Sepsis in the Intensive Care Setting

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Sepsis in the Intensive Care Setting
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What is Sepsis?
• Sepsis is a complex systemic illness. According to Kruse et al. (2016), neutropenic sepsis is a frequent complication in cancer patients. Although the underlying disease is severe, once transferred to the ICU with sepsis these patients have poor outcomes.
• Patients who develop sepsis are commonly admitted to an Intensive Care Unit. On the Medical Intensive Care Unit (MICU) at the James Cancer Hospital, one sees septic cancer patients often. This cancer diagnosis places patients at a higher risk of developing sepsis. Some patients also have a high risk due to decreased immunity from chemotherapy treatments. Oncology patients can become septic from the common cold or flu, they are highly susceptible to many infections that a typical person can defend from. According to Vioral and Wentley (2015), neutropenic sepsis results in post-cancer treatment complications and is considered an oncologic emergency. Neutropenic sepsis can result in mortality, especially if it is not identified at an early stage.

Pathophysiological Processes
Dunkley and McLeod (2015), states that sepsis is characterized severe tissue hypoperfusion and organ dysfunction.

Underlying Pathophysiology
• Inflammatory Response: Dunkley and McLeod (2015), that the inflammatory response is a patient’s innate defense to an infectious insult. In sepsis this response is exaggerated releasing cytokines which create an increased systemic vasodilation and splanchnic vasoconstriction. This increased permeability allows fluids to move from the vasculature to the interstitial space creating edema, shock, and hypotension.

Complement System: marks foreign substances to be destroyed by phagocytes by leukocytes. (Dunkley & McLeod, 2015), In sepsis this process is exaggerated which can cause multi-organ dysfunction.

Clotting Abnormalities: the clotting cascade creates a thrombin that can stop the spread of infection, help healing, and stop clotting. In sepsis the exaggerated inflammatory response disrupts this normal clotting creating an excess of platelet plugs and fibrin in the microvasculature. (Dunkley & McLeod, 2015). Also there is a deficiency of clotting factors which leads to coagulopathy dysfunction and dysfunction with blood supply to organs.

Signs and Symptoms:
• Hypotension
• Confusion
• Decreased level of consciousness
• Tachypnea
• Bounding pulse
• Oliguria
• Hypoesthesia that may lead to respiratory failure
• Increased lactate levels

Significance of Pathophysiology
• According to Dunkley and McLeod (2015), sepsis is characterized by an increase of cardiac output and drop in peripheral resistance due to the cardiac system’s attempt to compensate for the loss of circulatory volume.

Hypotension occurs as the result of the exaggerated innate response to the infectious insult to the patient.

Changes in coagulation can lead to increased risk of developing blood clot or the inability to form clots which places the patient at a higher bleeding risk.

Hypotension is at greatest concern, according to Dunkley et al (2015), states that sepsis is characterized severe tissue hypoperfusion and organ dysfunction.

Implications of Nursing Care
• Blood glucose measurement must be considered due to insulin resistance that can occur with sepsis with appropriate interventions to follow. Typically patients are placed on sliding scale insulin to treat patient’s stress induced glycemic changes. (Dunkley & McLeod, 2015).

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Significance of Pathophysiology
• According to Mink & Kellaf (2015), it is up to the nursing staff to monitor these patients closely. The foundation of sepsis management revolves around timely administration of antimicrobial therapy, adequate infection site source control, and appropriate hemodynamic support focused on preserving organ function.

According to Shorr, Zilberberg, Micek, Kollef (2014), blood cultures must be obtained upon ICU admission before antibiotic therapy is initiated. Blood cultures should be obtained from a peripheral vein vena cava and from an invasive line the patient presents with. These blood cultures can narrow antibiotic therapy to the particular infectious organism, typically broad-spectrum antibiotics will be started on admission until the results of the blood cultures.

Hypotension is at greatest concern, according to Dunkley and McLeod (2015). Fluids must be administered in order to maintain adequate blood pressure for organ and cerebral perfusion. Crystalloids are administered rapidly to the patient. If hypotension persists, vasopressor medicines are used to maintain an appropriate blood pressure.

According to Dunkley and McLeod, 2015, maintain a Mean Arterial Pressure (MAP) of 85 mm Hg or greater is the gold standard of maintaining appropriate organ perfusion. Strict intake and output must be recorded for these patients.

Conclusion
• Sepsis is a complex illness. It is a result of an exaggerated immune response to a foreign pathogen. Nursing management is crucial in sepsis management. Quick identification of the pathogen and appropriate antibiotic therapy are the key factors of decreasing patient mortality and improving patient’s outcomes.

Additional Sources


References


