RESULTS OF TARGETED TEMPERATURE MANAGEMENT IN COMA PATIENTS AFTER CARDIAC ARREST IN VIETNAM

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Overview

Targeted temperature management (TTM) has shown as an effective treatment for post cardiac arrest syndrome.

The application of TTM in the poor resource countries faces many challenges due to the late arrival and low successful rate of resuscitation.

We have carried out an observational study to look in to the effectiveness, complications as well as the implementation of TTM in Vietnam.

Patients

Cardiac arrest patients with CPR, ROSC (+), response time <15 minutes, CPR < 60 minutes

Coma, intubation, mechanically ventilated

Duration from ROSC to starting hypothermia < 6 hours

Mean arterial blood pressure > 65mmHg (with low doses or without inotropes/vasoactive drug)

Age ≥ 18.

Baseline characteristics

Clinical features	VN (n=76)	Storm C[1] (n=52)	HACA[2] (n=137)	Nielsen[3] (n=473)
Age (year)	45.1 (18 – 87)	62.6	59	64
Male Sex (%)	85.5%	82.7%	77%	83%
Witnessed CA	90.8%	30.8%	98%	89%
Initial rhythms on presentation - VF/pulseless VT	43.4%	65.4%	97%	79%

[1]Storm, C., et al., Mild therapeutic hypothermia shortens intensive care unit stay of survivors after out-of-hospital cardiac arrest compared to historical controls. Crit Care, 2008. 12(3): p. R78

[2]Hypothermia after Cardiac Arrest Study, G., Mild therapeutic hypothermia to improve the neurologic outcome after cardiac arrest. N Engl J Med, 2002. 346(8): p. 549-56

[3]Nielsen, N., et al., Targeted temperature management at 33 degrees C versus 36 degrees C after cardiac arrest. N Engl J Med, 2013. 369(23): p. 2197-206

Baseline characteristics

Clinical features	VN (n=76)	Bernard[1]	HACA[2]	Nielsen[3]
Respond Time (minutes) (median)	**7.8 (0 – 15)**	2.1		1 (0 - 2)
Time to ROSC (minutes) (median)	**29 (5 - 75)**	26.5	21 (15 - 28)	25
Time to hypothermia (minute) (median)	**255 (60 - 360)**		105 (61 - 192)	
Hypotension after ROSC (%)	**88,2%**		55%	15%
GCS (median)	**5 (3 - 10)**			3

[1]Bernard, S.A., et al., Treatment of comatose survivors of out-of-hospital cardiac arrest with induced hypothermia. N Engl J Med, 2002. 346(8): p. 557-63

[2]Hypothermia after Cardiac Arrest Study, G., Mild therapeutic hypothermia to improve the neurologic outcome after cardiac arrest. N Engl J Med, 2002. 346(8): p. 549-56

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Targeted temperature

Parameters	VN (n=76)	Bernard[1]	HACA[2]	Nielsen[3]
Temperature at present (°C)	**37.4 ± 0.97 (36 – 40.2)**	35	35.8	35.2±1.3
Targeted temperature 33°C	**100%**		86.1	
Time to achieve target 33°C (h)	**4.7 ± 2,9 (1 - 15)**	2.5	6.25	
Temp to have shivering (°C)	**35.6 ± 1.1 (33.9 – 37.4)**			
Time for rewarming to 37°C (h)	**20.7 ± 5.6**		8 (8 – 12)	> 8

[1]Bernard, S.A., et al., Treatment of comatose survivors of out-of-hospital cardiac arrest with induced hypothermia. N Engl J Med, 2002. 346(8): p. 557-63
[2]Hypothermia after Cardiac Arrest Study, G., Mild therapeutic hypothermia to improve the neurologic outcome after cardiac arrest. N Engl J Med, 2002. 346(8): p. 549-56
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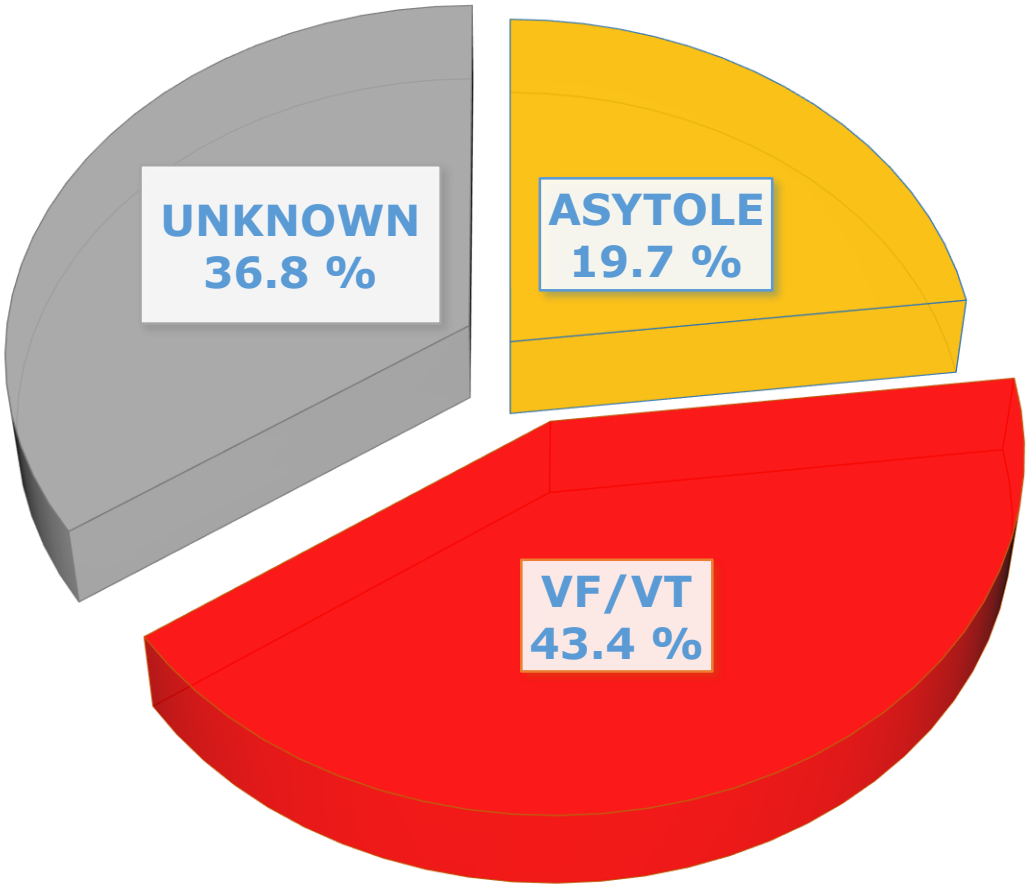
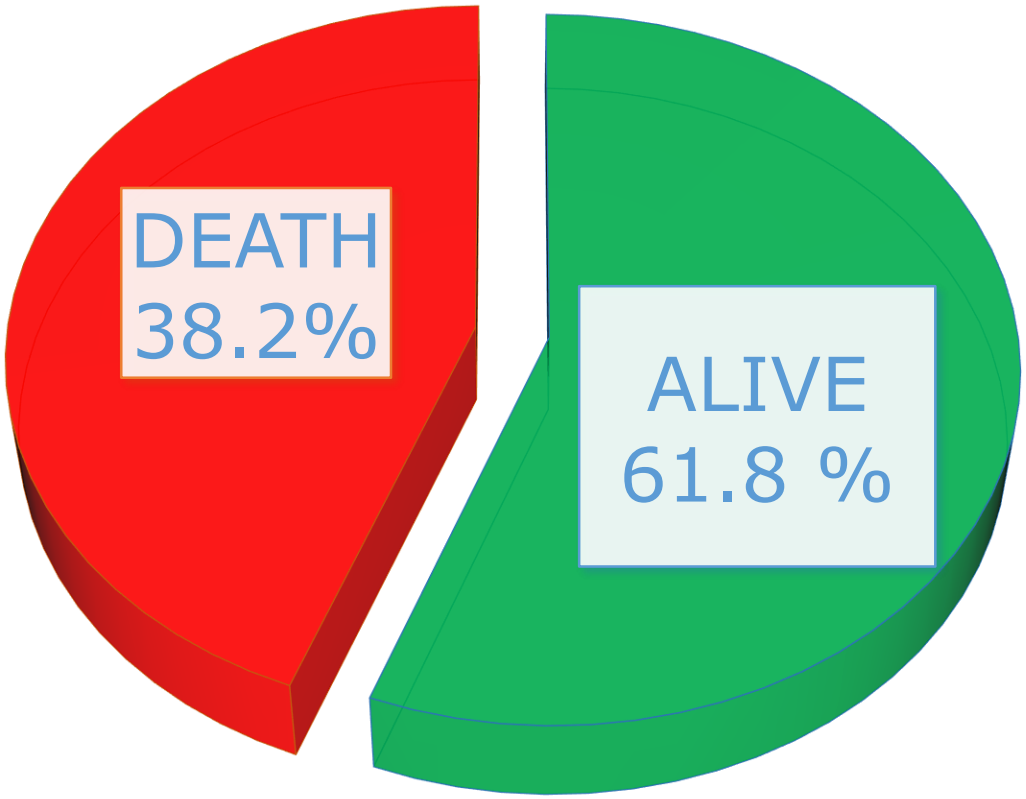
Initial rhythms



Outcomes: survival at discharge (n=76)



Outcomes: neurological

Outcomes	At discharge	Day 30	Day 90	Day 180	HACA[1] (n=137)	Nielsen[2] (n=473)
CPC 1	25	31	32	32		
CPC 2	6	1	2	2		
CPC 1+2	**31 (40.8%)**	**32 (42.1%)**	**34 (44.7%)**	**34 (44.7%)**	**55%**	**46%**
CPC 3	3	4	5	5		
CPC 4	13	5	2	2		
CPC 5	29	6	0	0		
Total	**76**	**47**	**41**	**41**		

[1]Hypothermia after Cardiac Arrest Study, G., Mild therapeutic hypothermia to improve the neurologic outcome after cardiac arrest. N Engl J Med, 2002. 346(8): p. 549-56
[2]Nielsen, N., et al., Targeted temperature management at 33 degrees C versus 36 degrees C after cardiac arrest. N Engl J Med, 2013. 369(23): p. 2197-206

Complications

Pneumonia 54%
Acute kidney injury 52.8 %
Arrhythmia: 1 case of couple ventricle premature, controlled with lidocaine. 2 cases of sinusoidal bradycardia (<40).
Pressure ulcer 6 cases (leg, pelvic)
There was no coagulation disorder.

Conclusions

In the selected cases of post cardiac arrest in Vietnam, TTM is feasible to carry out and it has shown an effective treatment with manageable complications.

The result of this study encourage us to implement TTM for the prehospital settings.

THANK YOU FOR YOUR ATTENTION