Sepsis Syndromes

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Clinical Vignette

A 65 year old female admitted with CHF exacerbation complains of dysuria and flank pain on day 3 of hospitalization. She has a temperature of 102.4 and heart rate is 120 bpm. How would your proceed with managing this patient?

Sepsis Syndrome

Identification of Sepsis: 2 SIRS criteria plus source of infection

- Temp ≥ 101 or ≤ 96.8
- Pulse ≥ 90
- RR ≥ 20
- WBC ≥12,000 or ≤ 4,000 or bands >10%

Identification of Severe Sepsis – Sepsis plus new end organ dysfunction

- SBP ≤ 90 or MAP ≤ 60
- New Alerted mental status
- Acute oliguria Urinary output ≤ 0.5ml/kg/hr
- Lactate ≥ 2.2
- Acute lung injury PaO_2: FIO_2 < 300
- Hyperbilirubinemia
- Acute Kidney Injury Platelet count <100,000
- Coagulation Abnormalities INR >1.5 or a PTT>60 seconds

Septic Shock – Persistent arterial hypotension despite volume resuscitation

Sepsis Bundle:

To be completed within 3 hours

- Administer 30ml/kg crystalloid for hypotension or lactate ≥ 4mmol/L (grade 1C).
- Measure lactate level – should be resulted within 90 minutes. In patients with elevated lactate levels, targeting resuscitation to normalize lactate (grade 1C).
- Obtain blood cultures prior to administration of antibiotics (grade 1C).
- Administer broad spectrum antibiotics
    - Antibiotics should be reassessed daily for potential de-escalation (grade 1B).
    - Empiric combination therapy should not be administered for more than 3-5 days.

- Deescalate to most appropriate single therapy as soon as susceptibility profile known (grade 2B).
- Duration of therapy typically 7-10 days (grade 2C).

To be completed within 6 hours

- Apply vasopressors (for hypotension that does not respond to initial fluid resuscitation) to
- maintain MAP ≥ 65 mm Hg (grade 1C).
- Remeasure lactate if initial lactate was elevated.
- Persistent arterial hypotension despite volume resuscitation or initial lactate ≥ 4 mmol/L:
  - Measure central venous pressure
  - Measure central venous oxygen saturation

Goals during the first 6 hours of Resuscitation:

- Central venous pressure 8-12 mm Hg
- Mean arterial pressure ≥ 65 mm Hg
- Urine Output ≥ 0.5mL/kg/hr
- Central venous or mixed venous oxygen saturation 70% or 65% respectively

Source Control:

- Perform imaging studies promptly to confirm a potential source of infection
- Intervention should be taken within 12 hours after diagnosis is made (grade 1C).
- When source control in a severely septic patient is required, intervention with the least physiological insult should be used.
- If intravascular devices are potential sources of infection, they should promptly be removed after other vascular access has been obtained.

Clinical Pearls:

- Early recognition of sepsis syndromes is critical and allows for earlier implementation of the sepsis bundles, with the goal of reduction of mortality.
- Fluid resuscitation guided by targeted endpoints for resuscitation – mean arterial pressure, urinary output, lactate, and central venous pressure.
  - Antimicrobial therapy and source control in a timely manner.
  - Triage patient appropriately and consider escalation in level of care.