A Case of Skin Necrosis During Severe Sepsis Complicated by Disseminated Intravascular Coagulation

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Background: Purpura fulminans is a skin manifestation of a thrombotic microangiopathy known as diffuse intravascular coagulation (DIC) that occurs in severe infection. It is characterized by microvascular thrombi affecting the skin of the extremities, causing skin necrosis and threatening limbs or digits. Purpura fulminans is relatively uncommon, but the presence of these skin findings implies certain management strategies that can improve coagulopathy and possibly save a patient's limb.

Case Presentation: Here we present a case of a woman with severe sepsis who developed skin necrosis and distal ischemia while undergoing aggressive treatment in the medical ICU. Surgical debridement revealed non-bleeding skin, soft tissue and skin necrosis that spared the underlying fascia. The veins of the skin were thrombosed, and the skin culture was negative for infection. In the patient's lab work, she had elevated INR, low fibrinogen, thrombocytopenia, and an elevated d-dimer level.

Conclusion: Purpura fulminans is diagnosed based on characteristic skin findings in the setting of sepsis and coagulopathy. This finding has unique implications for management, affecting choices of vasopressor, anticoagulation, and blood products. Its pathophysiology is thought to be driven by consumption of protein C, crucial to preventing excessive thrombosis in maintaining homeostasis in the coagulation system. Conservative measures such as topical vasodilators may be used but commonly, patients require surgical debridement and supportive measures that resemble the care of burn victims. Awareness of this life-threatening form of thrombotic microangiopathy, and understanding its treatment implications, may decrease morbidity in patients with severe sepsis.

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Keywords: Purpura Fulminans, Necrosis, Disseminated Intravascular Coagulation, Internal Medicine

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