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Backgrounds

Although it has been reported that therapeutic hypothermia (TH) improves neurological outcomes of patients with cardiac arrest , procedures of the hypothermia remain to be established.

Particularly, impact of cardiopulmonary assisted devices (PCPS) to treat the patients with prolonged cardiogenic shock under TH has not been sufficiently studied.

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Objective

To investigate the efficacy of TH including PCPS in patients with return of spontaneous circulation (ROSC) after resuscitation from out-of-hospital or inhospital cardiac arrest.

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Study Populations

281 consecutive patients with ROSC after resuscitation treated with TH in the multicenter registry in Japan (J-Pulse-Hypo registry) for 4 years (2005-2008).

<Inclusion criteria>

- Adult patients who remained unconscious after resuscitation from out-of-hospital or inhospital cardiac arrest.
- Presented the stable hemodynamics with treatment or mechanical supporting system including IABP or PCPS.

<Exclusion criteria>

- pregnancy
- dissection of aorta
- pulmonary thromboembolism
- drug poisoning
- poor daily activity

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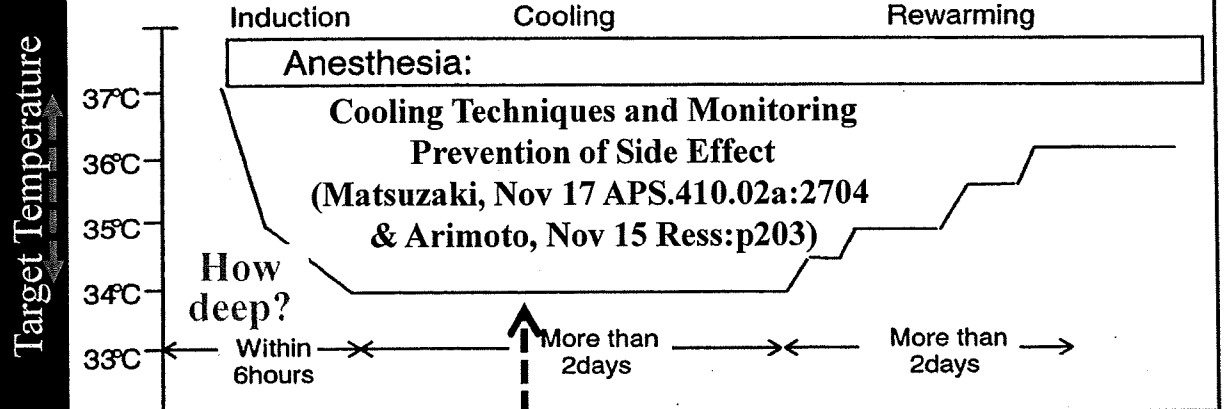
8 Clinical Questions from J-PULSE-Hypo in 2009

Patients characteristic

Initial Patients Evaluation (blood exam.) (Kashiwase, Nov 15 Ress:p202)

Impact of AMI/ACS (Shirai, Nov 14 Ress: p94)

PCPS with Hemodynamic Compromised State (Kokubu, Nov 14 Ress:p95)



Target Core Temperature (Kasaoka, Nov.16 APS.509.01: 3309)

Duration of Cooling (Kagawa, Nov 15 Ress:p200)

Windows of Opportunity for Therapy (Soga, Nov 14 Ress:p199)

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Study Organization

Principle Investigator:

Hiroshi Nonogi

Working members:

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Shinichi Shirai, Shunji Kasaoka, Kazunori Kashiwase,
Yuichi Motomura, Tomotaka Sawano, Mamoru Hase, Takuro Hayashi,
Tatsuya Maruhashi, Yuji Yasuga, Nobuaki Kokubu, Yoritaka Otsuka
Hideaki Arimoto, Kazui Soma, Yasuhiro Kuroda, Hiroshi Hazui

Biostatisticians:

Naohiro Yonemoto, Akiko Kada

Participating institution:

National Cardiovascular Center
Nihon University Surugadai Hospital
Osaka Police Hospital
Saga University Hospital
Hiroshima City Hospital
Takatsuki Red Cross Hospital
Yamaguchi Univrsity Hospital
Kagawa University Hospital
Sapporo Medical University Hospital
Yokohama City University Hospital
Kokura Memorial Hospital
Saiseikai Senri Hospital
Osaka City University Hospital
Kitazato University Hospital
Mishima Emergency critical Center
Sumitomo Hospital

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Methods-1

Selection of cooling procedure was left to each institution.

The patients with hemodynamic compromised state were treated with PCPS (PCPS group).

↓

PCPS group: n=57 (20%)
Non-PCPS group: n=224 (80%)

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Methods-2

We evaluated clinical characteristics of the patients treated with PCPS under TH, and factors to influence on favorable neurologic outcome (FNC) in patients treated with PCPS.

Primary end point of this study was FNC, cerebral performance category (CPC) 1 and 2 rate at 30 days.

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Clinical characteristics of patients treated with TH from J-pulse-hypo registry

	All patients (n = 281)
Age (years)	58± 13
Male	235 (84%)
Initial cardiac rhythm	
Ventricular fibrillation	196 (69%)
Pulseless electrical activity	26 (9%)
Asystole	21 (8%)
Unidentified	37 (13%)
Witnessed cardiac arrest	247 (88%)
Bystander CPR	145 (52%)
ROSC before admission	167 (60%)
Acute coronary syndrome	170 (60%)
Emergency PCI	122 (43%)
PCPS use	57 (20%)
IABP use	108 (38%)
FNC rate at 30 days	123 (44%)

Data are presented as mean value ± SD or number (%) of patients.
CPR, cadiopulmonary resuscitation; IABP, intra aortic balloon pumping;
PCI, percutaneous coronary intervention.

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Clinical characteristics between PCPS group and non-PCPS group

	PCPS group (n = 57)	Non-PCPS group (n = 224)	p value
Age (years)	59± 9	58 ± 14	0.56
Male	52 (91%)	183 (82%)	0.06
Initial cardiac rhythm			0.32
Ventricular fibrillation	35 (61%)	161 (72%)	
Pulseless electrical activity	6 (10%)	20 (9%)	
Asystole	4 (7%)	17 (7%)	
Unidentified	12 (21%)	25 (11%)	
Witnessed cardiac arrest	50 (88%)	197 (88%)	0.96
Bystander CPR	33 (58%)	112 (50%)	0.29
ROSC before admission	13 (23%)	154 (69%)	<0.01
Acute coronary syndrome	41 (72%)	129 (58%)	0.04
Emergency PCI	36 (63%)	86 (38%)	<0.01
IABP use	43 (75%)	65 (29%)	<0.01

Data are presented as mean value ± SD or number (%) of patients.
CPR, cadiopulmonary resuscitation; IABP, intra aortic balloon pumping; PCI, percutaneous coronary intervention.

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Cooling parameters and laboratory value on admission between PCPS group and non-PCPS group

	PCPS group (n = 57)	Non-PCPS group (n = 224)	p value
Maximam BP after ROSC	110± 39	132± 34	<0.01
Initiation cooling to target temperature (min)	124 ± 137	293± 248	<0.01
Cooling duration (hour)	32± 13	35 ± 15	0.24
Arterial blood pH	7.06± 0.19	7.17± 0.18	<0.01
Arterial blood Base Excess(mmol/l)	-16.3± 6.5	-11.5 ± 6.2	<0.01
Blood Sugar(mg/l)	297± 120	256± 85	<0.01
Creatinine(mg/dl)	1.3± 1.3	1.5± 1.8	0.32
Potassium(mEq/dl)	4.2± 1.0	4.1± 0.1	0.43
Hemoglobin(g/dl)	13± 2	14 ± 2	0.07

Data are presented as mean value ± SD or number (%) of patients.

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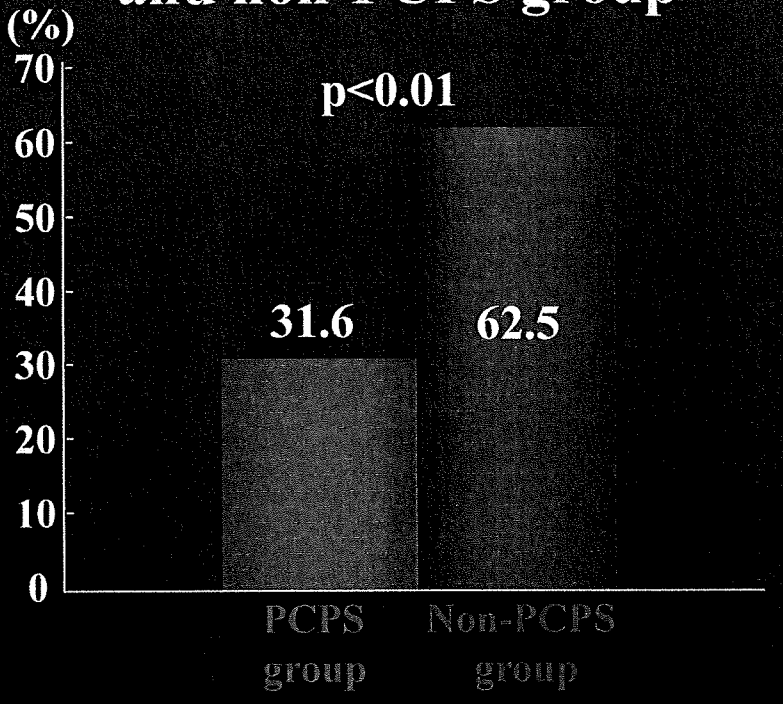
FNC rate at 30 days between PCPS group and non-PCPS group



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Comparison between FNC(CPC1/2) category and Non-FNC(CPC 3/4) category in PCPS group

	FNC group (CPC1/2) (n = 18)	Non-FNC group (CPC3/4) (n = 39)	p value
ROSC before admission	9 (50%)	4 (10%)	<0.01
Acute coronary syndrome	16 (89%)	25 (64%)	0.04
Emergency PCI	11 (61%)	25 (64%)	0.83
IABP use	12 (67%)	31 (79%)	0.30
Maximam BP after ROSC(mmHg)	136± 44	96 ± 28	<0.01
Initiation cooling to target temperature(min)	113 ± 105	145± 185	0.43
Arterial blood pH	7.11± 0.20	7.03 ± 0.20	0.17
Arterial blood Base Excess(mmol/l)	-14.9± 7.8	-17.0 ± 5.7	0.27
Blood Sugar(mg/l)	260± 114	316 ± 119	0.11

Data are presented as mean value ± SD or number (%) of patients

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Summery

To compare with non-PCPS group, PCPS group showed much less FNC rate at 30 days.

There was no significant inter-group difference, in gender, the presence of witness, bystander CPR, initial ECG findings and cooling duration. Although PCPS group showed much hemodynamic compromised state in maximum blood pressure, rate of ROSC before admission, blood sugar, pH and base excess of arterial blood gas at admission, PCPS group was more treated with PCI and IABP than in non-PCPS group.

Patients with FNC in PCPS group showed higher maximum blood pressure, more often coronary artery syndrome and higher rate of ROSC before admission than patients without FNC.

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Conclusions

The patients treated with TH using PCPS, even who were in very ill condition, were reached FNC at 30 days up to 31.6%.

Higher maximum blood pressure, cardiac arrest due to acute coronary syndrome and ROSC before admission were important factors of FNC in PCPS group.

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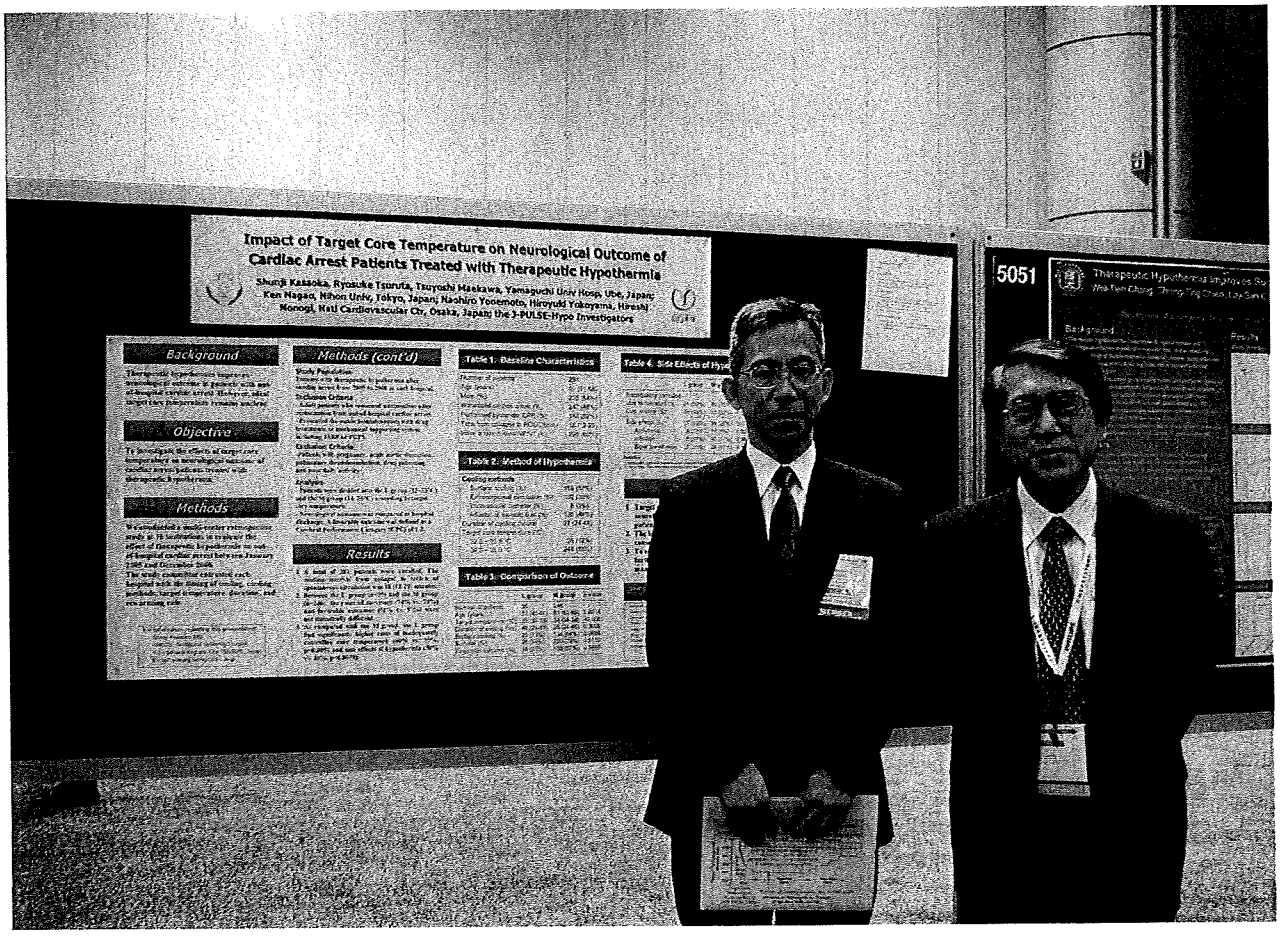

Impact of Target Core Temperature on Neurological Outcome of Cardiac Arrest Patients Treated with Therapeutic Hypothermia
Shunji Kasaoka, Ryosuke Tsuruta, Tsuyoshi Maekawa, Yamaguchi Univ Hosp, Ube, Japan; Ken Nagao, Nihon Univ, Tokyo, Japan; Naohiro Yonemoto, Hiroyuki Yokoyama, Hiroshi Monogi, Nati Cardiovascular Ctr, Osaka, Japan; the J-PULSE-Hypo Investigators
Background
Objective
Methods
Methods (cont'd)
Results
Table 1: Baseline Characteristics
Table 2: Method of Hypothermia
Table 3: Comparison of Outcome
5051

日本循環器学会資料

- J-Hypo
- J-RCPR

J-Hypo

抄録・スライド

Impact of Percutaneous Coronary Intervention and Mild Hypothermia therapy for Patients with out-of-hospital Cardiac Arrest of Acute Coronary Syndrome from Multicenter Hypothermia Registry in Japan.

Shinichi Shirai, M.D.[1], Masakiyo Nobuyoshi, M.D. [1], Kenji Ando, M.D. [1], Yoshimitsu Soga, M.D. [1], Kyohei Yamaji, M.D. [1], Katsuhiro Kondo, M.D. [1], Koyu Sakai, M.D. FACC [1], Takeshi Arita, M.D. [1], Masahiko Goya, M.D. [1], Masashi Iwabuchi, M.D. [1], Hiroyoshi Yokoi, M.D. [1], Hideyuki Nosaka, M.D. [1]Kokura Memorial Hospital
Ken Nagao, Nihon University
Naohiro Yonemoto, Hiroyuki Yokoyama, Hiroshi Nonogi, National Cardiovascular Center and J-PULSE-Hypo Investigators.

Object: The purpose of this study was to evaluate favorable neurological outcomes (cerebral performance category [CPC] 1 and 2) at 30 days for unconscious patients with ROSC after out-of hospital cardiac arrest. Method: Three years (2005-2007) data were available for the 281 patients treated with MH in the multicenter registry (12 institutions) of the J-PULSE-Hypo in Japan. Of those 122 were diagnosed as ACS by coronary angiography after ROSC (age 60+/-11, man 95%) and were treated with MH and PCI. IABP or PCPS were used in shock state. Result: Mean core temperature was 33.9 degrees C and mean cooling duration was 32 hours. Mean time interval from collapse to ROSC was 30min and IABP was used in 61.5% (N=75), and PCPS in 29.5% (N=36). Favorable outcome rate at 30 days was 52.3% (N=64, CPC 1=58), including 59.4% in Vf, 27.4% in PEA and 10.0% in asystole. In multivariate analysis, age, diabetes, and time interval from collapse to ROSC were the independent predictors of 30-day favorable outcome. Conclusion: MH with PCI for patients with ROSC after out-of-hospital cardiac arrest of ACS was effective for improvement of 30 days neurologic outcome even in the case of hemodynamic unstable and in any rhythm.

Key Word
Hypothermia, Acute coronary Syndrome, Percutaneous coronary intervention, Sudden cardiac death

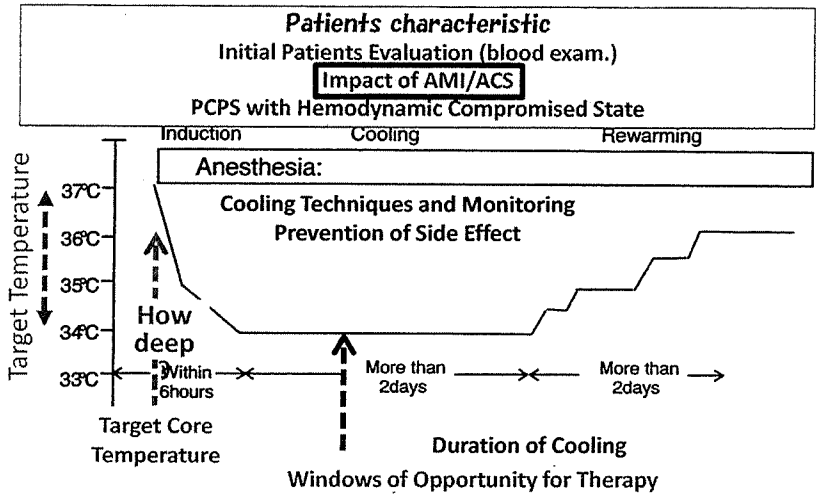
J-PULSE-Hypo registry: Mild Hypothermia Therapy for Acute Coronary Syndrome

Shinichi Shirai [1], M.D., Ken Nagao [2], M.D., Hiroshi Nonogi [3], M.D., Naohiro Yonemoto [3], M.D., Hiroyuki Yokoyama [3], M.D., Mamoru Hase [4], M.D., Yoshio Tahara [5], M.D., Kazunori Kashiwase [6], M.D., Yuji Yasuga [7], M.D., Hideki Arimoto [8], M.D., Soma Kazui [9], M.D., Hirotaka Sawano [10], M.D., Hiroshi Hazui [11], M.D., Takuro Hayashi [12], M.D., Eisuke Kagawa [13], M.D., Yasuhiro Kuroda [14], M.D., Yuichi Motomura [15], M.D., Shunji Kasaoka[16], M.D.

and for the J-PULSE Hypo registry Investigators.

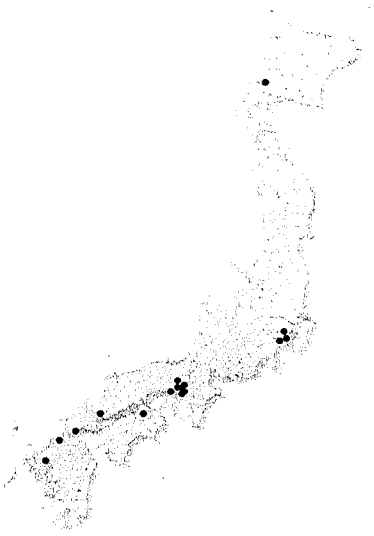
[1] Division of Cardiology, Kokura Memorial Hospital, [2] Division of Cardiology, Nihon University Surugadai Hospital, [3] Division of Cardiology National Cardiovascular Center, [4] Emergency and Critical Care Center, Sapporo City University Hospital, [5] Emergency and Critical Care Center, Yokohama City Hospital, [6] Division of Cardiology, Osaka Police Hospital, [7] Department of Cardiology, Sumitomo hospital, [8] Emergency and Critical Care Center, Osaka City Medical Center, [9] Emergency and Critical Care Center, Kitazato University Hospital, [10] Emergency and Critical Care Center, Saiseikai Senri Hospital, 11 Osaka Mishima Emergency Critical Care Center, [12] Emergency and Critical Care Center Kobe City Medical Center General Hospital, [13] Department of Cardiology, Hiroshima Municipal Hospital, [14] Emergency and Critical Care Center, Kagawa Univeristy Hospital, [15] Emergency and Critical Care Center, Saga University Hospital, [16] Advanced Medical Emergency and Critical Care Center, Yamaguchi University Hospital.

There are many unsolved questions in mild hypothermia therapy



Courtesy of Hiroyuki Yokoyama

J-PULSE Hypo registry



[1] Division of Cardiology, Kokura Memorial Hospital,
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[3] Division of Cardiology National Cardiovascular Center,
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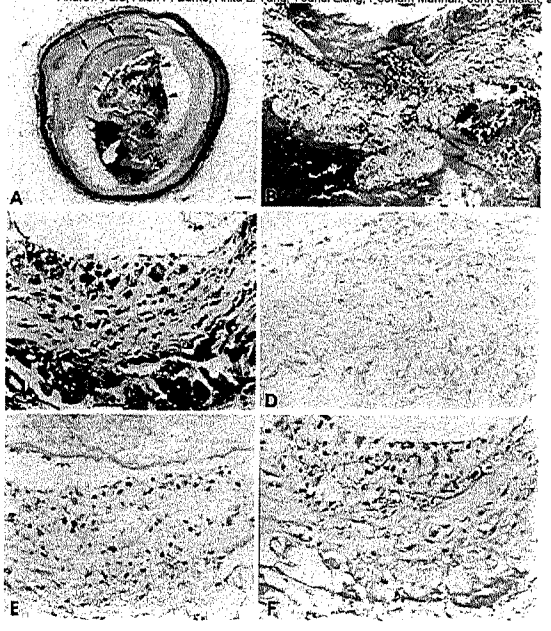
[15] Emergency and Critical Care Center, Saga University Hospital.
[16] Advanced Medical Emergency and Critical Care Center, Yamaguchi University Hospital.

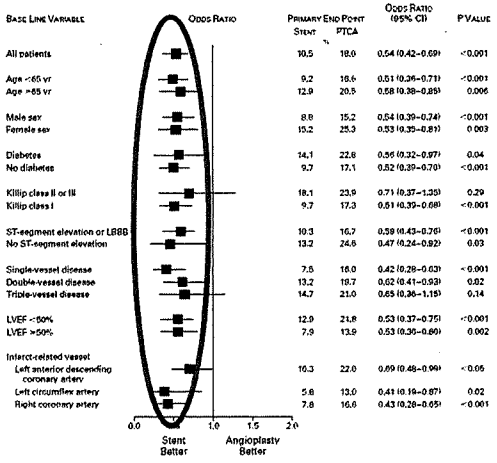
Coronary Plaque Erosion Without Rupture Into a Lipid Core : A Frequent Cause of Coronary Thrombosis in Sudden Coronary Death
Andrew Farb, Allen P. Burke, Anita L. Tang, Youhui Liang, Poonam Mannan, John Smialek, and Renu Virmani. Circulation. 1996;93:1354-1363



Acute thrombosis of the left anterior descending coronary artery was found in this 54-year-old man with witnessed cardiac arrest and death 2.5 hours after the onset of chest pain. A, Concentric plaque with a large hemorrhagic lipid core (L) and focal calcification (arrows) is seen at low power; an occlusive thrombus (arrowheads) is present. B, The platelet-rich thrombus (T) is adjacent to the rupture of the fibrous cap (high power). Immunohistochemical staining demonstrates abundant macrophages (in C), an absence of smooth muscle cells (in D), and scattered T cells (in E) with HLA-DR–positive macrophages and T cells (in F).

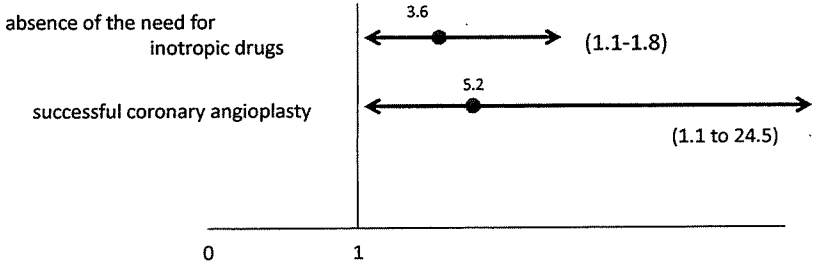
Circulation. 1996;93:1354-1363

COMPARISON OF ANGIOPLASTY WITH STENTING, WITH OR WITHOUT ABCIXIMAB, IN ACUTE MYOCARDIAL INFARCTION



N Engl J Med 2002;346:957-66.

IMMEDIATE CORONARY ANGIOGRAPHY IN SURVIVORS OF OUT-OF-HOSPITAL CARDIAC ARREST



Multivariate logistic-regression analysis revealed that successful angioplasty was an independent predictor of survival (odds ratio, 5.2; 95% C.I, 1.1 to 24.5; P=0.04)

N Engl J Med 1997;336:1629-33.

Acute coronary angiographic findings in survivors of out-of-hospital cardiac arrest

Characteristic	No significant CAD (n = 26)	Significant CAD (n = 46)	P	Total (n = 72)
Electrographic patterns on admission*				
ST-segment elevation	2 (7.7)	21 (45.7)	.0009	23 (31.9)
ST-segment depression	6 (230.)	15 (32.6)	.4	21 (29.2)
Left bundle branch block	4 (15.4)	8 (17.4)	1.0	12 (16.7)
Unspecific ST or T changes	8 (30.7)	4 (8.7)	.02	12 (16.7)
Normal	6 (23)	5 (10.9)	.2	11 (15.3)

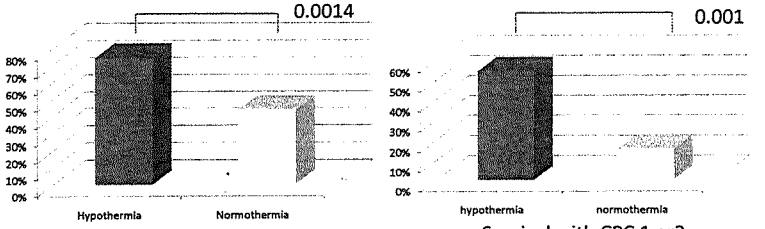
Pattern of ECG change immediately after ROSC.

ECG did not reflect the severity of coronary lesion.: in some cases, no significant change or normal pattern was found in the case of coronary block. Therefore, no ECG change immediately after ROSC could not conclude that the reason of cardiac arrest was due to the coronary ischemia.

⇒Emergency coronary angiography immediately after ROSC should be performed to establish the adequate diagnosis and treatment in order to improve the prognosis

Am Heart J 2009;157:312-8.

Primary percutaneous coronary intervention and mild induced hypothermia in comatose survivors of ventricular fibrillation with ST-elevation acute myocardial infarction



(Conclusion)

Our preliminary experience indicates that primary PCI and MIH are feasible and may be combined safely in comatose survivors of ventricular fibrillation with signs of STEMI. Such a strategy may improve survival with good neurological recovery.

Percutaneous coronary intervention with mild hypothermia therapy improved the neurologic outcomes for comatose survivors after cardiac arrest with ST-elevation myocardial infarction (STEMI).

However, this study was limited to the patients with STEMI and vetricularf ibrillation.

Resuscitation (2007) **74, 227—234**

Introduction

Resuscitated patients from sudden cardiac death (SCD) had a poor prognosis because of not only high mortality but also severe neurologic disability.

Ischemic heart disease was reported to be the main causes of SCD. Myocardial infarction was the main causes of SCD, therefore, emergency revascularization therapy might be the most effective for improving the mortality for the patients with cardiac arrest due to acute ischemic coronary artery disease, even without ST segment elevation in ECG.

For the patients with post cardiac arrest syndrome (PCAS), 'bundled' therapy was recommended, that is ,early coronary revascularization, temperature control was mandatory treatment strategy. Percutaneous coronary intervention (PCI) with mild hypothermia therapy (MHT) was effective for the cardiac arrest patients with ST elevation MI.

Intra-aortic balloon pumping (IABP) or percutaneous cardio-pulmonary support (PCPS) were used for the patients with compromised hemodynamic state at the discretion of the operator.

Cerebral performance category (CPC) with levels 1 (Normal mental performance), 2 (moderate disability), 3 (severe disability), 4 (vegetative state) was used at 30days. Favorable outcome was defined in CPC 1 or 2.

Methods

The exclusion of this study was 1) less than 15years old, 2) pregnant woman, 3) aortic dissection with or without cardiac tamponade 4) cerebral hemorrhage or subarachnoid hemorrhage, 5) known terminal disease.

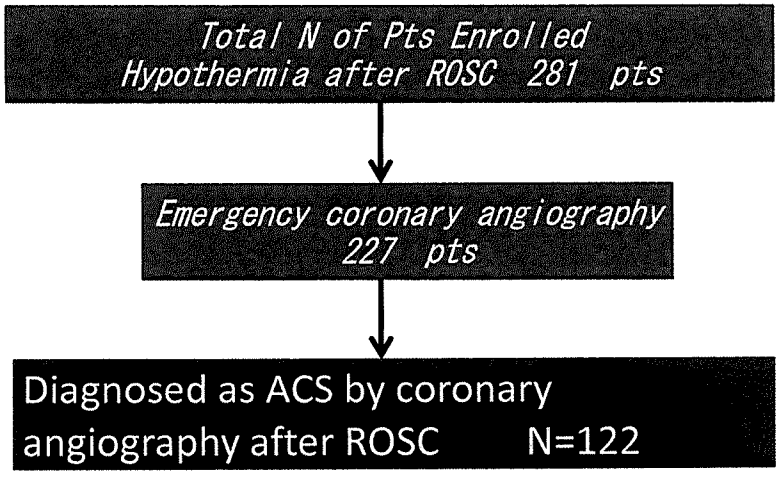
Non-shockable rhythm such as asystole or pulseless electrical activity (PEA) and complicating cardiogenic shock were enrolled in this study. All of suspicious patients of acute coronary ischemic events or without clear etiology of arrest were transferred to catheter laboratory immediately after ROSC even without ST segment elevation in ECG and with compromised hemodynamic. If the thrombotic stenosis or occlusion was found in the culprit coronary artery, percutaneous coronary intervention was attempted, followed by stent implantation if needed.

End-point of this analysis

Primary endpoint of this study was to evaluate favorable neurological outcomes (cerebral performance category [CPC] 1 and 2) at 30 days for unconscious patients with ROSC after out-of hospital cardiac arrest.

Secondary Endpoint of this study was to predict the 30 days neurologic outcomes.

Results



Baseline Characteristics (1)

Man (%)	95.1
Age	60+/−11
Bystander CPR (%)	54.1
Shockable Rhythm (%)	82.8
Mean no flow time (min)	3.0
OMI (%)	2.5
History of Heart Failure (%)	4.9
Stroke (%)	5.7
Hypertension (%)	35.0
Diabetes (%)	15.6
Mean GCS	3.8
ROSC before ER (%)	55.7
Hb (mean g/dl)	14.0+/−1.6
Serum K (mEq/l)	4.1+/−0.9
Cre>1.5 (%)	12.3

Baseline Characterstics (2)

mean B.E	−12.9
mean CA-ROSC	30 +/− 24
Cold saline use (%)	52.7
Surface cooling (%)	56.0
Over cooling during Tx (%)	28.6
cooling start to target temperature (min)	239.8+/− 211.4
Mean cooling time (hrs)	32.6+/−14.0
Rewarming	
24 hours>= (%)	24.6
24-48 hours (%)	30.3
48-72 hours (%)	33.6
72 hours<	9.0
Multivessel disease (%)	41.0
Anterior MI (%)	63.1
Left main culprit (%)	4.0
IABP use (%)	61.5
PCPS use (%)	29.5

Clinical Outcomes

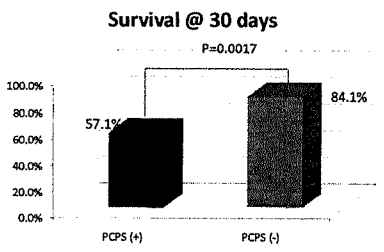
Alive @ 30days 77.0%

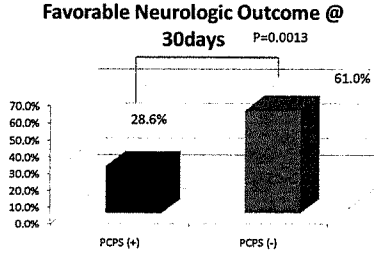
Favorable Neurologic Outcome @ 30days 52.0%

Including cardiogenic shock required PCPS

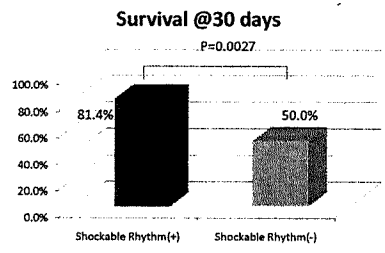
Clinical Outcomes (2)

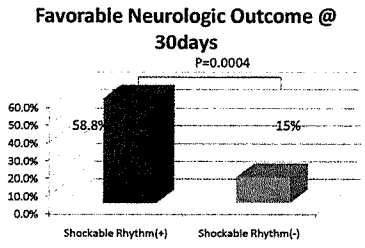
PCPS use

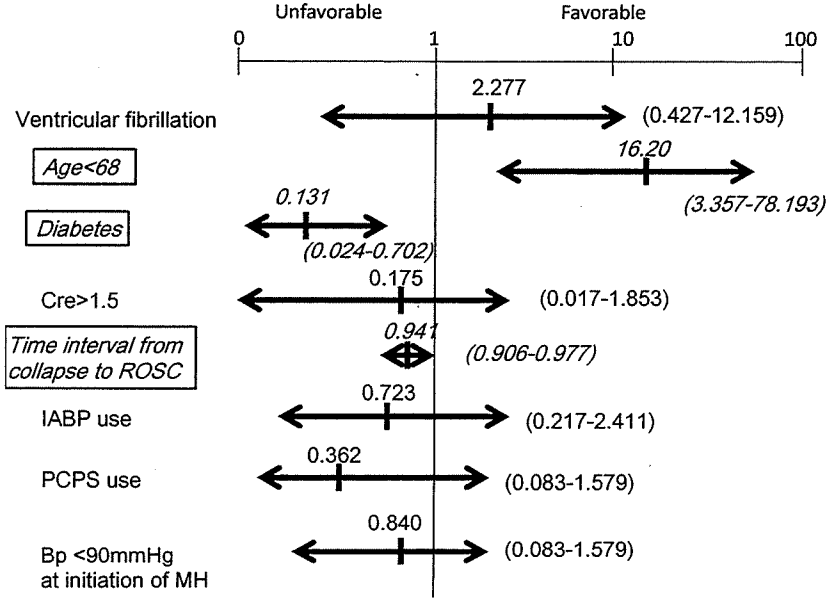




Shockable Rhythm

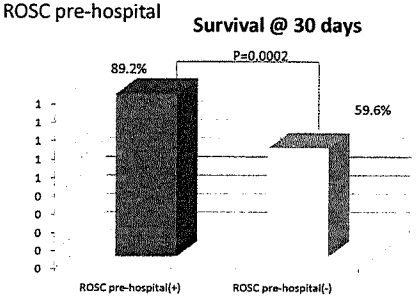


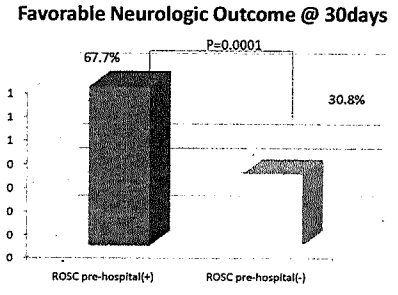




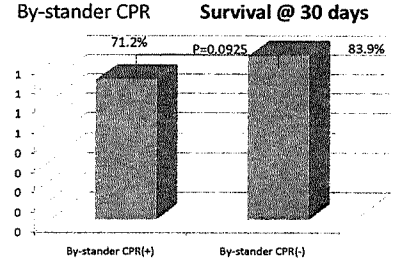
Clinical Outcomes (2)

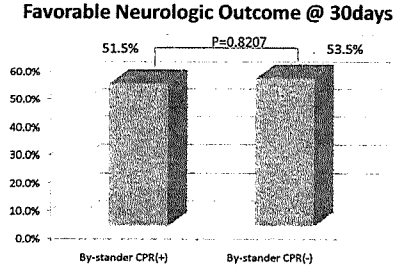
ROSC pre-hospital





By-stander CPR





Summary

1) Mild Hypothermia therapy with coronary intervention for ACS patients complicated by cardiac arrest was safe and effective for improving mortality and neurological outcomes compared with previous reports even in this high-risk cohorts.
2) Very high-risk patients with profound shock requiring PCPS was high-mortality and less favorable-outcome, however, for almost one-third of the shock patients, MHT with PCI was effective to achieve favorable outcome.
3) Early ROSC was one of the contributor for intact neurologic survival, therefore, early establishment of circulation might be effective by using extracorporeal circulation assist device.

Conclusions

MH with PCI for patients with ROSC after out-of hospital cardiac arrest of ACS was effective for improvement of 30 days neurologic outcome even in the case of hemodynamic unstable and in any rhythm.

タイトル:

Early Induction of Hypothermia using intravenous Ice-cold Fluids Improves Neurological Outcome (J-PLUSE-Hypo registry) and Its Optimal Monitoring of Core Temperature

抄録用図表の有無:なし

抄録本文:

Background Intravenous ice-cold fluids alone cannot be used to maintain hypothermia, but this cooling method can be used to institute easily and inexpensively. **Methods** The J-PLUSE-Hypo was conducted as a multi-center hypothermia study. We added a study of optimal monitoring places of core temperature during intravenous 2000mL of normal saline at 4° C using high-pressure infusion bags to the J-PLUSE-Hypo. **Results** In the J-PULSE-Hypo, 165 survivors from out-of-hospital VF cardiac arrest were treated with mild hypothermia (34° C for 1 to 3 days). Of those, 74 were treated with intravenous ice-cold fluids (IV group), and 91 induced hypothermia without ice-cold fluids (no-IV group). The two groups had similar cooling-to-34° C interval (median; 168 min vs. 195 min, p=0.68), but a significant difference was seen in a favorable neurological outcome (72% vs. 52%, p=0.009). In our additional study, a mean administrated interval of ice-cold fluids was 14 minutes. Significant differences were seen in mean core temperatures among 3 places before and after initiation of ice-cold fluids (before ice-cold fluids; 34.4±2.3° C in esophagus vs. 37.0±1.2° C in rectum vs. 36.5±1.2° C in bladder, p<0.001: After 30 minutes; 32.5±2.5° C in esophagus vs. 34.8±1.7° C in rectum vs. 35.0±1.5° C in bladder, p<0.001). **Conclusions** Early induction of hypothermia using intravenous ice-cold fluids was associated with better neurological outcomes. During ice-cold fluids, esophagus temperature was not suitable as a core temperature monitoring.

Efficacy of Early Induction of Hypothermia Using Intravenous Ice-cold Fluids (J-PLUSE-Hypo registry) and Its Optimal Monitoring Places of Core Temperature

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Kimio Kikushima, Kazuhiro Watanabe, Yoshiteru Tominaga, Katsushige Tada, Mitsuru Ishii, Nobutaka Chiba, Kei Nishikawa, Taketomo Soga, Yutaka Tateda, Harumi Ikeda and Tsukasa Yagi/ Surugadai Nihon University Hospital

Introduction

動物実験ならびに臨床試験において、心停止蘇生後早期に脳低体温療法を導入することが、神経学的予後に寄与することが報告されてきた。

院外VF心停止蘇生後患者には、より早期に32～34℃の低体温を12～24時間持続することが提案されているが、脳低体温療法の目標温度、導入方法、維持方法、復温方法などについては未だ確立されていない。

脳低体温療法の導入方法としては、氷嚢やクーリングブランケットの使用、胃洗浄、冷却水輸液、冷却ガス吸入などが試されてきた。なかでも冷却水輸液は低体温の維持には不向きではあるが簡便、安価であり、その有用性が報告されてきた。

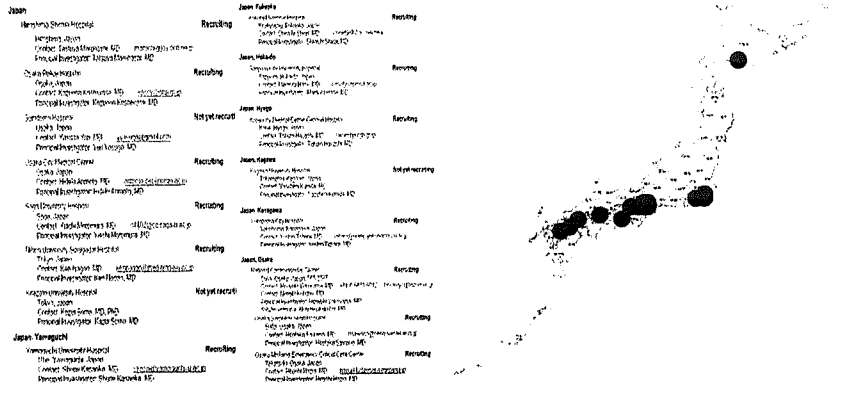
Resuscitation 2003; 56: 9-13.
Circulation 2005; 112: 715-719
Circulation 2007; 115: 3064-3070 . etc

ClinicalTrials.gov
A service of the U.S. National Institutes of Health

Multicenter Registry Study With Therapeutic Hypothermia After Cardiac Arrest in Japan (J-PULSE-HYPO)

This study is currently recruiting participants.
Verified by National Cardiovascular Center, Japan, May 2009

First Received: May 12, 2009 No Changes Posted



J-PULSE hypothermia registry

ClinicalTrials.gov
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Multicenter Registry Study With Therapeutic Hypothermia After Cardiac Arrest in Japan (J-PULSE-HYPO)

This study is currently recruiting participants.
Verified by National Cardiovascular Center, Japan, May 2009

Study Population

Patients with therapeutic hypothermia after cardiac arrest from 2005 to 2009 in each hospitals

Criteria

Inclusion Criteria:

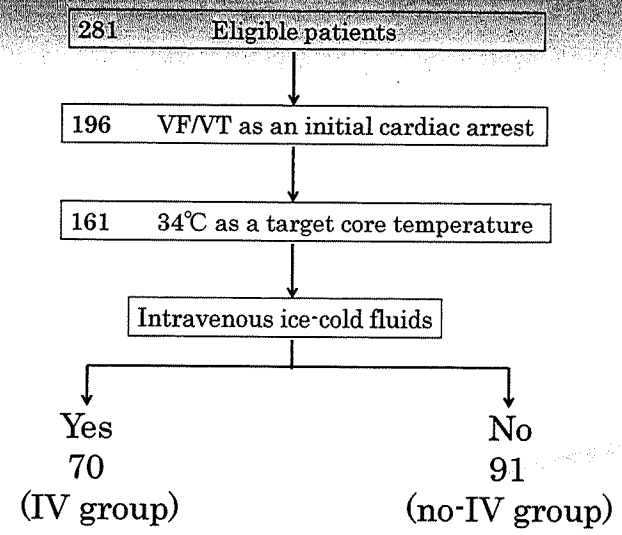
- Adult patients who remained unconscious after resuscitation from out-of-hospital or inhospital cardiac arrest
- Presented the stable hemodynamics with drug treatments or mechanical supporting system including IABP or PCPS

Exclusion Criteria:

- Patients with:
  - pregnancy
  - acute aortic dissection
  - pulmonary thromboembolism
  - drug poisoning
  - poor daily activity

J-PULSE hypothermia registry

Patients



Baseline Characteristic of Participants

	IV Group (n=70)	no-IV Group (n=91)	p*
Age (mean±SD, years)	57±12	60±13	0.11
Men	65 (93%)	75 (82%)	0.09
Witnessed cardiac arrest	60 (86%)	82 (90%)	0.54
Bystander CPR	31 (44%)	42 (46%)	0.93
From collapse to hospital arrival (median, min)	24	23	0.23
From collapse to ROSC+ (median, min)	21	25	0.09
Use of IABP after ROSC	25 (36%)	28 (31%)	0.51
Use of PCPS after ROSC	9 (13%)	21 (23%)	0.10
Causes of cardiac arrest			
Acute coronary syndrome	51 (73%)	59 (65%)	
Arrhythmia	7 (10%)	16 (17%)	
Cardiomyopathy	7 (10%)	6 (7%)	
Unknown	5 (7%)	10 (11%)	0.37

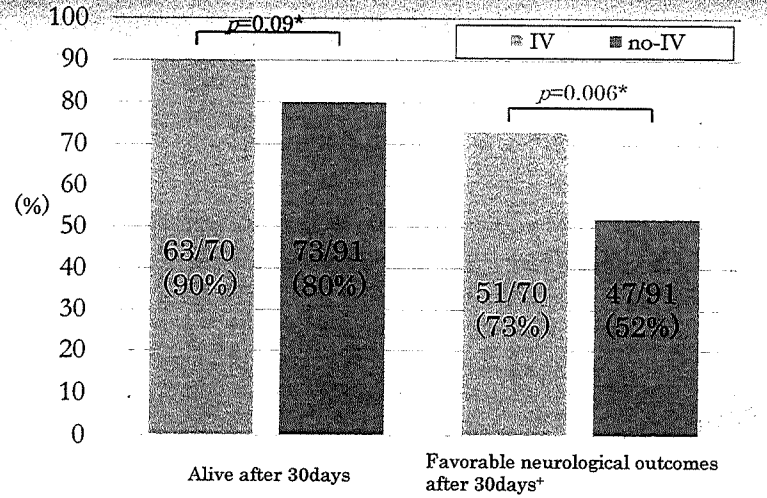
*Based on t, X^2 or log-rank test on appropriate, + Return of Spontaneous Circulation

Outcomes

	IV Group (n=70)	no-IV Group (n=91)	p*
From collapse to induction of hypothermia (median; min)	49	170	<0.001
From collapse to 34℃ (median; min)	220	360	0.06
From cooling to 34℃ (median; min)	169	195	0.61
Technique of maintenance of hypothermia (*n*)			
Blood cooling	38(54%)	33 (36%)	
Surface cooling	31(44%)	56 (62%)	
Combined cooling	1 (1%)	2 (2%)	0.07
Time duration of maintenance of hypothermia (*n*)			
24 hours	26 (37%)	40 (44%)	
25-48 hours	18 (26%)	32 (35%)	
49-72 hours	22 (31%)	15 (16%)	0.07
Missing	4 (6%)	4 (5%)	

*Based on t, log-rank or X^2 test on appropriate

Primary and Secondary Endpoint in This Study



* X^2 test , +CPC(Cerebral Performance Category) 1or 2