



Traumatic Cardiac Arrest

A retrospective analysis of outcomes in patients transported to a major trauma centre

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INTRODUCTION

Trauma remains the greatest cause of mortality in patients under 40 years¹. Recent studies on traumatic cardiac arrest (TCA) survival rates have challenged the belief that attempted resuscitation in this patient group is futile, citing survival rates to 30 days of up to 7.5%.² Air Ambulance Kent, Surrey & Sussex (AAKSS) operate 2 Paramedic/Physician teams that provides care to the most critically injured patients by means of helicopter (primarily) or rapid response car, with transfer to a Major Trauma Centre (MTC). The frequency of TCA within AAKSS is high, equating to roughly 10 cases a month³. It is therefore important to ascertain the outcomes of these patients in order to set a benchmark for improvement, as well as contribute further evidence to a changing mindset.

METHODS

This retrospective database analysis reviewed the data of all TCA patients attended by AAKSS and transported to Royal Sussex County Hospital (RSCH) from 2015 - 2018.

Inclusion criteria

- All true TCA attended by AAKSS
- All gender

Exclusion criteria

- Age <18
- Patients pronounced life extinct at the scene
- Patients not transferred to RSCH

Primary aims

- To identify the overall number of TCA patients transferred to RSCH by AAKSS
- To identify the outcomes of TCA patients transferred to RSCH

RESULTS AND DISCUSSION

Over a 4 year period, 13 patients who had pre-hospital TCA and subsequent ROSC were identified. One patient (7.7%) survived until hospital discharge. This figure reinforces previous studies into TCA survival. Within this cohort of patients, the majority were male (Table 1) with an overall median age of 50 years. This typical demographic of young, often healthy patients with few comorbidities highlights the importance that every effort should be made in the pre hospital and ED environment to resuscitate this patient cohort.

Mode of injury causing TCA is hugely important regarding initial management and outcomes. Blunt trauma was the predominant mode of injury (92%). However with increasing incidences of penetrating trauma nationally, it is likely that AAKSS and RSCH will see greater numbers of penetrating trauma causing TCA. This may subsequently impact on TCA outcomes, as TCA secondary to penetrating trauma and early intervention having a greater chance of survival.⁴

Once in the ED, over half of patients underwent CT imaging (Table 1). Of these patients 6 (85%) had a severe traumatic brain injury (TBI), with 5 (83%) surviving a median of 1 day (Range 1 - 4) in Intensive Care. Interestingly, the single survivor to discharge had a normal CT head. In general patients with severe TBI and TCA will likely have poor outcomes as evidenced here, however a case by case approach should always be used.

FIGURE 1

Male sex/n (5)	7 (54%)
Median age/years (range)	50 (18-85)
Imaging on arrival/n (%)	7 (53%)
Survival to discharge/n (%)	1 (7.7%)

FIGURE 2 : TCA Mechanism of Injury

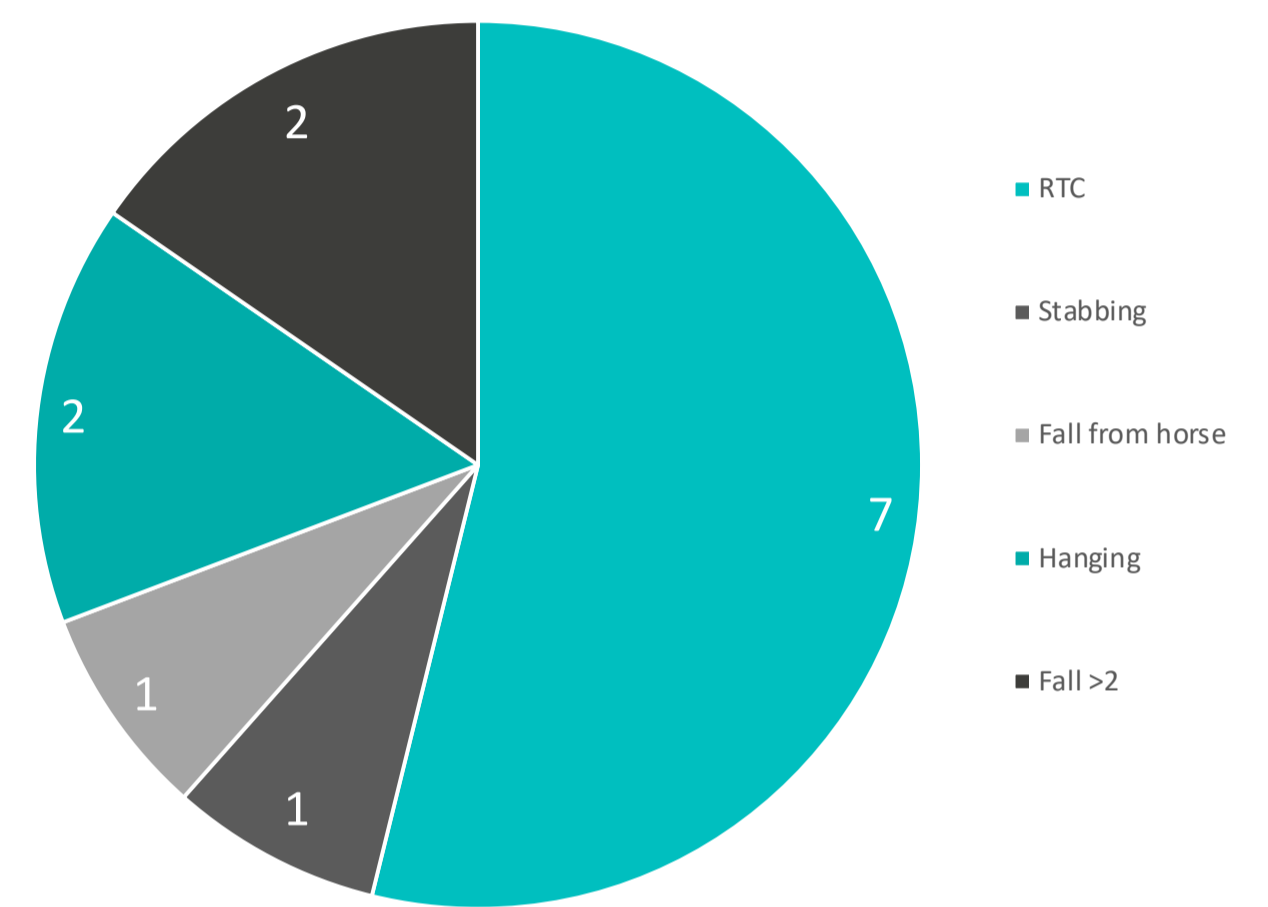
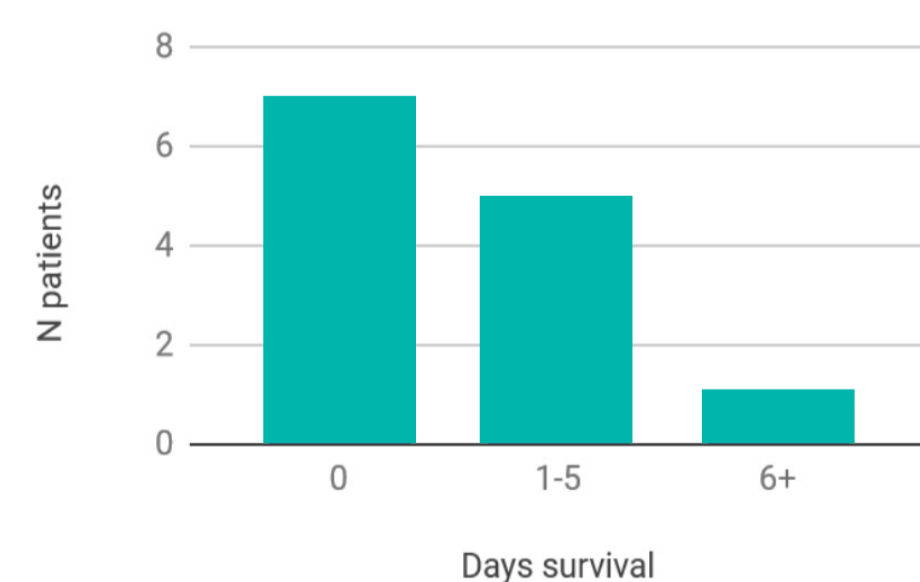


FIGURE 3 : CT imaging - Injury Pattern

Head	
Subarachnoid Haemorrhage/n	1
Hypoxic Brain Injury/n	4
Acute Subdural Haemorrhage/n	1
Skull/Facial bone #/n	2
Chest	
Rib fracture >3 /n	5
Lung Contusion/n	2
Tension Pneumothorax/n	1
Abdomen & Pelvis	
Splenic Laceration/n	1
Super + Inferior Sacral #/n	1
Superior + Inferior Pubic Rami #/n	2

FIGURE 4 : Outcome at RSCH



CONCLUSION

This study has demonstrated a 7.7% survival rate for TCA patients transferred to RSCH by AAKSS. Proactive, early, aggressive management of this patient cohort is paramount in improving outcomes. The primary mode of TCA remains blunt trauma in this region, however with a steady rise in penetrating trauma at RSCH the management and skill set required for such patients within the ED department will have to adapt to this. Further educational work must be done surrounding TCA, importantly increasing awareness and knowledge of the HOT trauma algorithm with both pre-hospital first responders and ED staff. TCA patients are not a lost cause.

REFERENCES

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