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Tetanus: A Case Report of Tetanus with Turubulant Course and Unusually Long Sedation

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ABSTRACT:
Despite the use of substantial sedation, a patient recovered from widespread tetanus with regular bouts of muscular spasms for over 6 weeks. This case is of a 22-year-old male farm worker with a punctured wound on his right hand who arrived at the Emergency Department 1 week later with muscular spasms and lockjaw. He was subsequently taken to the ICU for seven weeks before being discharged with complete recovery.
The reason for reporting this case is that despite several sedation and antispastic methods, he was never entirely free of muscular spasms during his 6-week course.

I. INTRODUCTION:

Tetanus is a vaccine-preventable infection caused by Clostridium tetani, an obligately anaerobic, gram-positive, spore-forming bacilli that enter a puncture wound,proliferate and release toxins (1,2). Tetanus toxin, also known as tetanospasmin, is the most important virulence component of C. tetani, affecting motor neurons and inducing tetanic convulsions. Tetanus is a potentially fatal condition characterized by increasing muscle tension and spastic paralysis (3). Although this infection is almost rare in the UAE due to stringent immunization, immigrants with a poor history of immunization can be infected.

II. CASE STUDY:

A 22-year-old male Pakistani agricultural worker was brought to our hospital emergency department by friends with generalized muscle rigidity and an inability to open his mouth. There is no h/o trauma, travel, or drug misuse. He was otherwise healthy, with no comorbidities, and his immunization history was unclear.

A dry wound on the dorsal side of the right hand was identified during the examination. Further inquiry found that he got a puncture wound while working one week previously. On admission, the vital signs were as follows: HR- 100/min, BP-115/80, SPO2 99% on room air, VBG- Ph- 7.41, PCO2-41, PO2 53, Bicarb-25, lactate 2.0. Except for myoglobin-109 and total CK-2645, all tests were within normal limits.

After receiving 10 mg of diazepam, he was able to open his mouth somehow and his muscles were partially relaxed. Blood and wound samples were collected for culture, and metronidazole was initiated Tetanus toxoid and tetanus immunoglobin was administered. The patient was admitted to the ICU.

In the ICU, the patient was confined in an isolated dark room, and on the first day, only diazepam was used as PRN.

On the second day, the patient developed frequent muscle spasms, bradycardia, and hypotension, therefore he was electively intubated and placed on control mode, sedated with fentanyl 100 mcg/hr, propofol 100 mcg/hr, midazolam 10 mg/hr, and rocuronium infusion. Baclofen 20 mg TID tabs were started, as well as a 1-2 gram/hour Mgso4 infusion. We tried to discontinue the rocuronium after two days of sedation. However, due to muscle spasms, the patient was placed on high sedation with RASS -4, fentanyl 200-300 mcg/hr, propofol 200 mg/hr, and midazolam 15 mg/hr. Diazepam 5-10 mg boluses were administered before any procedure or nursing care.

Because of his continuous episodic muscular spasms, increased liver function, and greenish urine, the strategyof sedationneeded to be changed in the following days. The major changes were as follows-

Day 6- fentanyl 300 mcg/hr, midazolam 15 mg/hr, thiopentone 100-150 mcg/kg/hr, ketamine 50 mg/hr, diazepam- 10 mg q4, tab labetalol 200 mg tid, baclofen- 20 mg tid.

Day 10- the infusions of morphine 5-10 mg/hr, midazolam 20 mg/hr, diazepam 10 mg q2, baclofen tab 20 qid, and rocuronium 20-30 mg/hr were restarted.

Day 12- morphine 10 mg/hr, propofol 250 mg/hr, midazolam 20 mg/hr, clonidine 1-1.5 mcg/kg/hr, baclofen, and diazepam as before, labetalol discontinued.

Day 18- dantrolene was added, and baclofen was put on every four hours.

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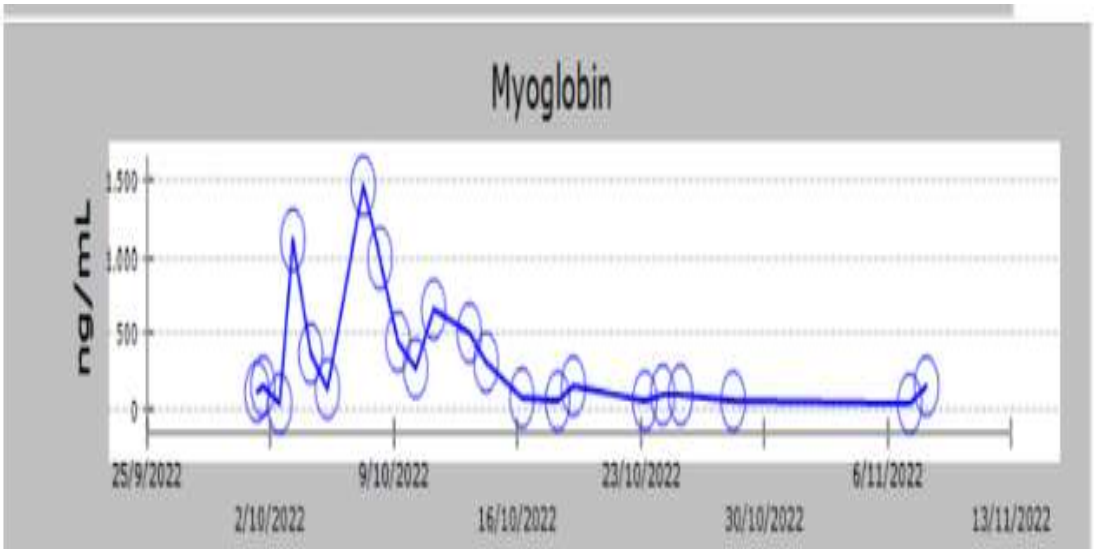
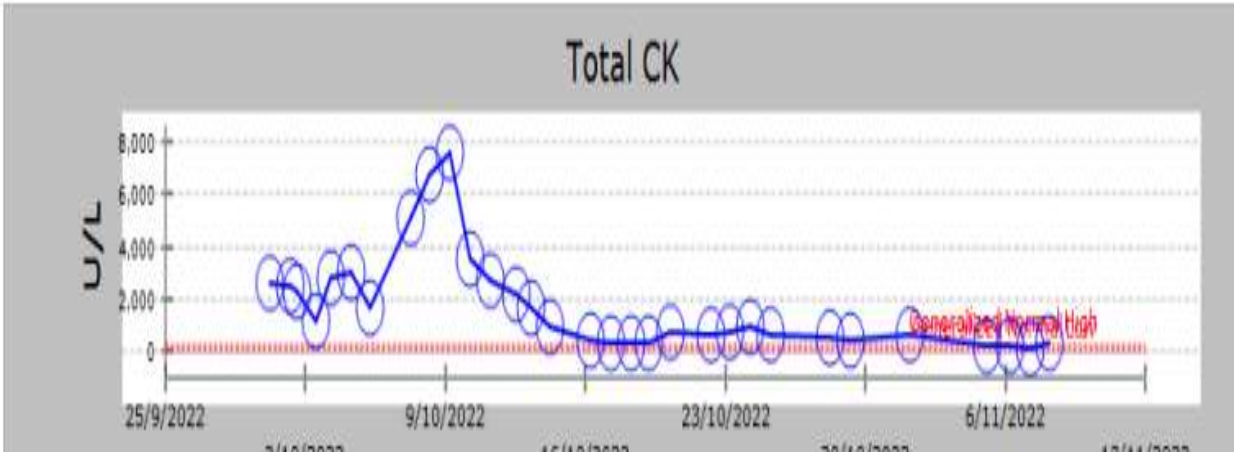
Day 24- Morphine was changed to fentanyl, and thiopental was restarted; propofol was discontinued, but clonidine was continued.

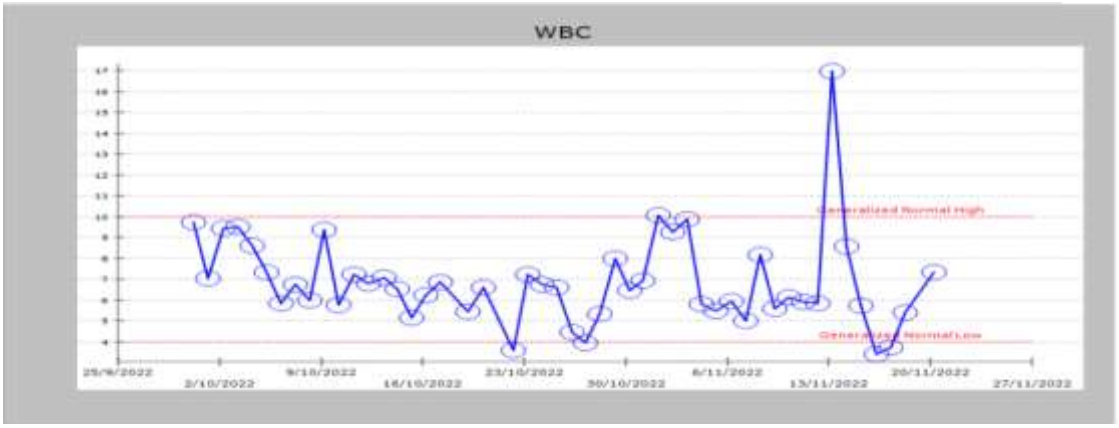
Day 30- The sedation was gradually tapered off, with frequent diazepam administration.

Day 40- discontinued all sedation and was just given clonidine tablets.

In addition to the normal daily lab tests, his labs for liver function, myoglobin, CK, and troponin werefollowed during his whole treatment.







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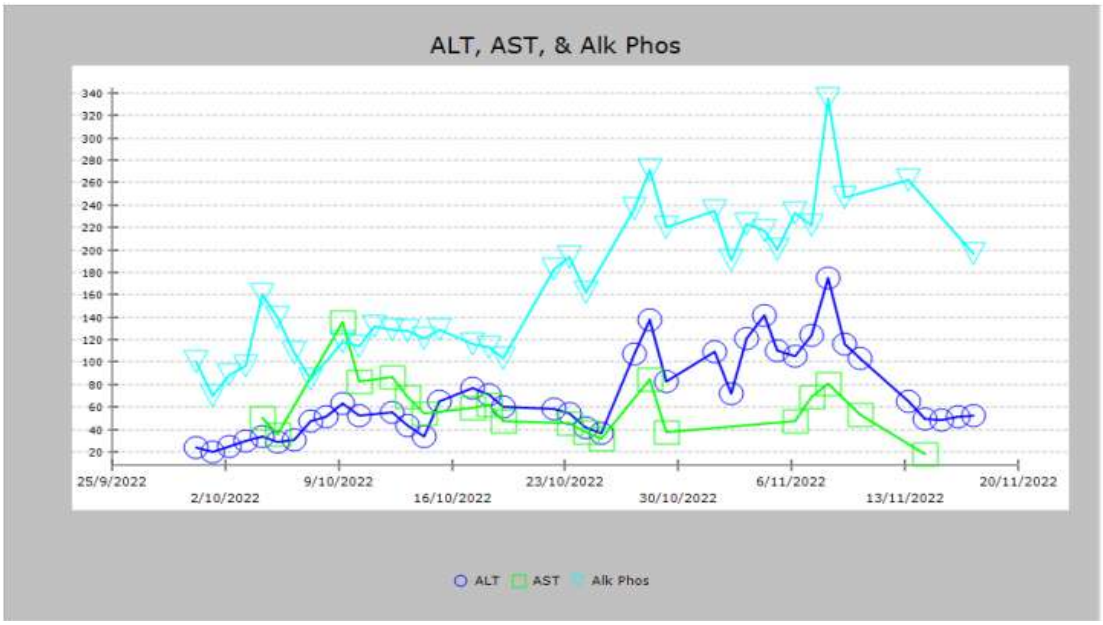

Myoglobin was maximum of 1463 on the eighth day, CK-7568 on the ninth day, WBC was virtually normal for most of the period, and liver function maximum was deranged between the 12th and 25th days. Renal function was unaffected.

From an antibiotic standpoint, he completed a 7-day course of metronidazole and administered vancomycin from the 4th to the 12th day; he also required low-dose norepinephrine for a few days.

He had a tracheostomy on day 14 and was discharged from the ICU on day 48, with a GCS of15/15,room air, hemodynamic stability, and no muscle spasms for the last 6 days.

III. DISCUSSION:

C. tetani is an anaerobic bacteria found in soil as spores or in the gastrointestinal systems of mammals that generates tetanospasmin, a powerful neurotoxin(4). The incubation period spans from 3 to 21 days, with the most common incubation period being 10 days (2). Tetanospasmin causes violent spastic paralysis by inhibiting the production of an inhibitory neurotransmitter glycineand Gama Amino Butyric Acid (GABA) that acts on motor neurons. , the overall course of disease in most cases of widespread tetanus is 6-8 weeks (6).

TIG, Metronidazole, magnesium sulphate(7), usage of sedative-benzodiazepine, opioids,

propofol, thiopental, baclofen for muscle spasm, clonidine, and labetalol for autonomic control are standard treatments for tetanus. Several studies also suggest dantrolene. For airway care intubation and tracheostomy are frequently required.

This patient was a textbook case in terms of the port of entry, the incubation period (seven days), symptoms (muscle rigidity, locked jaw, autonomic abnormalities), and course (seven weeks), except for the need for strong sedation.

We read several articles (8-16) before putting all the medications in these doses because these types of cases are extremely rare in UAE. Throughout the entire period, neuro and standard monitoring were in place. And the patient was monitored by ABG and labs.

IV. CONCLUSIONS:

We report management and outcome features in patients with tetanus treated according to a standardized protocol. Although this patient survivednevertheless duration of hospitalization,requiredhigh resources and mechanical ventilation.This indicates that tetanus remains a significant burden on healthcare services. Therapies that can reduce these continue to be needed.

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