찰 프로토콜 개발- 퇴원 후 치료 연구	서울대 분당	부교수	최동주	서울대 분당	조교수	윤창환

연구 분담

분 담 내 용	책임연구원 및 연구원			연 구 보 조 원		
	소 속	직 위	성 명	소 속	직 위	성 명
급성 심근경색 예후 및 관리지표 개발을 위한 전향전 추적 관찰 프로토콜 개발- 추적 관찰 시기에 필요한 항목 연구	성균관	부교수	권현철	성균관	부교수	최승혁
급성 심근경색 환자의 혈액 및 조직을 이용한 자원 관리 연구	전남대	부교수	안영근	전남대	부교수	김주한
급성 심근경색 발병 예측 모델 연구	충남대	교수	성인환	충남대	부교수	정진옥
급성 심근경색 예후 예측 모델 개발	영남대	교수	김영조	영남대	교수	박종선
급성 심근경색 퇴원 예측 모델 개발	경북대	교수	채성철	경북대	교수	박헌식

연구 분담

분 담 내 용	책임연구원 및 연구원			연 구 보 조 원		
	소 속	직 위	성 명	소 속	직 위	성 명
웹기반 임상연구관리시스템 관리 (iCReaT)	전남대	부교수	안영근	전남대	부교수	김주한
참여 연구원을 대상으로 과제수행과 관련된 정기적인 교육	계명대	교수	김권배	계명대	교수	허승호
연구진행 상황 점검 및 자문	전남대	부교수	안영근	전남대	부교수	김주한
코디네이터 교육 및 모니터링	부산대	부교수	차광수	부산대	조교수	이한철

KAMIR-NIH 논문 주제 공모 분류 후 선정
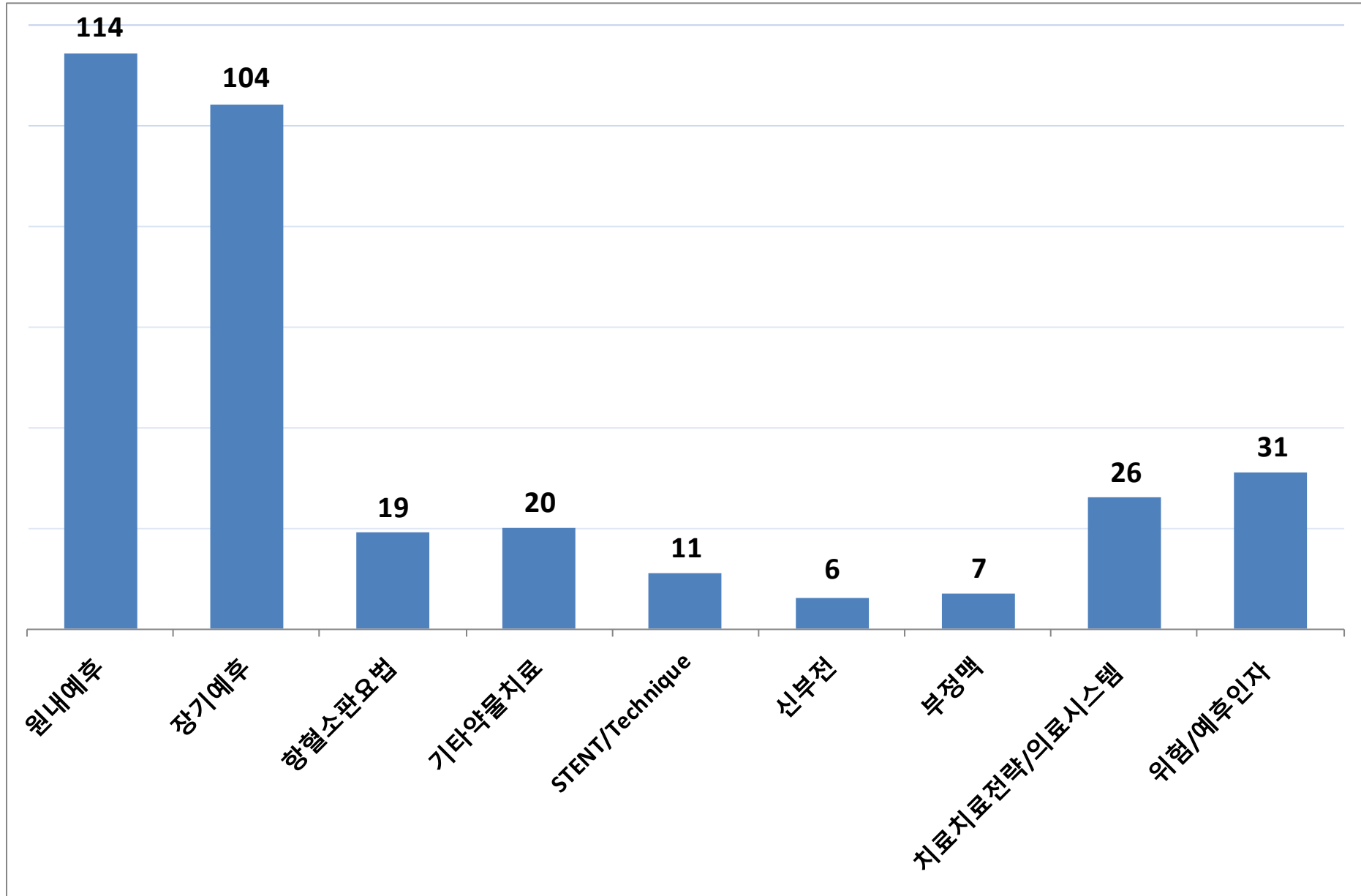
KAMIR-NIH 2016년도
연구 성과(학술발표)

KAMIR-NIH 2016년도
연구 성과(학술발표)
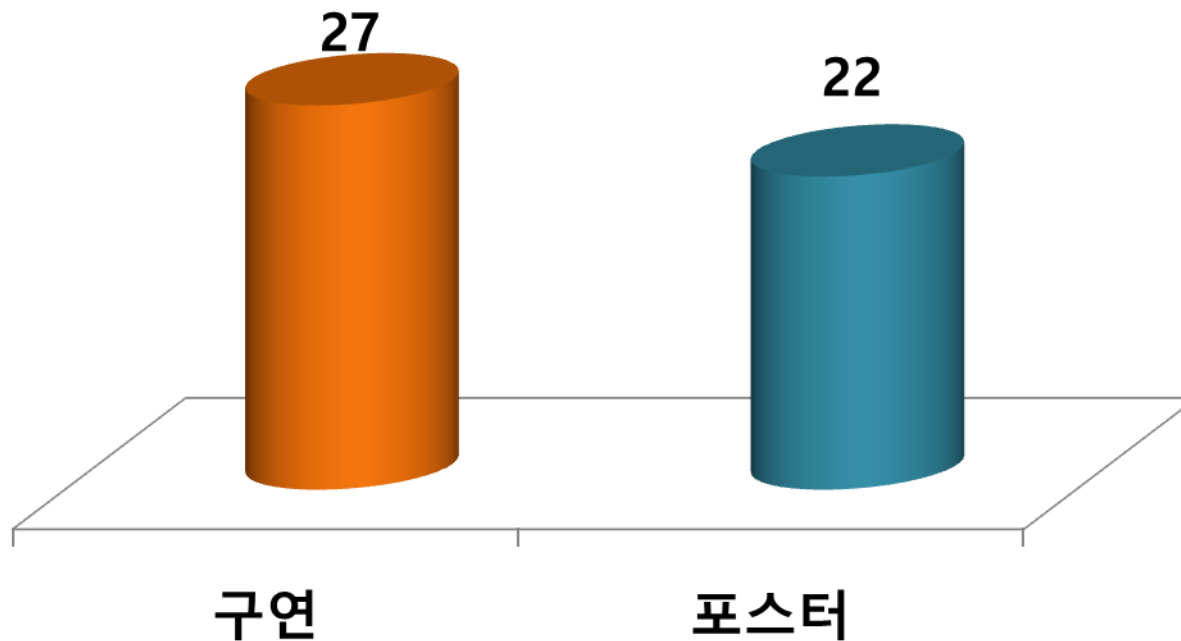
49편 초록은 KAMIR-NIH data 분석을 통하여

심근경색증 환자를 대상으로 항 혈소판 제제를

비롯한 약물 치료 및 스텐트 선택 등 시술, 예방 및

예후 예측 인자에 대한 결과 발표

– 추후 치료 및 예방 지침에 참고

KAMIR-NIH을 활용한
2016 KSC(구연 27편)

번호	발표제목
1	long term clinical outcome of the AMI patients with left circumflex artery occlusion
2	Comparison of Clinical Outcomes Between Ticagrelor and Prasugrel in Patients with ST-Segment Elevation Myocardial Infarction
3	**Optimal Timing of Percutaneous Coronary Intervention in Patients With Non-ST-Segment Elevation Myocardial Infarction Complicated by Acute Heart Failure.**
4	Optimal Blood Pressure Target in Patients With Acute Myocardial Infarction
5	Comparative Outcome of Angiotensin-Converting Enzyme Inhibitor and Angiotensin Receptor Blocker in Diabetic Hypertensive Korean Acute Myocardial Infarction Patients: Results from the Korean Acute Myocardial Infarction Registry
6	Efficacy and Safety of Prasugrel in Patients with Acute Myocardial infarction Undergoing Successful Revascularization
7	**Blood Pressure Target and Clinical Outcome: J Curve Phenomenon In Patients With Acute Myocardial Infarction**
8	1 year mortality risk prediction for percutaneous coronary intervention: Result from 9,047 KAMIR-NIH registry
9	Impact of thrombus aspiration in hospital mortality during primary PCI in STEMI patient with TIMI 0,1 flow ; KAMIR-NIH study

KAMIR-NIH을 활용한
2016 KSC(구연 27편)

번호	발표제목
10	Impact of statin therapy on the obesity paradox in patients with acute myocardial infarction
11	Angiotensin Converting Enzyme Inhibitor versus Angiotensin Receptor Blocker in Patients with Acute Myocardial Infarction with Systolic Dysfunction who underwent Percutaneous Coronary Intervention
12	Inverted U-shaped relationship between symptom onset-to-balloon time and incidence of micro vascular obstruction in patients with ST-segment elevation myocardial infarction underwent primary percutaneous coronary intervention : Results from Korea Acute Myocardial Infarction Registry(KAMIR)-National Institutes of Health(NIH) registry
13	Anticoagulation in patients with acute myocardial infarction who were presenting with atrial fibrillation improved clinical outcomes
14	Prognostic value of atypical chest pain in non-diabetic patients with acute myocardial infarction - KAMIR-NIH Registry
15	Intensity of Statin and Its Influence on Clinical Outcomes in Elderly Patients with Acute Myocardial Infarction: The Higher Is Not The Better
16	Benefit of vasodilating beta blocker therapy for patients with acute myocardial infarction after percutaneous coronary intervention. (from Korea Acute Myocardial Infarction Registry)
17	Derivation and validation of combined in-hospital mortality and major bleeding risk model in patients with acute myocardial infarction.
18	Efficacy and Safety of new generation P2Y12 inhibitors in Korean MI patients; a nationwide registry based analysis

KAMIR-NIH을 활용한 2016 KSC(구연 27편)

번호	발표제목
19	Comparison of ticagrelor versus clopidogrel in acute myocardial infarction patients with renal insufficiency
20	Radial versus femoral access with or without vascular closure device in patients with or without ST-segment elevation: propensity score matched analysis.
21	Effect of Metabolic Syndrome Score on Severity of Coronary Artery Disease and In-hospital Death in Patients with Acute Myocardial Infarction
22	Practice-level variation in initial treatment strategy in patients with non-ST segment elevation myocardial infarction –a multi-level methodological approach.
23	Comparison of In-hospital mortality and bleeding events according to the anticoagulation strategy in patients with acute myocardial infarction and atrial fibrillation: from Korea Acute Myocardial Infarction Registry – National Institute of Health
24	Comparison of everolimus-, zotarolimus-, and biolimus-eluting stent in patients with acute myocardial infarction and diabetes mellitus.
25	Influence of Intra vascular ultrasound on long-term clinical outcome in patients with or without ST-segment elevation myocardial infarction: propensity score matched analysis
26	Impact of cardio-renal interaction (LVEF and GFR) on long-term clinical outcome in patients with acute myocardial infarction
27	Improvement in Mitral Regurgitation is Associated with Left Ventricular Reverse Remodeling but Was Not a Predictor of Favorable 1-Year Clinical Outcome in Patients with Acute Myocardial Infarction

KAMIR-NIH을 활용한 2016 KSC(포스터 22편)

번호	발표제목
1	Guideline-directed antithrombotic therapy in patients with acute myocardial infarction and atrial fibrillation
2	In-hospital mortality and complications risk associated atrial fibrillation in patients with acute myocardial infarction in the Korean Acute Myocardial Infarct registry
3	The difference of clinical characteristics in women compared to men in Korea Acute Myocardial Infarction Registry of National Institute of Health
4	Practice-level variation in use of optimal medical treatment during hospitalization–a multi-level methodological approach
5	The Latest Tendency of Using Emergency Medical Service in Patients with Acute Myocardial Infarction around Korea : Observation from KAMIR-NIH Study
6	Lower In-hospital Ventricular Fibrillation in Acute Myocardial Infarction Patients Receiving Statins
7	Clinical Outcomes After Implantation of Various Stents in Korean Patients with Acute Myocardial Infarction and Renal Insufficiency
8	One year mortality risk prediction for percutaneous coronary intervention: Result from 9,047 KAMIR-NIH registry
9	Clinical Impact of Smoking on Mortality In Patients With Acute Myocardial Infarction Underwent Percutaneous Coronary Intervention

KAMIR-NIH을 활용한 2016 KSC(포스터 22편)

| 번호	발표제목
10	**Impact of Gender Differences on Clinical Outcomes in Elderly Korean Patients with Acute Myocardial Infarction**
11	**The Level of Non-High Density Lipoprotein Cholesterol Was Lower in Death Group Patients after Myocardial Infarction: In-hospital Outcome Analysis From Korean Acute Myocardial Infarction Registry-National Institute of Health patients.**
12	**Relationship of Symptom-onset to Medical Contact Time, Door-to-balloon Time and Symptom-Onset to Door-to-balloon Time with Complications During Hospitalization in Patients Undergoing PCI for STEMI According to the Korea Region**
13	**Comparison of door-to-balloon time and clinical outcomes between government-support vs. government-nonsupport period in patients with STEMI - KAMIR-NIH Registry**
14	**Clinical Outcomes Between Typical Angina Versus Atypical Symtoms at Presentation Among Patients with ST-Elevation Myocardial Infarction Treated with Primary Percutaneous Coronary Intervention**
15	**Stent Thrombosis between Female and Male among Patients with Acute Myocardial Infarction treated with Drug-Eluting Stent**
16	**The Clinical Outcomes between Everolimus-Eluting Stents and Resolute Zotarolimus-Eluting Stents in Patients with Acute Myocardial Infarction with Metabolic Syndrome**
17	**Clinical impact of obesity in younger patients after percutaneous coronary intervention for acute ST-segment elevation myocardial infarction**

KAMIR-NIH을 활용한 2016 KSC(포스터 22편)

| 번호	발표제목
18	**Difference of Clinical Outcome and Prognosis between Female and Male Acute Myocardial Infarction Patients with Hypertension and Diabetes Mellitus.**
19	Clinical Outcomes of Patients aged ≥ 75 Years Versus < 75 Years after Percutaneous Coronary Intervention for Left Main in Korea Acute Myocardial Infarction Registry (KAMIR)
20	ADP receptor inhibitors in acute myocardial infarction patients with cardiogenic shock
21	IVUS-guided left main coronary artery stenting in patients with acute myocardial infarction
22	Target-Vessel Versus Multivessel Revascularisation in Older Patients with ST-Elevation Myocardial Infarction

KAMIR-NIH 추적관찰 현황
(12 Months)
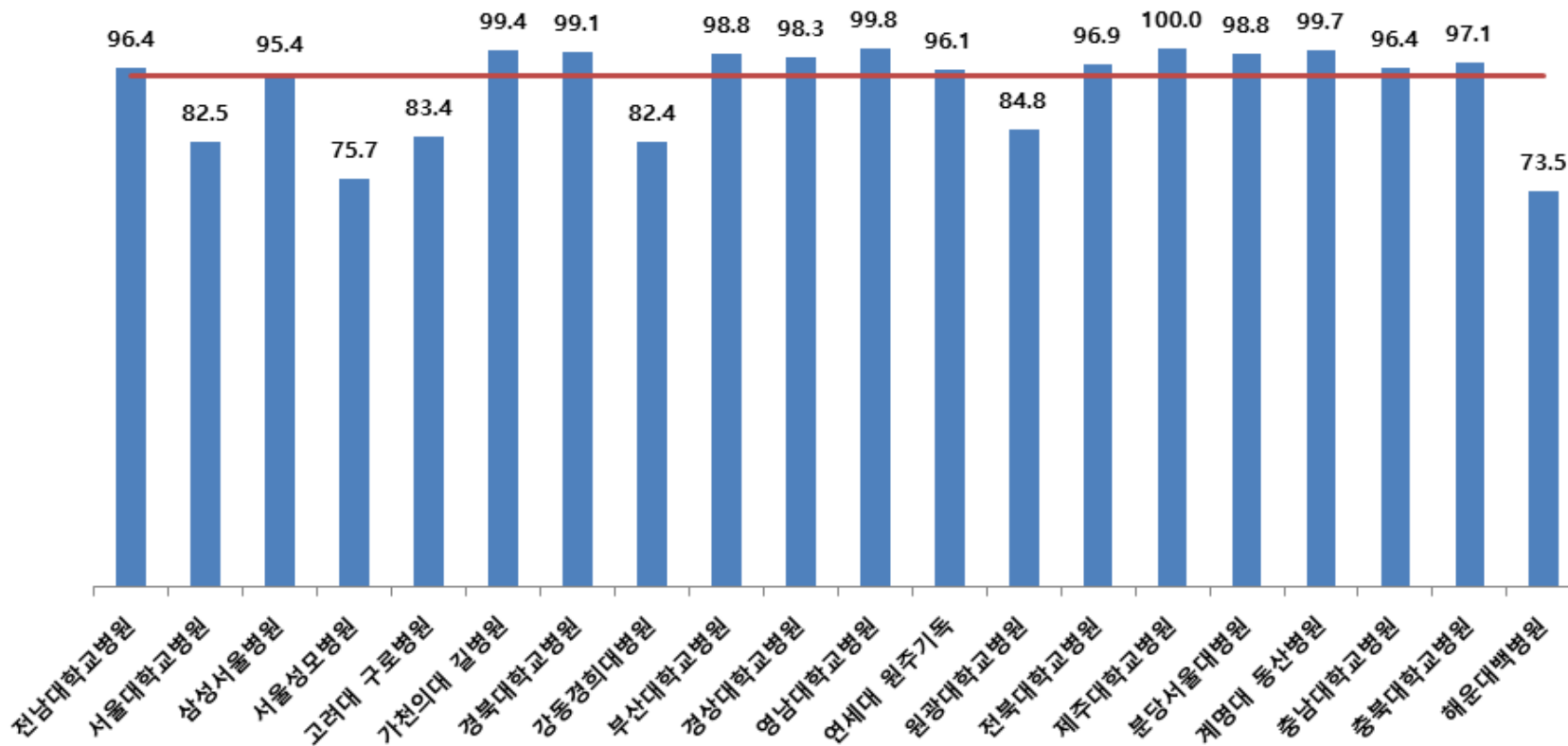
KAMIR-NIH 추적관찰 현황
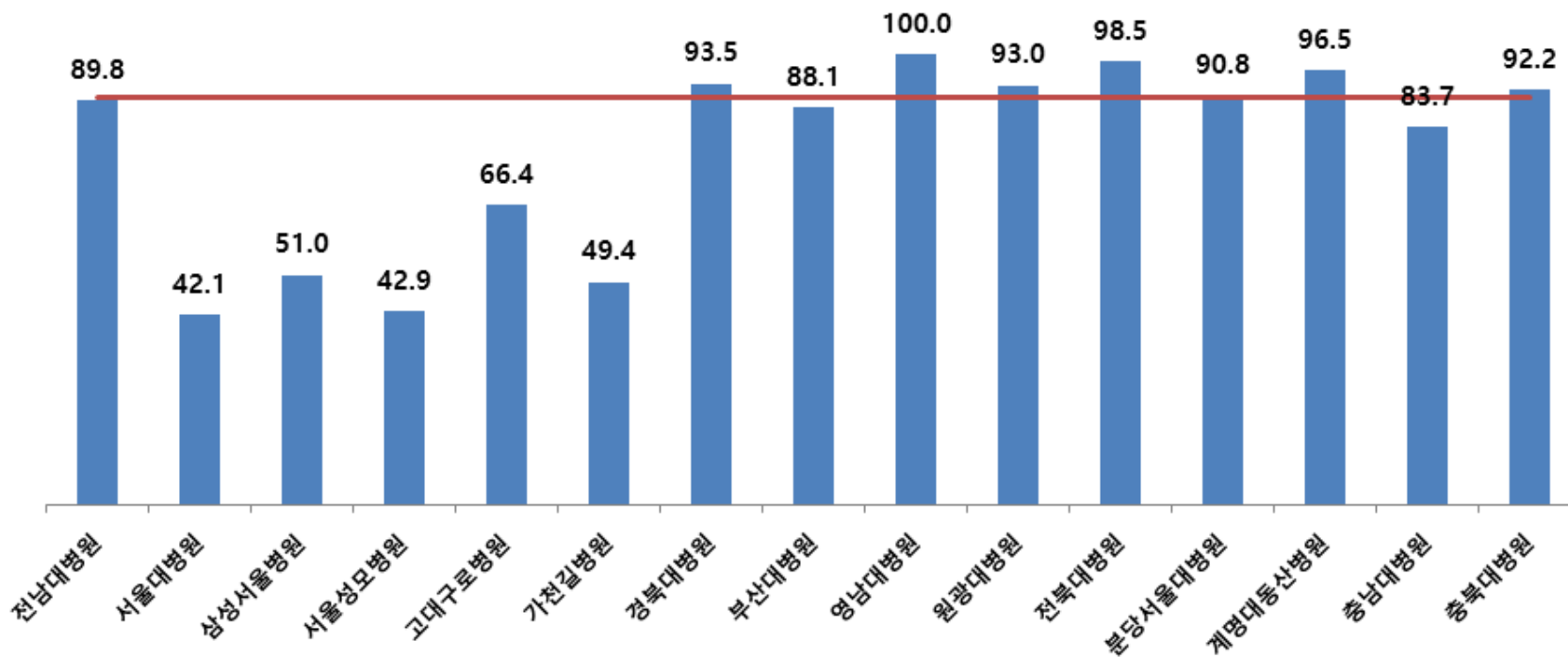# (24 Months)
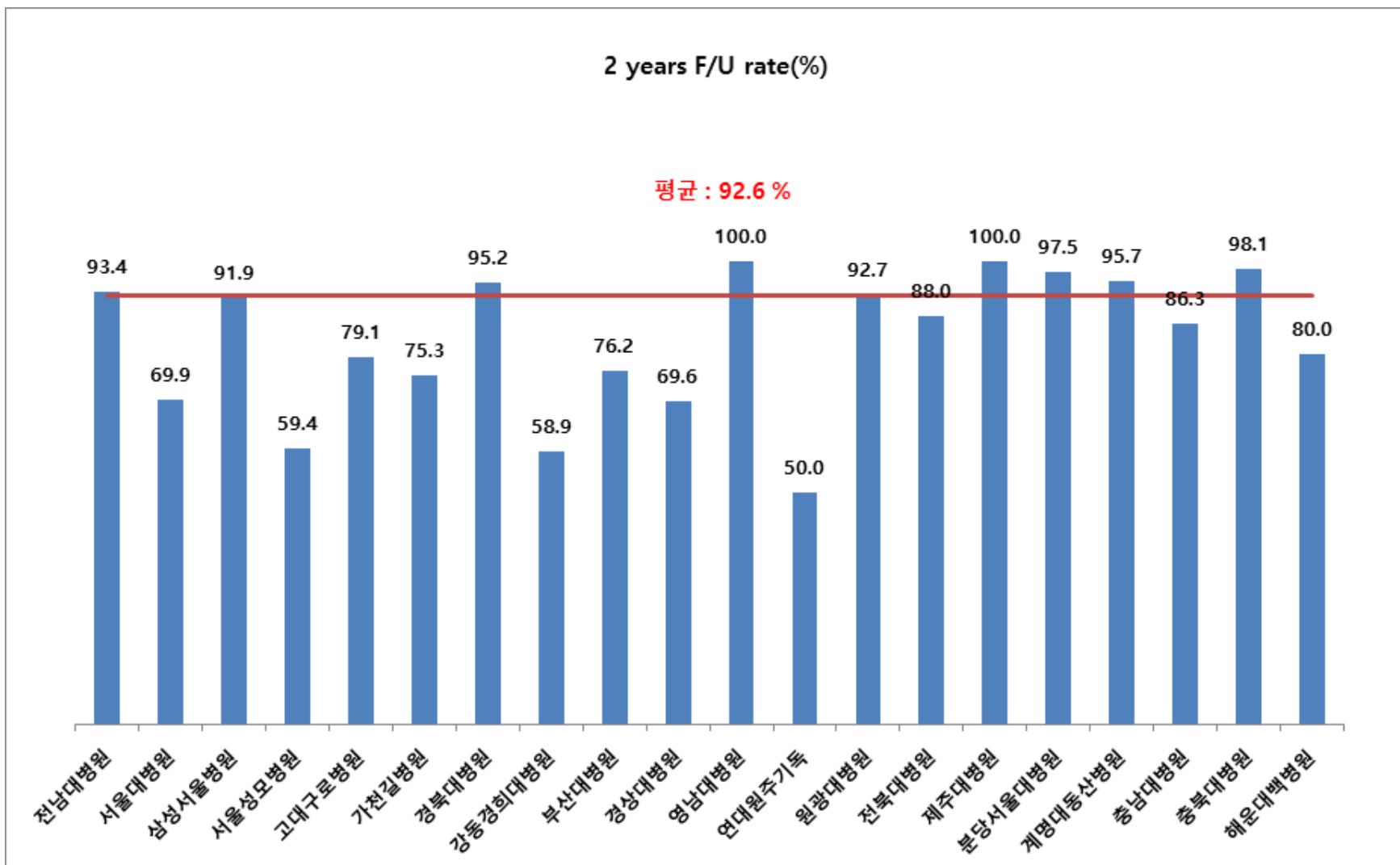
KAMIR-NIH 추적관찰 현황 (36 Months)

KAMIR 연구 발전을 위한 현재까지 노력

1) Data 질 관리 시스템 강화
   query 발송 및 QA 지속, 연구자/CRC 모임
2) 심근경색증 연구회 설립
3) 심근경색증 교과서 발간
4) SCI 논문 작성을 통한 data 질 강화와 연구자들
   사기 진작 및 성취감/자부심 고취 - KAMIR
    Score
5) 일본 및 중국, Sweden, 미국 등과 국제 교류
   활성화 – Korea and Asia AMI guideline 수립