Review physiological changes in the burn patient
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Objectives
1. Discuss pharmacodynamic/kinetic differences in drugs used in the care of a burn patient
2. Discuss a burn patient case study

Physiologic Changes:
1. Fluid and protein shift in the first 24 hours (books state that this shift returns to normal in 48 hours but inflammatory process can lengthen this time up to weeks)
2. IV fluid of choice is LR
3. 6 hypermetabolic manifestations: Tachycardia, tachypnea, increased O2 consumption, Hyperthermia, increased catabolism, and increased catecholamine
4. Hct will be falsely ELEVATED due to homoconcentration of the INTRAVASCULAR compartment OR falsely DECREASED due to dilution from the Parkland fluid model
5. Keeping burn patients warm is challenging but extremely important: hypermetabolic, increased evaporative fluid loss and increased exposure. Use "french fry lights", warmed fluids, head covering, plastic covering of areas not being operated upon, lower body and upper body, beneath the body forced air warmer, limit trips in and out of the room that could allow cool air to come in. (The burn patient loses 580 calories of heat for every 1 gram of H2O that evaporates)
6. Proper anticipation of blood administration can help to avoid massive hypotension and cardiovascular collapse intraoperatively. Transfuse @ 15-20% Hct in an otherwise healthy patient receiving a "small" operation, 25% in otherwise healthy patient receiving a "large" operation, 30% in a patient with cardiovascular disease

Drugs
1. Albumin in plasma decreases and leaks through the capillary into the INTERSTICIAL compartment drawing water with it. This decreases the INTRAVASCULAR albumin count so protein bound drugs such as benzos will have more bioavailability
2. Alpha-1 glycoprotein increases in the INTRAVASCULAR compartment which decreases the bioavailability of drugs like local anesthetics
3. Do not use succinylcholine on the burn patient: proliferation of EXTRA-junctional receptors causes the receptor to open"depolarize" and K is released from skeletal muscle possibly causing dangerous levels of K
   This can be treated with Insulin and Glucose, calcium administration, lasix, kayexelate, dialysis, and hyperventilation. Each of these treatments has a different time frame of efficacy - observe the patient before deciding which treatment(s) would be best
4. Resistance to non-depolarizing neuromuscular blockade could be due to : 3rd degree burns cause increase in the # of nicotinic receptors (EXTRAjunctional proliferation of Ach receptors)

Case study
1. Patient with 17% TBSA otherwise healthy burned 8 hours prior to arrival.
70kgs, 5'9". Has already received 500mls of LR
Sats are 93% on 4LNC
HR 120
RR 23
agitated and confused, c/o abdominal pain
BP 120/65
Carboxyhemoglobin is 17% (15% is considered toxic level)

Administration of 100% O2 will displace the Carbon Monoxide from the hemoglobin molecule and decrease the 1/2 life from 5 hours to 45-60 minutes.