From Skin to Lungs: A Case of Purpura Fulminans Complicated by Pulmonary Embolism

Sandra Abadir MD, Sangeeta Prabhakar, Jasprit Takher
HCA Healthcare; Los Robles Regional Medical Center, Department of Internal Medicine

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Introduction

- Streptococcus pyogenes is a β-hemolytic gram-positive bacteria causing a spectrum of infections from pharyngitis to necrotizing fasciitis.
- In rare cases, it can trigger purpura fulminans (PF), a rapidly progressive thrombotic disorder characterized by dermal vascular thrombosis, hemorrhagic skin infarction, and systemic coagulopathy.
- PF represents a severe form of disseminated intravascular coagulation (DIC), where dysregulated activation of coagulation cascades leads to widespread microvascular clot formation and depletion of platelet and clotting factors.
- As DIC progresses, the patient becomes vulnerable to both hemorrhagic complications and large-vessel thrombotic events. In this setting, venous thromboembolism—including pulmonary embolism (PE)—can emerge as a catastrophic consequence of the underlying consumptive coagulopathy.
- This case highlights the rare but important progression from streptococcal PF to DIC, culminating in fatal pulmonary embolism despite anticoagulation.

Case Presentation

- A 34-year-old previously healthy African American male presented with sudden onset of finger pain and cyanosis.
- Initial differentials included Raynaud's phenomenon, but the symptoms progressed despite vasodilator therapy.
- Over five days, he developed petechiae on toes, leukocytosis, and fever.
- Imaging showed peripheral ischemia, and labs were suggestive of early disseminated intravascular coagulation (DIC).
- Notably, antistreptolysin O was elevated with a recent dental cleaning as the only preceding event.
- He developed distal digital necrosis without systemic shock.

Case Presentation

- Diagnosis of PF secondary to S. pyogenes was made.
- Over the next 24 hours, he developed acute hypoxia, CT angiography confirmed bilateral pulmonary emboli.
- Anticoagulation with intravenous heparin was initiated.
- Over a few days, the patient was discharged from the hospital to follow up with vascular, surgery and infectious disease to decide on the duration of treatment.

The patient's finger tips were necrotic on admission and continued to progress. Over the course of his admission, his toe tips also began to necroes.

Discussion

- Purpura fulminans (PF) is a rare thrombotic emergency, often triggered by severe infections like Streptococcus pyogenes.
- It involves widespread activation of coagulation in dermal vessels and can signal the onset of systemic coagulopathy.
- Infectious PF can rapidly progress to DIC, a paradoxical state where both bleeding and thrombosis occur.
- This case highlights the rare but important progression from streptococcal PF to DIC, culminating in fatal pulmonary embolism despite anticoagulation.

Conclusion

- This case underscores the thrombotic potential of purpura fulminans secondary to Streptococcus pyogenes.
- It illustrates the progression from cutaneous thrombotic lesions to systemic coagulopathy and bilateral pulmonary embolism.
- Clinicians should maintain vigilance for large-vessel thrombosis in patients with PF and DIC, as early diagnosis and intervention may improve outcomes in this rapidly evolving syndrome.

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