ED QUICK QUIZ
WHAT IS THE DIAGNOSIS?

BACKGROUND

A 46 year old male presents following a fire in the van that he was travelling in. He was exposed to flames behind the driver's seat for about 1 minute as he was unable to self extricate. On arrival he has obvious facial, chest, bilateral arm and leg burns. He is intubated in ED by anaesthetics and the plastics team are contacted. His ABG shows: H 55, HCO4 24, pO2 24, pCO2 7 COHb 25. His burns are calculated as 45% BSA partial and 2% deep burns. IV fluids are commenced as per the Parkland's formula and he is taken to theatre by the plastics team for escharotomies of his arms. He is then admitted to ICU for ongoing care. His face is shown below:

QUESTIONS

1. When would you suspect an airway burn?
2. How do you calculate burns area?
3. When would you perform escharotomies?
4. How do you calculate IV fluid requirements?

ANSWERS & DISCUSSION

1. Airway burn

It is important to perform elective early intubation in all suspected airway burns. Airway swelling may make intubation difficult at a later stage. Remember to use an uncut endotracheal tube as there can be substantial swelling of the airway and lips over the next 24-48 hours. An airway burn should be suspected with:

- Facial burns
- Carbonaceous sputum
- Eyebrow and/or nasal hair singeing
- Carbon deposits in oropharynx or on face
- Hoarse voice
- Stridor
- Oedema of oropharynx
- Cough
- Dyspnoea
- Confusion
- Hypoxia
- Increased carboxyhaemoglobin levels

2. Burns area calculation

There are a few different methods used to calculate burn surface area. I find the rule of nines method the easiest to remember. In this method body areas are split into proportions as below.

Face- 4.5%

Scalp- 4.5%

Chest- 9%

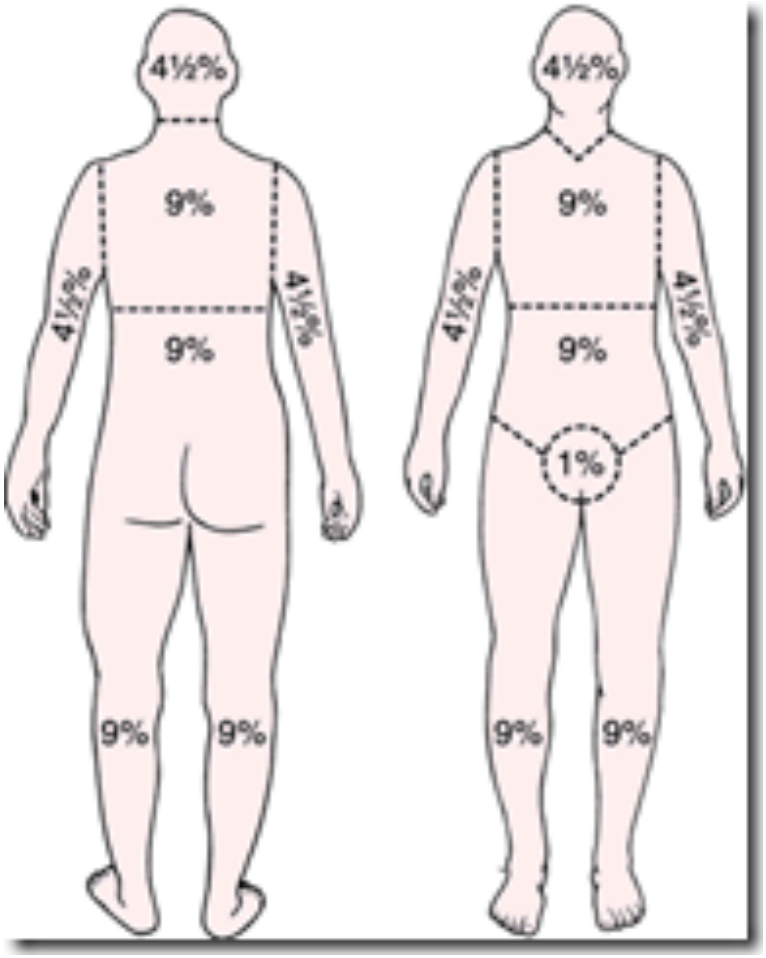
Abdomen- 9%

Back- 18%

Arm- 4.5% anterior and 4.5% posterior

Leg- 9% anterior and 9% posterior

Genitalia- 1%



Another method is that the size of the patient's palm represents 1% of their body surface area and estimating based on burn size.

3. Escharotomies

An escharotomy is a surgical procedure used to treat full-thickness circumferential burns. In full-thickness burns, both the epidermis and the dermis are destroyed along with sensory nerves in the dermis. The tough leathery tissue remaining after a full-thickness burn has been termed eschar.
It is usually performed as a prophylactic measure as following a full thickness burn and rehydration therapy commencement the tissues become constricted as the eschar above has lost elasticity. This leads to impaired circulation distal to the burn.
An escharotomy is performed by making an incision through the eschar to expose the fatty tissue below.
Indications for emergency escharotomy are the presence of a circumferential burn with one of:

- Impending or established vascular compromise of the extremities or digits.

- Impending or established respiratory compromise due to circumferential torso burns.

4. IV fluid requirements

Parkland's formula is used to calculate IV fluid requirements over the first 24 hours following a severe burn. Deep partial and full thickness burns areas are calculated.

The formula is : 4 x burn BSA x weight (kg)

Half of the requirements are given over the first 8 hours with the next half over the following 16 hours. The time starts at the onset of injury, therefore there may be time to catch up on.

In this case the BSA is 47%, therefore if the male is 70kg:

4 x 47 x 70 = 13160 ml

1st 8 hours = 6580ml

2nd 16 hours = 6580ml

If we assume that he has presented 1 hour post injury then 6580ml needs to be given over the 1st 7 hours.

It is important to administer increased IV fluids if the urine output is less than 0.5ml/hr. 250ml boluses of saline would be used in this case.