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### 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 curable, once transferred to the ICU with sepsis these patients have poor outcomes.
- Patients who develop sepsis are commonly admitted to an Intensive Care Unit. Working 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 as a 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 hypo-perfusion and organ dysfunction.

### Signs and Symptoms:

- Hypotension
- Confusion
- Decreased level of consciousness
- Tachypnea
- Bounding pulse
- Oliguria
- Hypoxemia that may lead to respiratory failure
- Increased lactate levels

## 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 creates an increased systemic vasodilation and vessel permeability. 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 phagocytosis by leukocytes. (Dunkley & McLeod, 2015). In sepsis this process is exaggerated which can cause multi-organ dysfunction.
- Clotting Abnormalities:** the clotting cascade creates a fibrin mesh that can stop the spread of infection, help healing, and stop clotting. In sepsis the exaggerated inflammatory response disrupts this normal coagulation creating an excess of platelet plugs and fibrin in the microvasculature. (Dunkley & McLeod, 2015). Also there is a deficient of clotting factors which lead to coagulopathy dysfunction and interference with blood supply to organs.

## 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 a 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.

## Implications of Nursing Care

- According to Micek and Kollef (2015), it is up to the nursing staff to monitor these patients closely. The foundation of sepsis management revolve 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 venous puncture and from an invasive lines 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 65 or greater is the gold standard of maintaining appropriate organ perfusion. Strict intake and output must be recorded for these patients.
- 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).
- Gotts and Matthey (2016) states that patient's may have to be intubated for respiratory distress from sepsis. Nurses must manage the ventilated patient with proper positioning and oral care.

## 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

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