Streptococcocal Induced Toxic Shock Syndrome: Importance of Diagnosis and Initiating Life Saving Treatment

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Introduction

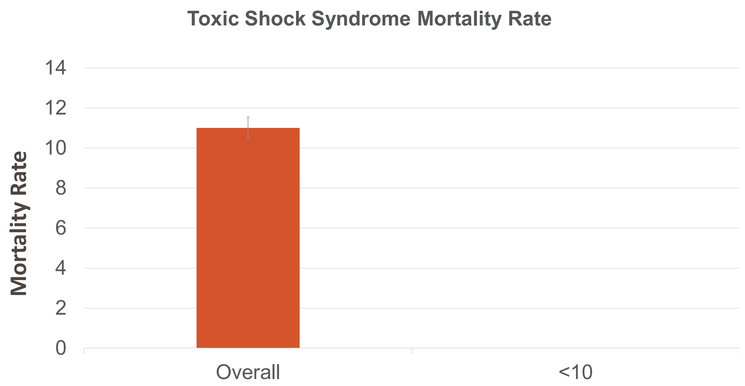
- Streptococcal toxic shock syndrome (TSS) is rare, life-threatening disease. with an annual incidence rate ranging between 0.8-3.4 per 100,000 cases. However, TSS is quite lethal with a mortality rate of 30-60% despite aggressive treatment.
- Clinical features usually consists of shock, organ failure, and a diffuse erythematous rash.
- Aggressive treatment is indicated due to its high mortality rate of 30-60%.

Case Description

- A 65 year old female with an unknown past medical history arrived to the emergency department (ED) comatose after being found unconscious on the floor with feces around her, last heard from in 5 days.
- At arrival in the ED, patient was afebrile, blood pressure 88/66, and hypoxic. Physical exam was remarkable for have a salmon pink rash with several bullae on her left lower extremity on the medial aspect of her calf starting distally from her knee and ending proximal to her ankle. Some of the bullae were intact while some had ruptured and were hemorrhagic. Another salmon pink rash was noted on her lower left extremity on the medial aspect of her thigh measuring about 3cm by 5cm. The rash was slightly raised without bullae formation.
- Major diagnosis included septic shock secondary to cellulitis and diabetic keto acidosis (DKA). She was transferred to the ICU underwent appropriate treatment of DKA and antibiotic treatment with vancomycin and piperacillin/tazobactam with blood cultures pending. Emergency surgical debridement of the wound showed no signs of necrosis.
- X days later, patient was still comatose

Clinical Manifestations and Mortality Rate

- The clinical manifestations of streptococcal induced TSS includes a high grade fever, hypotension, and diffuse salmon pink rash usually observed on the upper or lower extremities.
- Early initiation of treatment can help prevent severe complications such as septic shock, renal failure, and mortality.



TSS is a complication arising from infection with staphylococcal or streptococcal bacteria, a dangerous bodily response to the toxins they produce. And it can kill you: TSS from S. aureus has a mortality rate of between 5 and 15 percent, but for streptococcal TSS, the mortality rate jumps **up to 30 to 70 percent**.

Discussion

- This case illustrates how often TSS can be missed during our initial diagnosis and the clinical affects of delayed treatment. S. pyogenes is Group A strep that is susceptible to vancomycin which was initiated on arrival. However, major complications caused my Streptococcal TSS is not due to the bacteria, but due to the toxin, MN8, that it produces leading to systemic inflammation and capillary leakage via massive cytokine release. Therefore, antibiotic treatment is also tailored in the inhibition of the toxin.
- Clindamycin is preferred for streptococcal TSS due to its anti-toxin effect. Research has shown that Clindamycin leads to the inhibition of MN8, but does not affect the bacterial growth. Therefore, an adjunct antibiotic containing penicillin is added to treat the bacteria growth. Often antibiotics are adequate for treatment, however surgical intervention may also be needed for the toxic antigen released by S. pyogenes.
- Our patient had to undergo an emergent surgical debridement of the wound, which eventually led to the patient undergoing an above the knee amputation When observing a patient with diffuse cellulitis that is hemodynamically unstable, TSS should be considered in the differential diagnosis.

References

Schmitz M, Roux X, Huttner B, Pugin J. Streptococcal toxic shock syndrome in the intensive care unit. *Ann Intensive Care*. 2018;8(1):88. Published 2018 Sep 17. doi:10.1186/s13613-018-0438-y

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