Predictors of survival for Utstein-comparator group patients following out-of-hospital cardiac arrest: a multi-centre observational study

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Improving patient outcomes

Introduction

Patients with the greatest survival following out-of-hospital cardiac arrest (OHCA) are those with a witnessed arrest presenting in a shockable rhythm – the Utstein-comparator group (UCG). Data show that survival to hospital discharge for these patients has stagnated in England over the last decade (25-30%) and remains substantially lower than several other countries with developed prehospital systems (up to 56%). There remains a paucity of data on predictors of survival in this group. This study reports the predictors of survival to discharge in a large cohort of resuscitated Utstein-comparator group patients.

Methods

This retrospective observational study was conducted in the East of England, UK. A consecutive sample of adult (≥16 years old) UCG patients (witnessed collapse, initial shockable rhythm) with presumed cardiac aetiology, in whom resuscitation was attempted by the East of England Ambulance Service NHS Trust and was successful (return of spontaneous circulation at hospital arrival) were included; 2018-2022 inclusive.

Results

During the study period 18,276 OHCA patients were identified. After exclusions, 1151 patients were included in the final analysis. N = 647 (56.2%) patients survived to discharge.

After adjusting for confounders in a multivariable model; increasing age, increased time to ROSC, and adrenaline administration were negatively associated with survival.

OHCA in a public location, an increasing number of defibrillator shocks, and attendance of a helicopter emergency medical team were positively associated with survival.

Conclusion

These data identify predictors of survival in a large regional cohort of UCG patients following OHCA. Understanding these predictors will facilitate clinical innovation, system improvement, and enable rapid targeted dispatch to patients with the greatest opportunity of survival.

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Positive association with survival

Results displayed as Odds Ratio (95% Confidence Interval)

HEMS attendance

1.37 *(1.00 - 1.92)*

Public location

2.11 *(1.55 - 2.90)*

Number of shocks

0	**0.86** *(0.42 - 1.76)*
1	(ref)
2	**0.74** *(0.45 - 1.19)*
3 - 4	**1.19** *(0.74 - 1.91)*
5 - 7	**2.18** *(1.35 - 3.56)*
≥8	**2.34** *(1.28 - 4.29)*

Negative association with survival

Results displayed as Odds Ratio (95% Confidence Interval)

Age (per year)

0.94 *(0.93 - 0.96)*

Adrenaline

0.13 *(0.09 - 0.19)*

Time to ROSC

<15'	(ref)
15 - 24'	**0.37** *(0.23 - 0.61)*
25 - 40'	**0.24** *(0.14 - 0.41)*
>40'	**0.09** *(0.05 - 0.16)*
Not recorded	**0.35** *(0.19 - 0.63)*