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Identifying Acute Organ Dysfunction as a Marker of Severe Sepsis

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Sepsis leading to Organ Failure

Signs of Organ Dysfunction

- Altered mentation
- Respiratory distress
- Hypotension
- Coagulopathy
- Acute kidney injury
- Hyperglycemia
- Liver dysfunction
- Coagulopathy
- Increased lactate

Sign of Sepsis

- Fever or hypothermia
- Chills
- Hypotension
- Tachycardia
- Increased respiratory rate
- Tachypnea

Significance of Pathophysiology

- Understanding the pathophysiology of severe sepsis is significant to good patient outcomes. The number of septic cases in the United States exceeds 750,000 per year and was recently reported to be rising. Sepsis is the 10th leading cause of death in the United States and the leading cause of death in non-cardiac ICUs. One patient in the United States presents to an emergency department every minute with severe sepsis and accounts for 20% of all ED admissions (Palesch, Stein, O’Connor, Dunn, & Hasenauer, 2014). Knowledge of organ dysfunction markers can help identify severe sepsis quickly which means that treatment protocol can be initiated earlier. Comprehending the etiologic origins of sepsis and infectious agents that they take, means appropriate anti-infective measures can be implemented and patient outcome improved. One example of the significance of organ dysfunction of severe sepsis is the symptom of low oxygen extraction ratio. Recent research shows initial low OER (Oxygen Extraction Ratio) was associated with severe organ dysfunction that resulted in high mortality with severe sepsis and septic shock. When patients had initial abnormally low OER, their in-hospital mortality was higher than in normal OER patients. Therefore, the OER should be considered when attempting to predict the outcome of septic patients (Kim, Lee, Lee, Han, Mison, & Hong, 2015).

Nursing Considerations

Increased knowledge of organ dysfunction markers can improve severe septic patient outcomes. The earlier the patient is identified as severe sepsis, the sooner they can receive appropriate treatment. Recent studies show that nurses play a key role in the initial image and care of patients with potentially life-threatening sepsis. A recent study showed a nurses’ role in a new emergency initiated department severe sepsis protocol to initial antibiotic administration, and had an impact in in-hospital mortality rates (Bruce, Massone, Fedullo, & Policard, 2015). A recent study by Galeazzi and colleagues supports the nursing clinical relevance by showing that elapsed time from triage to administration of antimicrobials is the primary determinant of mortality of patients with severe sepsis and septic shock (Galeazzi et al., 2020). The knowledge of a severe sepsis screening tool significantly decreased the mean time to antibiotics in patients presenting to the ED with suspected severe sepsis or septic shock (Petruci, Turner, Xue, & Segel, 2016). This research demonstrates that increased nursing understanding of sepsis and severe sepsis markers can significantly improve patient care outcomes.

Conclusion

Despite advances in the development of numerous drugs and supportive care therapies, severe sepsis remains an unmet challenge for clinical investigators and physicians with an unacceptable high mortality rate of 28% to 50%. Sepsis is the most common cause of death in the non-cardiac intensive care unit (Mingming, Zhan, Han, Jin, & Shen, 2015). Treatment protocol differs when a patient is determined to have severe sepsis as opposed to sepsis. For this reason, it is significant that health care professionals be able to recognize the markers of organ dysfunction as a sign of severe sepsis. Knowledge of these markers and the pathophysiology associated with severe sepsis can improve patient outcomes significantly.