

Geriatric Experience Following Cardiac Arrest At Six Interventional Cardiology Centers In The United States 2007-2011

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The International Cardiac Arrest Registry (INTCAR) – CARDIOLOGY Research Group*

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Introduction

- It is unknown if aggressive post-resuscitation care, such as percutaneous coronary intervention (PCI) and therapeutic hypothermia (TH), benefit cardiac arrest (CA) survivors over 75 years old. [1]
- Age is not considered a contraindication to PCI or TH at many centers, where anecdotal experiences suggest some elderly patients do well. Nonetheless, some healthcare systems limit access to these treatments based on age alone.
- We evaluated the clinical experiences and outcomes of patients aged > 75 years at six regional PCI centers in the United States, and compared them to those of younger patients treated under the same protocols.

Methods

- Six US Interventional Cardiology centers comprising the INTCAR-Cardiology research group retrospectively and prospectively evaluated 754 sequential cardiac arrest survivors admitted between 2007-2011. Data were de-identified and uploaded into a secure, web-based registry (INTCAR). [2]
- Demographics, hospital course, adverse events, treatments, and outcomes of 129 cardiac arrest survivors aged > 75 years were compared to 625 similar patients aged 18-75.
- Data entry was locally IRB-approved at all centers, and statistical analysis was performed at Maine Medical Center.

Results

Demographics & Clinical factors	Age 18-75 N=625	Age >75 N=129	P
Male gender	68.2% (426/625)	67.4% (87/129)	0.9
Outside Transfer	51.8% (316/610)	43.0% (55/128)	0.07
Comorbid conditions	2.0 +/- 1.6	3.0 +/- 1.6	<0.0001
Collapse to ROSC (minutes)	24.1 +/- 17.1	21.2 +/- 13.5	0.1
Rhythm VT/VF	60.6% (366/604)	56.1% (69/123)	0.3
Witnessed	82.1% (508/619)	83.6% (107/128)	0.7
Bystander CPR	52.8% (325/615)	51.2% (64/125)	0.7
Admit GCS (median)	3 (IQR 3-3)	3 (IQR 3-3.25)	<0.0001
STEMI	27.5% (170/618)	21.9% (28/128)	0.19
Shock on presentation	32.7% (203/620)	27.8% (35/126)	0.28
Normal or mild LV dysfunction	39.0% (199/510)	25.4% (29/114)	0.007
Moderate LV dysfunction	30.2% (154/510)	40.4% (46/114)	0.035
Severe LV dysfunction	30.8% (157/510)	34.2% (39/114)	0.48

THERAPEUTICS	Age 18-75 n=625	Age >75 n=129	P
Therapeutic Hypothermia	97.6% (610/625)	97.7% (126/129)	0.96
Urgent cardiac catheterization	48.8% (305/625)	44.2% (57/129)	0.6
Urgent PCI	24.5% (153/625)	24% (31/129)	0.4
Minutes arrest to initiation of hypothermia	179.0 (+142.7)	160.6 (+128.8)	0.2
Minutes arrest to target temperature	381.4 (+205.2)	337.2 (+180.8)	0.031
MRI	17.8% (111/622)	8.7% (11/127)	0.011
Continuous EEG	29.9% (183/612)	32.5% (41/126)	0.56
AICD placed during hospitalization	7.8% (47/602)	7.8% (10/128)	0.998
IABP	16.8% (105/624)	14.7% (19/129)	0.56
TTVP	10.0% (62/622)	7.8% (10/128)	0.45

ADVERSE EVENTS	Age 18-75	Age >75	P
ANY	83.0% (519/625)	87.6% (113/129)	0.2
--Infection (any)	35.2% (220/625)	39.5% (51/129)	0.3
--Pneumonia	25.6% (160/625)	31.0% (40/129)	0.21
--Bleeding	10.1% (63/625)	10.1% (13/129)	0.999
--Seizures	26.1% (163/625)	27.9% (36/129)	0.67
--Electrolyte disturbance	60.5% (378/625)	60.5% (78/129)	0.997
--Arrhythmia* <small>*hemodynamically significant</small>	37.1% (232/625)	43.4% (56/129)	0.18
--Hyperglycemia	59.0% (369/625)	70.5% (91/129)	0.015
--Fever	35.2% (216/614)	25.2% (32/127)	0.03

OUTCOMES	Age 18-75 n=625	Age >75 n=129	P
DNR order	48.2% (300/623)	65.9% (85/129)	0.0003
WD Life Support	47.5% (297/625)	61.2% (79/129)	0.005
Survival to DC	46% (282/613)	33% (42/126)	0.009
6-month CPC 1-2	40.6% (242/597)	26.4% (33/125)	0.002

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Discussion

- Cardiac arrest survivors over 75 years underwent urgent coronary angiography, PCI, and therapeutic hypothermia at rates similar to younger patients.
- Older patients experienced similar adverse events as younger patients, but had more hyperglycemia and less post-cooling fever.
- Older patients were more likely to have DNR orders placed and more likely to have life support withdrawn.
- Short and intermediate term outcomes were worse among elderly than younger patients, yet despite a cohort that included 43.9% PEA or asystole, 26.4% patients over 75 years of age had good neurological outcome at 6 months.
- Exclusion of elderly patients from aggressive post-resuscitation care does not appear warranted on the basis of age alone.

References

1. The Hypothermia after Cardiac Arrest Study Group. Mild therapeutic hypothermia to improve the neurologic outcome after cardiac arrest. *N Engl J Med.* 2002; 346:549
2. <http://www.intcar.org>

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