Severe Sepsis and Septic Shock Assessment

Sepsis is a systemic inflammatory response to an infection and it is classified as severe sepsis when organ dysfunction is involved. Septic shock is the occurrence of sepsis with hypotension despite adequate fluid resuscitation. In response several pathological mechanisms occur in the body including excessive vasodilation, increased microvascular permeability, excessive cellular activation, and increased coagulation. This results in maldistribution of blood leading to inadequate tissue perfusion and subsequently tissue hypoxia.

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Microthrombi

Micro-trombones

Platelets and clotting factors form microthrombi in the vessels which decrease blood flow and cause tissue ischemia.

DIC

Dice

DIC or Disseminated Intravascular Coagulation begins when microthrombi form causing a thrombotic state. Once all platelets and coagulation factors are consumed patients experience hemorrhage. Characteristically patients bleed from any previous puncture wounds and orifices and may have petechiae. PT and PTT values will be increased.

Decreased Oxygen Saturation

Down-arrow Percent O2-tank

Ischemia causes decreased oxygenation to tissues as a result of microthrombi formation. Severe tachypnea results in an attempt to compensate. Acute Respiratory Distress Syndrome (ARDS) may occur as a result of alveolar damage in the lungs.

Decreased WBC

Down-arrow White-mac-man

Sepsis can present as a high or low WBC count. Sustained sepsis may result in a low WBC or >10% bands (immature neutrophils).

Oliguria

Old-gopher

As refractory hypotension leads to septic shock urine output decreases closer to 0, which is termed oliguria.

High Output Heart Failure

High Output Dead Heart

Septic shock is a form of distributive shock or high output heart failure which is defined as increased cardiac output but unable to meet metabolic demands. In this case the cardiac output is increased however the oxygenated blood is not able to reach the tissues.

Multiple Organ Failure

Multiple Dead Organs

With prolonged ischemia, tissues sustain irreversible damage. This irreversible damage leads to organ failure and subsequently death.

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