










# A case report of toxic shock syndrome caused by *Streptococcus pyogenes*

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**Introduction:** Streptococcal toxic shock syndrome (TSS) is an acute, toxin-mediated condition characterized by rapid deterioration and multiorgan involvement, associated with a high mortality rate.<sup>1</sup> We report a case of *Streptococcus pyogenes*-induced TSS in a healthy 39-year-old woman who developed a multiorgan dysfunction syndrome, including myocarditis.

**Case report:** On April 12, 2024, the patient presented to the emergency department with fever, sore throat, and upper back pain. Following treatment, she was discharged with a prescription for oral antibiotic therapy. The next day, she presented with a fever and stomach pain, with poor overall health and hypotension. Radiological analysis reveals a suspicious formation in the lower right abdomen quadrant that is not seen during laparoscopic investigation. Following surgery, hemodynamic collapse develops, and severe streptococcal toxic shock syndrome is suspected. The patient is hemodynamically stable on high levels of vasopressor and inotropic support, has livid extremities, and undergoes hemodialysis with hemopurification and intravenous immunoglobulin injection. Due to the development of acute respiratory distress syndrome, veno-venous extracorporeal membrane oxygenation is initiated, with support gradually deescalating over the next few days. The patient, requiring extended mechanical ventilation due to respiratory failure, underwent a percutaneous tracheotomy on April 26. Early mobilization and respiratory physiotherapy began on the second day of admission to counteract the risks of deconditioning from prolonged bed rest. During early hospitalization, the patient developed ischemia in both feet and fingers, which led to progressive necrosis in affected areas. In early May, signs of neurological improvement emerged, with the patient beginning to communicate nonverbally and verbally. High-flow oxygen therapy was applied, and by the end of May, she achieved respiratory independence. The patient developed a total AV block, necessitating the placement of a temporary electrode until a permanent pacemaker was implanted on July 15. Meanwhile, ischemia worsened in her extremities, resulting in significant tissue necrosis and requiring surgical intervention, which was performed on 60th hospitalization day and included a right below-knee amputation, transmetatarsal amputation of the left foot, and finger amputations at the DIP joints. Despite these amputations, the patient continued with active physical therapy, mobilizing on her remaining limb. Due to complications in the left leg, on the 94th day a multidisciplinary team opted for a left below-knee amputation to ensure proper wound healing. After 110 days in the hospital, the patient achieved hemodynamic stability, respiratory independence, and sufficient recovery to be discharged in good condition, despite the significant loss of limbs.

**Conclusion:** TSS is a life-threatening illness that can rapidly spread and affect all organ systems. The patient's successful recovery, despite severe complications and prolonged hospitalization, highlights the adaptability of multidisciplinary teams and coordinated interventions such as hemodynamic support, immunotherapy, advanced respiratory management, psychological support, and ongoing rehabilitation. Nursing care for those patients demanded an individualized approach that addressed the patient's psychological and emotional needs as well as to the physical aspects of care. Effective communication, continuous monitoring, and collaboration with the healthcare team are essential for improving patient outcomes and promoting recovery and rehabilitation.

## LITERATURE

1. Chen X, Gong YY, Zhang L. A case report of streptococcal toxic shock syndrome caused by *Streptococcus mitis* in a healthy adult. *BMC Infect Dis.* 2021 Feb 6;21(1):154. <https://doi.org/10.1186/s12879-021-05852-y>

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