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Letter to the Editor

Treatment of severe tetanus in ICU on mechanical ventilation: Case report

Fulya Yilmaz[1], Hande Sahinkaya[1], Direnc Ezgi Kulunk[1], Ozgur Duran[2]

[1]Health and Science University Bozyaka Training and Research Hospital Anaesthesiology and Reanimation Department, Izmir, Turkey
[2]Health and Science University Bozyaka Training and Research Hospital Emergency Medicine Department, Izmir, Turkey

Dear Editor,

Tetanus is an acutely progressive, mortal systemic disease that is caused by exotoxins produced by Clostridium tetani (1-5). The disease has an importance because of its high mortality. Respiratory failure is the most severe problem releated to generalized tetanus and mechanical ventilation is almost mandatory (1,6). Despite the passive and active immunization since 1893 and 1923, tetanus is still significant health problem in the developing world (3,4,6). The mortality rate has recently decreased with improvements in infection control, immunization and medical treatment (2,7). There are 4 variable types of tetanus disease (generalized, local, cephalic, neonatal) (1,3,8). Initial symptoms are nonsepsific (8). The diagnosis is purely clinical and is based on a clinical history and physical examination (4-6). No laboratory studies are spesific for tetanus (5).

A 65 year-old-woman with a medical history of type 2 diabetes, hypertension and coronary artery disease was admitted to Emergency Department (ED) eight days ago with an injury at her right foot by a nail. She had received tetanus vaccine and than she was discharged from ED. Three days after the discharge, she again presented to another hospital complaining of jaw and neck stiffness. Here she was treated symptomatically and discharged from ED. Five days after the second discharge, she was presented to our ED with worsened symptoms. During admission, she was conscious, her heart rate was 117/min, blood pressure was 170/110 mmHg, respiratory rate was 28 breaths/min, and temperature was 37°C. On neurologic examination, she had severe trismus, jaw cramping and painful muscle spasms involving the whole body. Initial laboratory studies were normal except white blood cell count (WBC). (WBC:59800/mm3). The electrocardiogram showed tachycardia.

The patient was diagnosed as tetanus. She was immediately treated with tetanus immuno globulin 4500 IU and metronidazole 500 mg intravenous every 6 hours. She subsequently developed progressive respiratory difficulty requiring intubation at ED. She was admitted to ICU. Rocuronium, midazolam and remifentanyl were used to treat muscle spasms and for sedation. Fluctuating blood pressure caused by tetanus associated autonomic dysfunction was controlled by using fluid therapy, vasopressors and hypotensive agents. The patient underwent tracheostomy for prolonged requirement of mechanical ventilator. Her hospital course was complicated with ventilator associated pneumonia, which was dealt successfully accordingly . Finally 40 days after admission, spasms resolved and the patient was weaned from mechanical ventilator. She was discharged from ICU to Infectious Disease Clinic 2 months after admission and discharged from hospital after 4 months with tracheostomy cannula.

Despite active and passive immunization, tetanus continues to be seen in our country (4). In most cases Clostridium tetani enters the body mainly through injuires (2), especially of the lower extremty (4). Incubation time varies between 2 days to 2 months (1). The treatment of tetanus is focused on the elimination of the organism, neutralization of tetanospasmin, control of symptoms and supportive care (3,7). Human tetanus immnunoglobulin neutralize circulating tetanospasmin. Antibiotics are recommended to prevent the production of toxin (3). Metronidazole is a safe alternative antibiotic (3,7). Approximately 3-5 weeks ICU treatment is required in severe cases (1).

Which wound that causes tetanus can not be distinguished so tetanus toxoid is recommended for all patients especially for adults more than 10 years since their last immunization or have no past immunization (1,2,4,8).

Our case was admitted to ED with an injury at her right

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Corresponding Author: Fulya Yilmaz, Health and Science University Bozyaka Training and Research Hospitak Anaesthesiology and Reanimation Department, Izmir, Turkey, E-mail: drfulya@mynet.com

foot by a nail. Nonspecific initial symptoms (widespread pain, spasms in the jaw and neck) began 3 days after her discharge. She again was presented to another hospital and was treated symptomatically and discharged from hospital. Tetanus was not considered in diagnosis so immune prophylaxis was not given. Eight days after the injury, she was presented to our ED with worsened symptoms. The patient was diagnosed with tetanus and treated with tetanus immuno globulin 4500 IU 8 days after the injury. She subsequently developed progressive respiratory difficulty requiring intubation and mechanical ventilation for 40 days. Tetanus is a rare disease and in our case we believe that there is a delay in the diagnosis like other reported cases (4,6).

According to Dakar score, short incubation period, presence of spasms and tachycardia are negative prognostic factors of the dissease (4). Rapid, short-acting, and cardioselective beta-adrenergic antagonist esmolol have been used in the control of the autonomic nervous system disfunction of tetanus (1), as we used in our case.

Magnesium, a presynaptic neuromusculer blocker, reduces autotomic disturbance as well as muscle spasms (2,7). In the present case, spasms were so severe that magnesium sulfate was not efficacious. Neuromuscular blocking agents were required. Midazolam was used for sedation.

Kuzucuoğlu et al (1) reported a 65 year old non-immunized and had generalized tetanus patient. Horiuchi et al (2) reported a case of tetanus in a 77 year old man with type 2 diabetes whom tetanus result from needle puncture for self-monitoring of blood glucose. Shumy et al (7) reported tetanus in a case after traffic accident. Demirel et al(8) reported a 65 year old case with tetanus and Koruk et al (6) reported a 12 year old case with tetanus after an injury with nail. They all treated successfully in the respiratory ICU. But the patients reported by Aghamollaie et al (3) and Koruk et al (4) were not treated successfully. First patient was a 41 year old man who developed tetanus by injection drug use; second patient was a 47 year old man who developed tetanus after an injury of a nail.

Although the incidence of tetanus is lowered with tetanus immunization, it is still a health problem in developing countries especially in adult patients. Tetanus should be considered in patients with muscle pain and spasm. The diagnosis is mainly clinical.

Competing interests: The authors declare that they have no competing interest.

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