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Neutropenic Sepsis in the Intensive Care Unit
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What is Sepsis in the Neutropenic Patient?
- Neutropenic Sepsis is a complication and oncologic emergency that results from treatment of cancer. According to Vioral & Wentley (2015), neutropenic sepsis remains the leading cause of death in oncology patients.
- Sepsis occurs due to infection (bacterial, viral, or fungal) being present and the body’s immune response is inadequate (Vioral & Wentley, 2015).
- Neutropenic Sepsis has been defined in the National Institute of Health (NIH) as a neutrophil count of ≤0.5 x 10⁹/L, and either a temperature higher than 38°C, which is associated with fever.
- A RN in the Medical Intensive Care Unit at the James Cancer Hospital, sepsis in the neutropenic patient is the most commonly seen diagnosis.

Sepsis & Clinical Signs
- Hypotension
- Altered Mental Status
- Fever
- Tachycardia
- Tachypnea
- Increased Lactate levels, acidosis.
- Dizziness
- Cold, clammy, cyanotic skin
- Bounding pulses
- The complement system is a part of the innate immune system, with three purposes: recruitment of inflammatory cell to infected area, mark pathogens by covering the bacterial membrane, and destroy pathogens (Dunkley & McLeod, 2015).
- According to Dunkley and McLeod (2015), the inflammatory response disrupts normal clotting, causing excessive platelet plugs and fibrin in microvasculature in conjunction with a deficit of clotting factors leading to coagulopathies.

Significance of Pathophysiology
- Neutropenic patients face greater complications and poorer prognosis in sepsis. According to Kruse, et al (2016) patients with neutropenic sepsis, prognosis of the initial insult, is determined primarily by the severity of multiple organ dysfunction.
- Clotting abnormalities and coagulopathies can further be complicated in the neutropenic setting causing DIC and decreased perfusion to the tissues. Oncology patients have baseline coagulopathies related to chemotherapy treatment, that should be considered, and potentially exaggerated in sepsis.
- According to Dunkley and McLeod (2015), the release of cytokines into the blood stream, leads to leakage of fluid from circulation into intestinal tissues, decreased intravascular volume, hypotension, hypoxia, and lactic acidosis.

Implications of Nursing Care
- It is imperative practitioners are highly suspicious when caring for this patient population.
- Neutropenic and McLeod (2015) encourages practitioners to reflect on neutrophil counts as lowest 5-7 days after chemotherapy administration and if this is the rapid period that neutrophic patients are at highest risk for infection.
- Best, et al (2013), supports current practice of standardized order sets in the sepsis treatment protocol. Early administration of antibiotics, fluid resuscitation, obtaining blood, urine, and stool cultures, and stabilization of vital signs are all shown to improve outcomes and decrease mortality.
- Wells, et al (2015), stresses the importance of continued education of providers caring for neutropenic patients as well as the patients and families themselves. Early recognition is imperative.
- Patient’s may require mechanical ventilation in the critically ill patient in order to control hypoventilation and dyspnea. Opioids may occur of excessive mechanism related to metabolic acidosis (Dunkley & McLeod, 2015).
- Transfusion Red Blood Cells to maintain hemoglobin greater than 7.
- Consider corticosteroids if hemodynamic instability continues despite fluid resuscitation and vasopressor support. Hydrocortisone 200mg/ d4ly is the recommended dose (Dunkley & McLeod, 2015).

References