

Generalized tetanus in an eight-year-old girl: a case report

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ABSTRACT

Tetanus, a vaccine-preventable disease threatens life. Tetanus has four clinical presentations: neonatal, localized, cephalic, and generalized. Generalized tetanus was the most common presenting feature on admission to the hospital. We report a case with generalized tetanus with difficulty swallowing and sore throat by admission. She was eight years old. She had symptoms on the fifth day of nail soak. She rapidly developed an opisthotonic posture on the first day of admission. She was discharged on foot on the seventieth day. Generalized tetanus should be kept in mind that a patient may be admitted to a hospital with difficulty swallowing and a sore throat.

Keywords: Generalized tetanus, childhood, tetanus toxoid, muscle spasm

Tetanus is a vaccine-preventable disease which is caused by *Clostridium tetani*. It often causes disease through infected wounds [1]. The exotoxin tetanospasmin blocks the presynaptic release of neurotransmitters, causing uncontrolled muscle contraction and clinical spasms [2]. Tetanus is not transmitted from person to person. Prevention of tetanus in public is by vaccination after injury [3].

Tetanus has four clinical presentations: neonatal, localized, cephalic, and generalized. Generalized tetanus constitutes 94-95% of cases admitted to the hospital after the neonatal period [4].

We present a case of generalized tetanus who presented with sore throat and difficulty in swallowing and was discharged after recovery.

CASE PRESENTATION

An eight-year-old Syrian girl with a painful throat, dif-

iculty swallowing, and tongue motions, as well as neck pain, fever, and shivering, was admitted to the hospital. She had the symptoms for three days.

Eight days ago, a nail became lodged in her right foot. She had never been immunized against tetanus before. She couldn't open her mouth during the physical checkup. She had grimacing on her face. She couldn't show her teeth, couldn't sit without assistance, and was bending backwards. She was suffering from diaphoresis. She had a Dakar score of 3. The findings of the initial laboratory tests were normal; *C. tetani* (Tetanus) IgG was 0.05 IU/mL (0.01-0.15 IU/mL). No organism was found in blood or sputum cultures.

The wound was cleaned. The treatment was promptly supplemented with aqueous penicillin (400.000 units/kg/day, 4 divided doses) and metronidazole (30 mg/kg/day, 3 divided doses). For muscle stiffness and tachycardia, midazolam infusion (0.1 mg/kg/h-0.4 mg/kg/h) and tizanidine (2 mg/day, 3 split doses) were added. A dose of 500 IU of human tetanus

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immunoglobulin was given. She developed opisthotonus after a few hours (Fig. 1). She was intubated in the twelfth hour of her admission. Rocuronium bromide was used to provide skeletal muscular relaxation (starting at 7 micrograms/kg/min and increasing to 12 micrograms/kg/min). Phentanyl was utilized for pain. An extra dose of 1000 IU antitoxin was given because of spasms in the neck and abdominal muscles. The infusion of esmolol (200 micrograms/kg/min) had begun. When necessary, amiodarone was used to treat tachycardia. With loud stimuli or external movement, she had myoclonus in her arms, which moved towards her legs. Myoclonus was treated with a single dosage of rocuronium administered intravenously. Because the tachycardia persisted, adenosine and lidocaine were administered. A single dose of captopril was given because hypertension had developed. Penicillin and metronidazole were withdrawn on the 14th day. The patient could not be removed from the ventilator. A tracheostomy was put in place. She had pulmonary edema and cardiac arrest on the sixteenth day of her admission. For the persisting myoclonus in the arms, legs, and around the mouth, gabapentin and levetiracetam were added. With a decrease in rocuronium infusion, she was able to open her eyes when she heard her name called on the twentieth day of admission. Trismus had returned, and she was still experiencing autonomic symptoms (diaphoresis, tachycardia, and hypertension). The tracheostomy was removed on the 45th day of admission. Her legs hurt as she moved them. She exhibited gripping incompetence in her right hand, and her muscle strength in the right leg was 3/5, while it was 4-5/5 in the left leg.

On the 50th day of hospitalization, a brain MRI indicated hyperintensities in the periventricular deep white matter, the centrum semiovale, and the subcortical white matter. The diffusion MRI and MRI venography of the brain were both normal. She was able to

sit without assistance on the 70th day, when she was discharged, although she still needed help. She had right hemiparesis.

DISCUSSION

Tetanus is a vaccine-preventable infectious disease. In 2015, 79% of deaths due to tetanus were seen in developing countries like South Asia and sub-Saharan Africa [4].

Because some developing countries' reporting systems are inefficient, the incidence may be higher than estimated [4]. The classic form of tetanus is generalized tetanus, which accounts for more than 80% of cases. It takes 3 to 21 days for symptoms to appear after infection, with symptoms often intensifying over a week [1]. Our patient had symptoms on the fifth day of nail wound.

Toxin accumulation in the central nervous system causes autonomic dysfunction [5]. Our patient had shivering, diaphoresis, and tachycardia. Diaphoresis, increase in temperature, arrhythmias, and changing blood pressure are all autonomic nervous system signs of generalized tetanus [1]. Reflex spasms, risus sardonicus (continuous facial contraction), opisthotonus (backward arching of the head, neck, and spine due to strong muscular spasms), and generalized seizure-like activity have all been reported [1, 5]. All of these symptoms were present in our case. The Dakar scoring system is a prognostic scoring system that takes into account the incubation period and the period of onset as well as neurological and cardiac manifestations [6]. Our patient had a Dakar score of 3. Farrar et al. [7] reported a mortality rate of 59% with a Dakar score of ≥ 3 and a mortality rate of 14% with a Dakar score of < 3 . Tetanus is a life-threatening illness. Wound care, management of muscle spasm and consequences, res-



Fig. 1. Wound under right foot and opisthotonic posture of the patient.

piratory support, metabolic state balancing, and avoidance of the toxin's ongoing spread are all part of the treatment [4]. Tetanus cannot be diagnosed with a specific test [5]. In the general population, protective antibody levels range from 0.01 to 0.15 IU/mL. The majority of vaccinated people should have protective antibody levels of > 0.15 IU/mL [5]. If serum antibody titers are greater than 0.1 IU/mL, a diagnosis of tetanus should be considered doubtful [4, 5]. Our patient's Tetanus IgG was 0.05 IU/mL. She was not vaccinated before. The patient must stay in a calm place. The number of manipulations and procedures performed on patients must be kept to a bare minimum. Patients may have myoclonus. Myoclonus is a condition that begins in the upper extremities and extends lower. Symptoms may appear sooner or later depending on the distance between the damage site and the central nervous system, with an incubation period of 3-21 days [5].

Tetanic seizures are a sign of a worsening prognosis. The patient is in excruciating pain and does not lose consciousness throughout this seizure [5]. Our patient suffered tetanic seizures as well, but the prognosis was not as bad as it may have been. On house visits after discharge, she was vaccinated.

CONCLUSION

Tetanus can be prevented with vaccination. It should be kept in mind that patients with tetanus may present with difficulty swallowing and a sore throat.

Informed consent

Written informed consent was obtained from the patient's family for publication of this case and any accompanying images.

Authors' Contribution

Study Conception: SY; Study Design: SY, ST; Supervision: ST, YB; Funding: N/A; Materials: SY, CS; Data Collection and/or Processing: SY, CS; Statistical Analysis and/or Data Interpretation: SY, ST; Literature Review: SY, YB; Manuscript Preparation: SY and Critical Review: SY, ST.

Conflict of interest

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