Management of Tetanus in the ED: A Case Study

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Objective

To describe the clinical features and initial management of a patient with suspected tetanus, presenting to an emergency department (ED).

Clinical Features

An otherwise well male aged in his seventies presented from home to the ED with severe left thigh spasm on a background of squatting while gardening 3 days prior. While in the ED, the patient developed 2 episodes of self-resolving trismus with associated oxygen desaturations. History and clinical features were in keeping with presumed tetanus. Tetanus immunoglobulin and antimicrobials were administered, as well as the diphtheria-tetanus vaccine, as tetanus vaccination was out of date. The patient was intubated using propofol and rocuronium for hypoxic respiratory failure due to repeated episodes of tetany. Propofol and morphine infusions were used for ongoing sedation and analgesia. *See Figure 1 for pharmacotherapy used.*

Initial Therapy
- ADT Vaccine IM
- Benzylpenicillin IV 1.8 g q4h
- Tetanus Immunoglobulin IM 500 units

Rapid Sequence Intubation
- Propofol IV 100 mg
- Rocuronium IV 150 mg

Post Intubation Sedation
- Propofol IV 500 mg/50 mL infusion
- Morphine IV 100 mg in 100 mL 0.9% NaCl infusion

Other Therapy used
- Metronidazole IV 500 mg q6h
- Metaraminol IV 1 mg (0.5 mg x 2 doses)

Figure 1: Pharmacotherapy used

Literature Review

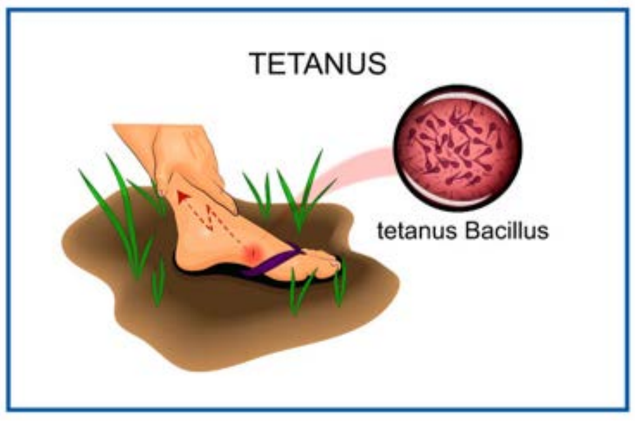

Figure 2: Common cause of tetanus

The prevalence *of Clostridium tetani (c.tetani)* infection, the cause of tetanus, has decreased significantly due to high vaccination uptake (1,2). Those at risk include unvaccinated and immunocompromised patients. *C.tetani* is mostly located in dust, animal faeces and soil, and usually enters the body via skin breaks *(see Figure 2).* The diagnosis of tetanus is clinical, with positive culture results in ~30% of cases. The treatment for tetanus includes antibiotics, tetanus immunoglobulin, neuromuscular junction blockade and management of complications (2).

Pharmacist Interventions, Case Progress and Outcomes

The pharmacist assisted the medical team in preparing for rapid sequence induction in the setting of respiratory compromise, advised on the dosing of antimicrobials and charted all medication administered in the ED via the Partnered Pharmacist Medication Charting model (3,4). The patient was subsequently extubated and remained in an altered conscious state in the week after presentation, experiencing ongoing episodes of tetanus.

Discussion

Tetanus should be considered a differential diagnosis in patients who present with trismus. A multidisciplinary approach to early management facilitated timely diagnosis and management (5,6,7).

References

1. Kyu HH, Mumford JE, Stanaway JD, Barber RM, Hancock JR, Vos T, et al. Mortality from tetanus between 1990 and 2015: Findings from the global burden of disease study 2015. BMC Public Health. 2017;17(1):1–17.
2. Bae C, Daniele Bourget. Tetanus. In: StatPearls. Treasure Island, Florida: StatPearls Publishing; 2022.
3. Tong EY, Roman C, Mitra B, Yip G, Gibbs H, Newnham H, et al. Partnered pharmacist charting on admission in the General Medical and emergency short-stay unit - a cluster-randomised controlled trial in patients with complex medication regimens. Journal of Clinical Pharmacy and Therapeutics. 2016;41(4):414–8.
4. Roman et al. Feasibility of early Partnered Pharmacist Medication Charting (PPMC) for undifferentiated patients in the ED [abstract]. Proceedings of the SHPA Virtual Congress; 2020 November 20th; Australia.
5. Chalya PL, Mabula JB, Dass RM, Mbelenge N, Mshana SE, Gilyoma JM. Ten-year experiences with tetanus at a tertiary hospital in Northwestern Tanzania: A retrospective review of 102 cases. World Journal of Emergency Surgery. 2011;6(1):20.
6. Dafallah MA, Ragab EA, Mohamed Ahmed Elawad OA. Experience with tetanus in a tertiary care hospital in Sudan: A retrospective review. Emergency Medicine International. 2021;2021:1–5.
7. Joshi S, Agarwal B, Malla G, Karmacharya B. Complete elimination of tetanus is still elusive in developing countries: a review of adult tetanus cases from referral hospital in Eastern Nepal. Kathmandu Univ Med J (KUMJ). 2007;5(3):378-81.

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