**SURVIVING THE HOT SCORCH : A CASE REPORT ON SEVERE HEAT STROKE**

Noor Anisa binti Faisal,Shahira Ruslan,Grace Lim Wan Chen

Emergency and Trauma Department, Hospital Sultanah Maliha, Langkawi

**Introduction**

Exertional heat stroke(EHS) is characterized by an elevation of core temperature of more than 40 C and accompanied by central nervous system dysfunction related to strenuous activities. Complications include rhabdomyolysis and multiorgan failure,with a high mortality rate. We present a patient who survived severe EHS with multiorgan failure.

**Case**

A 22-year-old police trainee lost consciousness during outdoor training in high temperature and humidity conditions. At casualty, GCS was 3 with pinpoint pupils, BP 91/67 and HR 168. External skin temperature was 39 C. In view of history of doing strenuous activities and altered mental status, diagnosis of heat stroke was established. Copious IV fluids and immediate cooling measures such as application of cold packs, cooling fans and tepid sponging was done. Patient was intubated for airway protection and required vasopressors. He subsequently developed 2 episodes of fitting which were aborted with IV Valium 5 mg. Initial blood investigations revealed high lactate with metabolic acidosis, acute kidney injury (AKI) and CK of 4265 IU/L. However, liver enzymes and coagulation profile were normal. In the Intensive Care Unit (ICU), he developed worsening AKI, rhabdomyolysis, acute liver failure and coagulopathies. He required a total of 14 cycles of hemodialysis, N-Acetylcysteine(NAC) and prothrombin complex concentrate(PCC). His ICU stay was complicated by acute pulmonary edema and bacterial bloodstream infection. After 50 days of hospitalization, he was discharged with normal blood parameters.

**Discussion**

EHS leads to a cascade of physiological events that may result in multiorgan failure. Extreme heat can denature proteins, disrupt cell membranes, cause cellular dysfunction and cell death. EHS also causes severe dehydration and electrolyte imbalances due to inadequate fluid intake and excessive sweating,leading to ischemia. The systemic inflammatory response is also activated,causing the release of pro-inflammatory cytokines and immune cells which exacerbates tissue damage. All these responses  to extreme heat can cause multiorgan failure in EHS.

**Conclusion**

EHS has a high mortality rate if early recognition and immediate cooling measures are not initiated. Therefore, it is imperative for clinicians to recognize EHS early and start active cooling.

**Keywords:** Heat stroke,heat related illness,multiorgan failure