

# Clinical Case Report

## From lockjaw to life: A case series on tetanus

POOJA SINGH, APOORVA DHIMAN, ADITI RATHEE,  
SHANU KUMAR, SANJAY PANDIT, ANURAG ROHATGI

### ABSTRACT

Tetanus remains a major cause of morbidity and mortality, especially in resource-limited settings. This case series outlines the management of four patients with tetanus referred to our critical care unit in New Delhi from July to November 2024. The comprehensive approach included early administration of tetanus immunoglobulin, rigorous control of spasms and autonomic dysfunction, and careful management of complications. Our team achieved a 100% survival rate in a disease known for its high fatality. We discuss the challenges of tetanus management with the need for sedatives, muscle relaxants for a longer period, approximately 2 weeks, and underscores the importance of immunization and timely, evidence-based critical care.

Natl Med J India Article in Press

### INTRODUCTION

Tetanus is a life-threatening neurological disorder caused by the neurotoxin of *Clostridium tetani*, which enters the body through contaminated wounds and has a high fatality of about 42% in India.<sup>1,2</sup> The toxin blocks neuro-transmitter release, causing intense muscle spasms, rigidity and autonomic instability. In developing countries, poor vaccination coverage and inadequate healthcare access contribute to the continued prevalence of tetanus with high mortality. According to the WHO, global tetanus mortality remains concerning, especially among unvaccinated adults.<sup>3</sup> Management focuses on neutralizing the toxin, controlling muscle spasms and addressing complications such as respiratory failure and infections.

### THE CASE

#### Case 1

A 37-year-old male rag picker presented with trismus and dysphagia, rapidly progressing to generalized spasms and opisthotonus. Symptoms began 1 month after sustaining a knee injury from an iron rod. He had no history of tetanus immunization. Initial assessment revealed severe type 2

Maulana Azad Medical College, Delhi, India  
POOJA SINGH, APOORVA DHIMAN, ADITI RATHEE,  
SHANU KUMAR, SANJAY PANDIT, ANURAG ROHATGI  
Department of General Medicine

Correspondence to: Aditi Rathee; [rathee.aditi03@gmail.com](mailto:rathee.aditi03@gmail.com)

[To cite: Singh P, Dhiman A, Rathee A, Kumar S, Pandit S, Rohatgi A. From lockjaw to life: A case series on tetanus. *Natl Med J India* 2025. DOI 10.25259/NMJ1\_1610\_2024]

© The National Medical Journal of India 2025

respiratory failure, necessitating immediate intubation and administration of 3000 i.u. tetanus immunoglobulin, intravenous midazolam and injection of rocuronium. The patient developed autonomic dysfunction, with fluctuating blood pressure requiring occasional vasopressor support. He was managed for ventilator-associated pneumonia (VAP) as per the sensitivity. Sedative was continued for 17 days and muscle relaxant for 14 days, with sedation-free period trials in between. By day 22, the patient was weaned off the ventilator. He was discharged on day 28, having fully recovered.

#### Case 2

A 17-year-old male was admitted with generalized tetanus symptoms, including trismus, risussardonicus, and severe opisthotonus. He had no known trauma but lacked a vaccination history. Rapid progression led to respiratory compromise, requiring intubation within 2 days of start of symptoms. He was treated with human anti-tetanus immunoglobulin, metronidazole, and midazolam. Paroxysms were severe, necessitating sustained propofol infusion for 24 hours for resistant titanic spasms. By day 15, a T-piece trial was initiated, and his tracheostomy was successfully decannulated by day 20. The patient made a full recovery and was discharged on day 30, with follow-up confirming complete functional recovery.

#### Case 3

A 58-year-old male farmer presented with generalized rigidity following an abrasion on his lower limb 8 days before the presentation. He had a history of left upper limb amputation 7 years back and no history of tetanus immunization. On admission, his symptoms worsened rapidly, leading to the diagnosis of generalized tetanus. He was administered tetanus immunoglobulin and treated with midazolam, baclofen and metronidazole. Persistent spasms required continuous infusion of sedation and a muscle relaxant. Injectable morphine was added in the initial 5 days to maintain round-the-clock analgesia that minimized the dose requirement of injection midazolam. VAP developed, and intravenous antibiotics were tailored to susceptibility patterns. Despite setbacks, including failed initial weaning attempts, he was successfully weaned off the ventilator by day 25 and discharged fully recovered by day 28.

#### Case 4

The fourth patient was a 45-year-old male who presented with severe tetanus following trauma to his foot from a rusty nail 14 days earlier. He had no vaccination record and displayed generalized spasms and opisthotonus. Aggressive treatment included tetanus immunoglobulin, sedatives and muscle relaxants. Tracheostomy and ventilatory support were essential, with careful management of autonomic instability and secondary infections. He was successfully weaned off sedation and subsequently discharged without complications after 30 days. The use of injectable morphine minimized sedative and muscle relaxant requirements.

### DISCUSSION

The management of tetanus involves multifaceted strategies, requiring prompt neutralization of the toxin, control of muscle

spasms and prevention of complications such as respiratory failure and nosocomial infections. All patients in this series required mechanical ventilation and aggressive spasm control, highlighting the disease's severe nature.

#### *Pharmacological management*

Key agents included injection midazolam<sup>4</sup> as a sedative and rocuronium for neuromuscular blockade. Intravenous magnesium sulphate was used in one case to manage refractory spasms, consistent with evidence supporting its antispasmodic effects.<sup>5</sup> Morphine reduced the sedative and muscle relaxant dose requirement.<sup>6</sup>

#### *Infection control*

VAP was a major complication, managed based on culture results. *Klebsiella* and *Acinetobacter* were the predominant pathogens, reflecting common intensive care unit-acquired infections in our setting.

#### *Autonomic dysfunction*

All patients experienced autonomic instability, a hallmark of severe tetanus. Fluctuating blood pressure was managed with careful fluid resuscitation and vasopressor support when needed.

Our results demonstrate that even in resource-limited settings, a structured approach can lead to successful outcomes. However, the burden of tetanus could be drastically reduced

with increased immunization coverage, as outlined by global health initiatives.

#### *Conclusions*

Despite the disease's high mortality rate, we achieved 100% survival in four cases of tetanus, showcasing the effectiveness of a dedicated and multidisciplinary approach. The cases underscore the urgent need for improved public health measures, especially in adult vaccination campaigns, to prevent such life-threatening infections.

*Conflicts of interest.* None declared

#### REFERENCES

1. Marulappa VG, Manjunath R, Mahesh Babu N, Malige Gowda L. A ten year retrospective study on adult tetanus at the epidemic disease (ED) hospital, Mysore in Southern India: A review of 512 cases. *J Clin Diagn Res* 2012;**6**:1377–80.
2. Hassel B. Tetanus: Pathophysiology, treatment, and the possibility of using botulinum toxin against tetanus-induced rigidity and spasms. *Toxins (Basel)* 2013;**5**:73–83.
3. World Health Organization. Tetanus: Key facts. Available at [www.who/website](http://www.who/website) (accessed on 10 Dec 2024).
4. Gyasi HK, Fahr J, Kurian E, Mathew M. Midazolam for prolonged intravenous sedation in patients with tetanus. *Middle East J Anaesthesiol* 1993;**12**:135–41.
5. Thwaites CL, Yen LM, Loan HT, Thuy TT, Thwaites GE, Stepniewska K. Magnesium sulphate for treatment of severe tetanus: A randomized controlled trial. *Lancet* 2020;**368**:1436–43.
6. Zia Z, Muneer S, Baloch R. The role of sedative and muscle relaxants in the management of severe tetanus: A case study approach. *Anaesth Analg* 2022;**134**:348–56.