INTRODUCTION

Electrocution may result in burn injury to the skin and deeper tissues including muscles and nerves. As a result of being thrown, patients may also sustain mechanical injury such as joint dislocation.

Electrocution may result in cardiac arrhythmias and cardio-respiratory arrest. Sustained muscle contraction from the electrical current may produce respiratory arrest or other mechanical damage.

Arrhythmias are unlikely to develop with domestic voltage once the patient is isolated from the current; with high voltage sources arrhythmias may develop later.

HISTORY

Do not approach the patient until any local electrical supply is cut off and you are certain it is safe to approach.

Establish how the patient was electrocuted and the voltage of the supply involved. The important information is whether it is domestic (240 volts) low voltage (less than 240 volts) or high voltage (greater than 480 volts).

ASSESSMENT

Assess and correct deficits with:

- **A**IRWAY
- **B**REATHING
- **C**IRCULATION
- **D**ISABILITY (mini neurological examination)

If the patient is in cardiorespiratory arrest refer to adult or child advanced life support guidelines.

Assess for time critical features:

- cardiorespiratory arrest
- major ABCD problem
- facial or airway burn
- cardiac arrhythmia compromising circulation
- extensive burns
- evidence of significant mechanical injury.

IF PRESENT CORRECT AIRWAY AND BREATHING PROBLEMS AND TRANSPORT RAPIDLY TO NEAREST SUITABLE RECEIVING HOSPITAL WITH A PRE-ALERT MESSAGE.

If no time critical features, complete primary and secondary assessment for burn and mechanical injuries prior to transport.

MANAGEMENT[1,2]

Take the defibrillator to the patient.

Manage **ABCD**'s.

Immobilise the cervical spine when there is risk of injury (refer to neck and back trauma guideline).

Administer high concentration oxygen (O_2) via a non-re-breathing mask, using the stoma in laryngectomee and other neck breathing patients, to ensure an oxygen saturation (SpO_2) of >95%, except in patients with chronic obstructive pulmonary disease (COPD) (***refer to COPD guideline***)

Monitor patient with ECG and pulse oximetry.

Manage burns and mechanical injuries (***refer to burns and trauma emergencies guidelines***).

FURTHER CARE

Patients exposed to a high voltage electrical source should always be transferred to the emergency department.

Following exposure to a domestic or low voltage electrical source, if the patient is asymptomatic with no injuries and has normal initial 12-lead ECG, then transportation to hospital is not routinely required.[3,4]

Key Points – Electrocution

- Scene safety.
- Manage cardiac arrest according to usual guidance.
- Severe tissue damage may be present despite apparently minor injury.
- Exposure to domestic voltage may not require hospitalisation.

REFERENCES

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METHODOLOGY

Refer to methodology section.