Sepsis & Septic shock

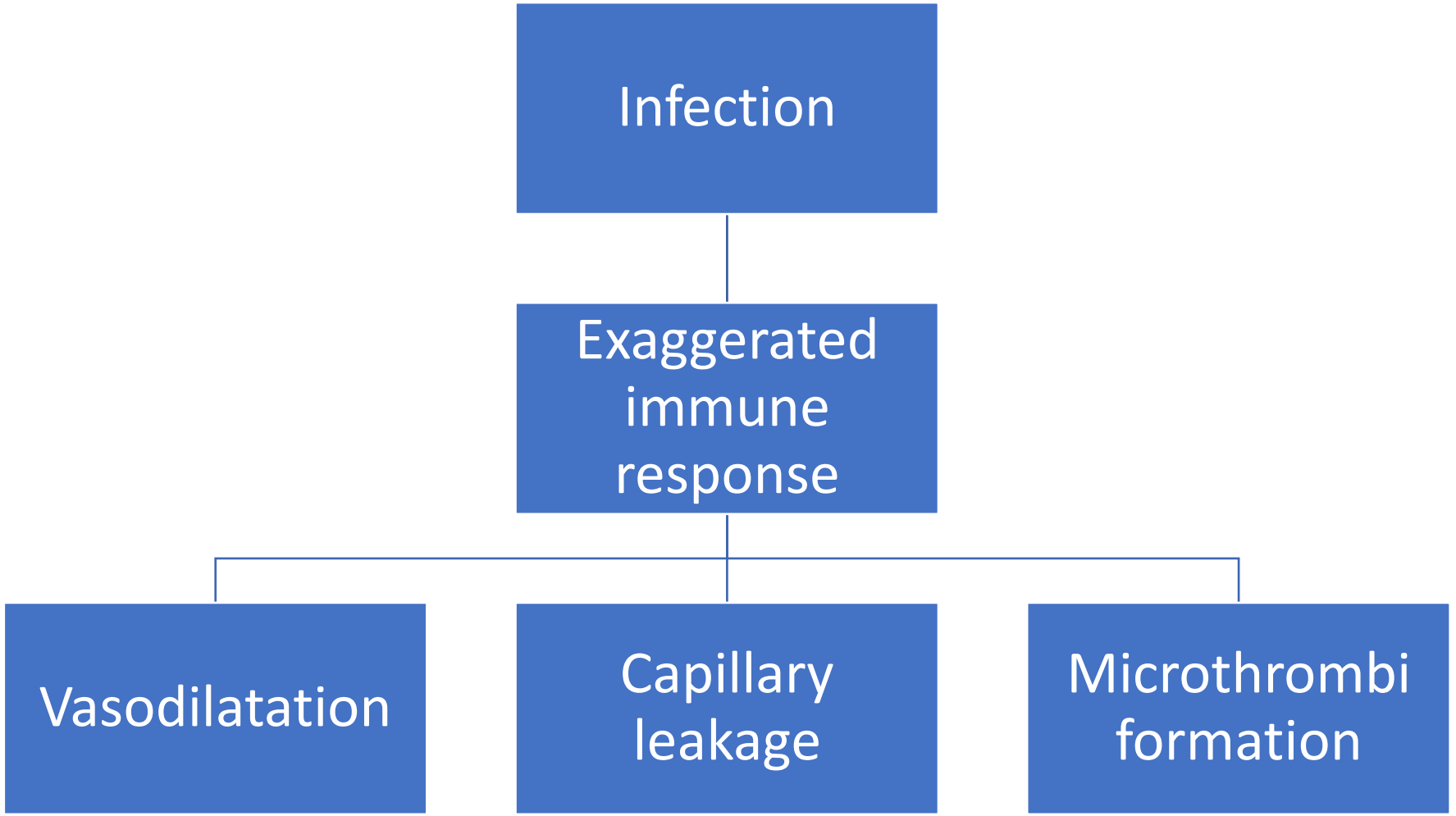
Sepsis

Consensus definition (Sepsis-3)

"life-threatening organ dysfunction caused by a dysregulated host response to infection"

- The best predictor of death or a requirement for 3 days or more of intensive care for ward patients was a new construct, the 'quick SOFA' (qSOFA). Patients are deemed positive for qSOFA if they have two of:
  - Glasgow Coma Scale score of <15
  - respiratory rate of ≥22 breaths/min
  - systolic blood pressure of ≤100mmHg.

Pathophysiology of sepsis



Septic shock

- The term ‘septic shock’ is reserved for the subset of patients with sepsis whose circulatory and metabolic dysfunction is such that their risk of death is significantly increased.

- Clinically, patients are identified as septic who require vasopressor support to maintain a mean arterial pressure of 65mmHg or more, and who have an elevated serum lactate concentration (>2mmol/L) despite adequate volume resuscitation.

- Groups at higher risk of developing sepsis include:
  - older people (>65 years of age) and the very young (neonates)
  - people who have previously had sepsis people with immunosuppressive medical conditions (such as HIV, asplenism, cirrhosis, autoimmune diseases)
  - people who are iatrogenically immunosuppressed (those on immunosuppressive drugs, including systemic corticosteroids)
  - patients with indwelling devices, especially if they breach normal barriers against infection
  - pregnant women
  - people who abuse alcohol or intravenous drugs.

Clinical features

- pyrexia and rigors, or hypothermia (unusual, but more common in the elderly and associated with worse prognosis)
- nausea, vomiting
- vasodilation, warm peripheries ,bounding pulse
- rapid capillary refill ,hypotension, low diastolic pressure, widened pulse pressure
- occasionally, signs of cutaneous vasoconstriction
- other signs
  - jaundice
  - coma, stupor
  - bleeding due to coagulopathy (e.g. from vascular puncture sites, gastrointestinal tract and surgical wounds)
  - rash and meningism
  - hyperglycaemia; in more severe cases, hypoglycaemia

Diagnosis

- The ***diagnosis of sepsis*** is easily missed, particularly in the elderly. Clues include mild confusion, tachycardia, tachypnoea, unexplained hypotension, a reduction in urine output, a rising plasma creatinine and glucose intolerance.

- qSOFA & SOFA scores helps in recognition of sepsis clinically.

Management

- **Sepsis is a medical emergency!**

- Initiate sepsis 1 hour bundle upon recognition of sepsis/septic shock.

Management

1. Measure lactate level. Remeasure lactate if initial lactate elevated (> 2 mmol/L)
2. Obtain blood cultures before administering antibiotics.
3. Administer broad spectrum antibiotics

Management

4. Begin rapid administration of 30 mL/kg crystalloid for hypotension or lactate ≥ 4 mmol/L.

5. Apply vasopressors if hypotensive during or after fluid resuscitation to maintain a mean arterial pressure ≥ 65 mm Hg.

Management

After initial resuscitation

- **Identification of suspected source** — Empiric antibiotics should be targeted at the suspected source(s) of infection which is typically identified from the initial history, physical examination, and preliminary laboratory findings and imaging

- **MONITOR RESPONSE-**After fluids and empiric antibiotics have been administered, the therapeutic response should be assessed frequently.

Management

After initial resuscitation

- **SEPTIC FOCUS IDENTIFICATION AND SOURCE CONTROL-**Establish anatomical diagnosis and arrangements for emergency source control as soon as possible and remove potentially infected vascular access devices as soon as new access is obtained.
- **FLUID THERAPY-** Apply a fluid challenge technique when on-going fluid administration is required ,Use crystalloids, the recommended fluid of choice , Consider human albumin solution in addition, when large volumes of fluid are required, Avoid hydroxyethyl starches

Septic shock

- A combination of dobutamine and noradrenaline (norepinephrine) is used for the management of patients who are ***shocked with a low systemic vascular resistance*** (e.g. septic shock).
  - Dobutamine is given to achieve optimal cardiac output.
  - Noradrenaline, sometimes supplemented by vasopressin, is used for restoration of an adequate blood pressure by reducing vasodilation.