

MANAGEMENT OF ELECTRICAL INJURIES

1 Treat A,B,C's and associated injuries

2 Perform fluid resuscitation

Details

Ringers Lactate @ 4 ml/kg body weight /% body surface burn (electrical injuries may require considerably more fluid than formula suggests)

This volume is given over the first 24 hours post injury:

- 1/2 in first 8 hours
- 1/2 in next 16 hours

Determine the adequacy of volume replacement by:

- vital signs
- urine output – aim for 1 ml/kg/hr

If myoglobin is present in the urine

- keep urine output > 2 ml/kg/hr until clear
- add NaHCO₃ 1 ampoule (50 mEq)/litre to Ringers Lactate
- consider Mannitol to increase diuresis – 25 gm bolus and then 12.5 gms q 2-4 hours until pigment clears.

3 Monitor

a) cardiac

b) renal function – urine output, urine myoglobin

c) extremities – pulses, sensation, motor function, muscle compartment palpation

4 Fasciotomies when necessary

ELECTRICAL INJURIES PRODUCE

Surface burns:

- from associated flames
- from electric current itself

Deep injuries:

- current passage generates heat, especially in extremities, muscle, nerve, bone, etc.
- physiological effects of electric shock (see reverse)

Muscle tissue injury can result in:

- muscle death
- tissue swelling → possible compartment syndrome
- myoglobin release → possible renal impairment

PHYSIOLOGICAL EFFECTS OF ELECTRIC SHOCK

Site	Mode of action	Consequences
Bones/Joints	Thrown from source; fall	Fractures Dislocations
Muscles	Heat	Muscle death
	Contraction	Muscle damage Rupture
Respiratory system	Tetanization	Increased respiratory tract pressure } Alveolar ruptures } → Asphyxia (acute pulmonary edema)
		Epiglottal blockage } Laryngospasm } → Apparent death of person
Vascular system	Vasoconstriction } Destruction of vascular walls } High blood pressure }	Angina pectoris } Hemorrhage } → Myocardial infarction
Heart	Rhythm disturbances } Conduction disturbances } Cardiopathic aggravation } Increased myocardial temperature }	Ventricular fibrillation → Apparent death of person
	Cardiac arrest	→ Apparent death of person
Carotid sinus	Loss of cerebral arterial pressure → Syncope	→ Apparent death of person
Brain	Inhibition of cortical centres } Desynchronization } Cerebral edema }	→ Loss of consciousness Epilepsy-like crisis
	Medulla oblongata	Increased temperature } Loss of excitability } Loss of conductivity }
Nerves	Neuronal lesions → Cardiorespiratory syncope	→ Apparent death of person
Cells nerve muscular	Electric curarization → Metabolic arrest	→ Apparent death of person
Skin	Heat	Thermal burns, most likely full thickness

HOW TO TREAT ELECTRICAL INJURIES



A guide for paramedics and other medical professionals

WHOM TO CALL

The British Columbia Professional Fire Fighters' Burn Unit at Vancouver General Hospital for more advice at: **1 604 875 4030**
OR Trauma Hotline: **1 800 561 1133**

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