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Disseminated Intravascular Coagulation (DIC)
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Topic Statement
Investigation of disseminated intravascular coagulation (DIC) in the critical care setting, and how it contributes to multi-system organ failure.

Introduction
DIC has been widely recognized as a contributing factor in the outcome of several illnesses (Gando, et al., 2016), and is typically a manifestation of an underlying pathologic or disease process (Boral et al., 2016). Boral et al. (2016) further relays that ‘DIC’ is relatively uncommon in the general hospitalized patient but accounts for 9% to 19% of ICU admissions and has a high mortality rate of 45% to 78%.

To better understand this complex process, it is important to discuss normal pathophysiology, and what leads to the development of DIC (Boral et al., 2016).


disseminated fibrinolysis.

Normal hemostasis:
- A localized process
- Outcome is a platelet plug made through platelet adhesion and aggregation
- Secondary fibrin clot through activation of the coagulation cascade
- Leads to the formation of thrombus

DIC:
- Acquired systemic disorder characterized by intravascular activation of coagulation
- No specific localization, results from different processes
- Can cause damage to the microvasculature, and can lead to organ dysfunction

Etiology & Presentation
Clinical conditions identified as etiologies that can lead to the development of DIC (McCance et al., 2014, p. 1044):
- Septis/infection (gram-positive or gram-negative bacteria, malaria, fungi, viral hemorrhagic fever)
- Malignancies (metastatic cancer or acute leukemia)
- Pregnancy complications (amniotic fluid embolism, abruptio placenta, intrauterine fetal demise)
- Severe trauma (head injury, burns, etc.)
- Liver disease
- Immune reactions (severe anaphylaxis, herpetic transfixion reactions)
- Vascular abnormalities (glomerulonephritis, sickle cell disease, large aortic aneurysms)
- Hypoxia

Signs & Symptoms
Depends on underlying disease process, and whether presentation is acute or chronic
- Result of either hemorrhage or thrombosis
- Most common symptom is bleeding-from lines and wounds, purpura, petechia, hematomas, bleeding from eyes, nose, gums
- Can lead to shock; most demonstrate bleeding from 3 or more unrelated sites

Underlying Pathophysiology
The pathophysiology of DIC is complex, and “A variety of mechanisms contributing to the derangement of coagulation in DIC have been described.” (Levi, 2018). The significance of this process is inherent in the fact that a variety of factors, such as endothelial injury and inflammation, can initiate DIC (McCance et al., 2014, p. 1045).

Suppression of normal homeostasis
- Tissue factor (TF) release by endothelium or monocytes
- TF initiates the coagulation cascade, leading to thrombin activation, production of fibrin, and polymerization in a fibrin clot

Asymptomatic to life-threatening symptoms
- Difficult, meaning the bedside nurse must be cognizant of the pertinent lab tests
- Nurses need to be aware of what indicators to look for early identification of symptoms

Nursing Care
Quick and accurate clinical diagnosis is critical, therefore nurses need to be aware of what indicators to look for that indicate organ failure. Nurses should assess for:
- Changes in LOC, confusion
- Seizure activity
- Hypoxia
- Hypotension
- Chest pain
- Tachycardia

Diagnosis
Diagnosis is confusing and difficult, meaning the bedside nurse plays a critical role in early identification of symptoms. The nurse must also be cognizant of the pertinent lab values that drive treatment of DIC.

Significance
Though DIC presents in under 20% of ICU admissions, Toh et al. (2016) shares that “the presence of DIC shares the increases the chances of mortality beyond those of the primary disease.” This is why early recognition is essential, and leads to better outcomes for the affected patient.

Implications for Nursing Care
DIC is dynamic and complex, requiring vigilant monitoring from the bedside nurse. Prompt recognition of the underlying disease process is critical for successful patient outcomes, as there is no one lab test that is used to diagnose DIC (McCance et al., 2014, p. 1047). Presentation can range from acute life-threatening to stable chronic, so the clinical course will vary from patient to patient.

Conclusion

References

\[ http://step1.medbullets.com/hematology/114067/disseminated-intravascular-coagulation-dic \]


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