INTRODUCTION

Traumatic cardiac arrest is a very different condition from the more usual cardiac arrest which is often related to ischaemic heart disease. Management of traumatic cardiac arrest must be directed toward identifying and treating the underlying cause of the arrest or resuscitation is unlikely to be successful.

Traumatic cardiac arrest may develop as a result of:

1. Hypoxia caused by manageable issues such as obstruction of the airway (e.g. facial injury or decreased level of consciousness) or breathing problems (e.g. pneumo/haemothorax).

2. Hypoperfusion caused by compromise of the heart (e.g. stab wound causing cardiac tamponade) or hypovolaemia (either occult or revealed haemorrhage).

MANAGEMENT:

Ventricular fibrillation/ventricular tachycardia (VF/VT) may be present, although this is unlikely. However, if present it should be managed by defibrillation according to the standard shockable rhythm algorithm (***refer to advanced life support guideline***) and followed by treatment of any identified potential cause.

The potential causes should be addressed by applying standard trauma management principles (***refer to trauma emergencies guideline***). Any problem should be dealt with adequately before moving on to the next:

A – Airway obstruction; ensure the airway is open and clear.

B – Impaired breathing; search for and manage a sucking chest or a tension pneumothorax (***refer to thoracic trauma guideline***). If not absolutely certain then needle thoracocentesis should be performed on both sides. Support and assist ventilation.

C – Hypovolaemia as a result of major blood loss; apply external haemorrhage control and secure vascular access while transferring without delay to definitive treatment.

D – Major head injury (***refer to head trauma guideline***) or spinal cord injury (***refer to neck and back trauma guideline***) impairing ventilation through CNS depression or loss of neuromuscular function.

The international literature and published evidenced-based guidelines over the last five years are quite clear:

Arrested on arrival at the scene:

- resuscitation can be stopped in blunt traumatic cardiac arrest when the patient is apnoeic, pulseless, without organised cardiac electrical activity and without pupillary light reflexes on arrival and where there has been no change after five minutes of cardio-pulmonary resuscitation with full resuscitative effort
- in penetrating traumatic cardiac arrest, resuscitation should be continued for 20 minutes while transferring rapidly to hospital. If a patient has not responded after 20 minutes of Advanced Life Support (ALS) (***refer to advanced life support guideline***) then resuscitation can be terminated.

Arrested in the presence of Emergency Medical Services (EMS):

- termination of resuscitative effort in the patient who has suffered a trauma related cardiac arrest (blunt or penetrating) in the presence of the EMS crew should be considered if the patient has not responded to 20 minutes of ALS.

If no cause amenable to treatment is found by following the above interventions and circulation is not restored, then survival is not possible and further intervention is medically inappropriate.[1-9] The only exceptions to this are pregnancy (when the patient should be rapidly transferred to hospital to deliver the infant), in the presence of hypothermia and with trauma involving children. In this case the JRCALC guideline on paediatric cardiac arrest should be followed and the patient transported rapidly to a hospital Emergency Department.

After stopping resuscitation, the Recognition of Life Extinct by Ambulance Clinicians (ROLE) (***refer to ROLE guideline***) procedure should be followed and the Police informed (**See also Appendix 1**).

Key Points –Traumatic Cardiac Arrest

- Traumatic cardiac arrest is different from cardiac arrest due to primary cardiac disease.
- Assessment and management should follow the trauma guideline, treating problems as they are found.
- If the patient is in blunt traumatic cardiac arrest on crew arrival and there is no change after 5 minutes of full resuscitation, further effort is futile.
- If the patient suffers a traumatic cardiac arrest from penetrating trauma or arrests in the presence of the crew and there is no response to resuscitation after 20 minutes of active resuscitation while moving to hospital, further effort is futile.
- The ROLE procedure should be followed if resuscitation is terminated.

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METHODOLOGY

Refer to methodology section.

Appendix 1 – Traumatic Cardiac Arrest