

Management of hyperpyrexia in critically ill patients with burns >25%

Severe hyperthermia should be treated promptly to avoid multi-organ failure

Background

1. People with severe burns often become hyperthermic
2. Core temperature up to 38.5°C can be considered normal for patients with burns >25% TBSA due to SIRS
3. Even short periods of very high temperature can cause problems.
4. Temperatures at which irreversible cell injury occurs is thought to be 41.6-42°C for periods as short as 45 minutes (1)
5. Above 42°C oxidative phosphorylation becomes uncoupled and a variety of enzymes cease to function. Cytokine mediated SIRS develops and production of heat shock proteins is increased. Blood is shunted from the splanchnic circulation to the skin and muscles, resulting in GI ischaemia.
6. Hepatocytes, vascular endothelium and neural tissue are the most sensitive to increased core temperatures, but ultimately all organs may be involved.
7. In severe cases, patients will develop multi-organ failure and DIC

Management

Core temperature 39°C and above

1. Perform sepsis screen as per burns ITU guidelines
2. Consider Paracetamol if appropriate
3. Place the patient's arms out, resting on tables
4. Consider ice packs for groins and axillae
5. Open gamgee dressings
6. Remove head dressings
7. Consider reducing room temperature if the patient is peripherally warm (less than 2°C core-peripheral temperature difference)
8. Refrigerate NG flush / NG feed prior to use

Core temperature 40°C for more than 6 consecutive hours

1. Commence CVVHDF

Core temperature 41°C for more than 2 consecutive hours

1. Commence CVVHDF

Active cooling should stop when the patients core temperature falls to 38.5°C

[1] Bouchama A, Knochel P. Heat stroke. N Engl J Med 2002;346:1978-88