Shock

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- Shock is a clinical condition characterized by failure to adequately perfuse and oxygenate vital organs

- Clinically, shock is recognized by

1. Hypotension Generally considered to be systolic BP <90mmHg (in adults),
2. *tachycardia* (> 100/min) is common
3. *Altered consciousness* and/or fainting (especially on standing or sitting up) may result from decrease cerebral perfusion
4. *Poor peripheral perfusion* Cool peripheries, clammy/sweaty skin, pallor, decrease capillary return
5. *Oliguria* decrease renal perfusion with urine output <50mL/hr (in adults).
6. *Tachypnoea*

Classification of shock

Hypovolaemic shock

- *Hypovolemic shock refers to a medical or surgical condition in which rapid fluid loss results in multiple organ failure due to inadequate circulating volume and subsequent inadequate perfusion.*
- • *Blood loss:* trauma, gastrointestinal (GI) bleed (haematemesis, melaena), ruptured abdominal aortic aneurysm, ruptured ectopic pregnancy.
- • *Fluid loss/redistribution ('third spacing')* : burns, GI losses (vomiting, diarrhoea), pancreatitis, sepsis.

Cardiogenic shock

- cardiogenic shock (CS) is decreased cardiac output and evidence of tissue hypoxia in the presence of adequate intravascular volume.
- Cardiogenic shock is the leading cause of death in acute myocardial infarction (MI), with mortality rates as high as 50% in the absence of aggressive, highly experienced technical care.
- • *Primary* : myocardial infarction (MI), arrhythmias, valve dysfunction, myocarditis.
- • *Secondary* : cardiac tamponade, massive pulmonary embolus, tension pneumothorax

Septic shock

- Septic shock is present when septic patients exhibit hypotension unresponsive to intravenous fluid resuscitation.
- More common at the extremes of age, in patients with diabetes mellitus, renal/hepatic failure and the immunocompromised (eg HIV infection, underlying malignancy, post-splenectomy, steroid therapy

Neurogenic shock

- It can happen after you've had a spinal cord injury, which can keep your body from regulating its own blood pressure, heart rate and temperature.

- Neurogenic shock is a critical condition because it keeps oxygen from reaching your organs

Anaphylactic shock:

- Anaphylaxis is a generalized immunological condition of sudden onset, which develops after exposure to a foreign substance.
- Anaphylaxis is an acute, potentially fatal, multiorgan system reaction caused by the release of chemical mediators from mast cells and basophils.
- Initially, patients often experience pruritus and flushing , Nasal congestion, coryza, rhinorrhea, sneezing, throat tightness, wheezing, shortness of breath, cough, hoarseness, dyspnea

- **Common causes**

1. Drugs and vaccines (eg antibiotics,, aspirin, non-steroidal anti-infl ammatory drugs (NSAIDs), intravenous (IV) contrast agents).
2. (bee/wasp) stings.
3. Foods (nuts, shellfish, strawberries, wheat).
4. Latex

Management of shock

- Address the priorities — ABC.
- • Give high flow O2 by mask.
- • Secure adequate venous access and take blood for FBC, U&E, glucose, liver function tests (LFTs), lactate, coagulation screen, and if appropriate, blood cultures.
- • Monitor vital signs, including pulse, BP, SpO2 , respiratory rate.
- • Check ABG.
- • Monitor ECG and obtain 12 lead ECG and CXR.
- • Insert a urinary catheter and monitor urine output hourly.

- For shock associated with defective circulating blood volume, give IV crystalloid (0.9 % saline) 20mL/kg as bolus.
- Give further IV fluids including colloids blood (aim for hematocrit (Hct) > 30 %) according to etiology and clinical response (and in particular, pulse, BP, and urine output).
- Use caution with IV fluid infusion in shock related to cardiogenic causes.

Specific management

- Look for, and treat specifically the cause(s) of the shock.
- Echocardiography, USS, CT, and/or surgical intervention may be required.
- Specific treatments include:
- • *Laparotomy* : ruptured abdominal aortic aneurysm, splenic and/or liver trauma, ruptured ectopic pregnancy, intra-abdominal sepsis.
- • *Thrombolysis/angioplasty* : MI. PE.
- • *Pericardiocentesis/cardiac surgery* : cardiac tamponade, aortic valve dysfunction.

- • *Antidotes* : for certain poisons.
- • *Antibiotics* : sepsis
- • Inotropic and vasoactive therapy, assisted ventilation, and invasive monitoring (including arterial and CVP lines) are often needed as part of goal directed therapy.
- Get specialist ICU help early.

Thank you