ICU module: burns

A 70kg, 56 year old man has sustained a severe burn at work and has been brought to his local district general hospital accident and emergency department by an ambulance crew. This discussion will be based around a series of questions regarding the management of patients with burns. You are the surgical SHO on-call who has been called to assess this patient, and you are the first doctor to see the patient. The examiner will ask you a series of questions based on this scenario

What is your immediate approach to the management of the patient?

- **A**irway – check for signs of airway burns/inhlational injury (risk of rapid oedema) [risk factors: soot around nostrils, hoarseness, stridor, carbonaceous sputum]

- **B**reathing – Full assessment – awareness that full thickness circumferential burns can restrict respiration and patient may need escharotomy.

- **C**irculation – Early intravenous fluid resuscitation

On your secondary survey you see the areas shown in the diagram are affected. What percentage burn does this equate to, and how do you calculate?

******figure 1 = burns man*******

- 32.5%.
    - Anterior arm = 4.5% x 1
    - Anterior leg = 9% x 1
    - Posterior leg = 9% x 1
    - Abdomen = 9%
    - Genitalia = 1%

What fluids would you prescribe to this patient?

- 2-4ml of crystalloid per % burn per kg mass. Half given over the first 8 hours and half in the subsequent 16 hours. (Parkland formula)
- = 70kg x 32.5% x 4 = 9,100ml over 24 hour period

Describe how burns are classified?

- Superficial/first degree – erythema, painful
- Partial thickness/second degree – red/mottled, swelling, blistering, wet, painful

- Full thickness/third degree – dark/leathery, dry, painless

What are the indications for transfer of patients to burns centres?

Criteria for this include:

- Partial/full thickness >10% BSA <10yrs and > 50yrs
- Partial/full thickness > 20% BSA otherwise
- Burns involving face, eyes, ears, hands, feet, genitalia, perineum
- Full thickness > 5% BSA
- Significant electrical or chemical burns
- Inhalational injuries

What are the complications of burns?

- Death, renal failure, sepsis, infection, ARDS, compartment syndrome, scarring, functional disabilities etc.

You notice that there are full thickness circumferential burns around both calves. What complication should you be particularly aware of, and what procedure can you perform to reduce the risk?

- Compartment syndrome – escharotomy (excision of burnt skin to relieve constriction)

What is compartment syndrome?

- Elevated tissue pressure within a myofascial compartment to the extent that it exceeds capillary pressure and compromises the blood flow to structures within the compartment

What are the signs/symptoms of compartment syndrome?

- Paraesthesia, pain on *passive* movement, loss of sensation
- Loss of muscle power and loss of pulse = late signs
- Muscle creatine phosphokinase – massively elevated in necrosis

Why do patients with rhabdomyolysis develop acute renal failure and how can you manage this?

- Deposition of myoglobin in the renal tubules.
- Hydration to maintain a high urine output (dilution)
- Maintenance of an ALKALINE urine using sodium bicarbonate.