

# Peripheral facial palsy unveils cephalic tetanus, progressing to generalized tetanus: A case report

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## Abstract

**Introduction:** Tetanus, caused by the powerful exotoxin tetanospasmin produced by *Clostridium tetani* bacteria, is an acute disease characterized by neuromuscular dysfunction that can be prevented through vaccination is a widespread health issue in underdeveloped nations like Ethiopia. Generalized, local, cephalic, and neonatal tetanus are the four symptomatic subtypes of clinical tetanus. A rare form of localized tetanus known as cephalic tetanus is defined by the involvement of the cranial nerves in the facial region. The generalized form of tetanus can develop from either local or cephalic tetanus.

**Case description:** We report a case of a 37-years old patient who presented with a fall-down accident from a standing position of 3hours duration. The patient exhibited weakness starting from the leg, along with right-side facial deviation, difficulty swallowing, and trouble opening his mouth, all of which persisted for 3 days. After his admission, he started to experience multiple spasms and episodes of diaphoresis. Even if most of the clinical signs, resembled those of a stroke and the behavioral changes resembled alcohol withdrawal with close clinical monitoring, The patient was accurately diagnosed and received treatment involving-pain, benzodiazepine, antibiotics, and other supportive care.

**Conclusion:** Tetanus continues to be a public health issue despite increased vaccination rates in low-income nations. This study emphasizes the value of thorough history-taking and meticulous clinical monitoring to detect unusual illness manifestations.

**Keywords:** Cephalic tetanus, facial palsy, tetanospasmin

## Background

Tetanus is an acute vaccine-preventable illness manifested by neuromuscular dysfunction due to a potent exotoxin, tetanospasmin produced by *Clostridium tetani*. It is a common health problem in developing countries like Ethiopia. (1,2,3,4). Most unvaccinated children live in the poorest countries including our county Ethiopia (5). Tetanus remains a public health issue in underdeveloped nations despite the implementation of the expanded immunization campaign advised by the World Health Organization (WHO) (4). The neurotoxin tetanospasmin is in charge of the infection's distinctive clinical signs.

Generalized, local, cephalic, and neonatal tetanus are the four symptomatic subtypes of clinical tetanus (5). The primary method of diagnosis is clinical; it can take one of two forms: a generalized form with symptoms like trismus, risus sardonicus, neck stiffness, dysphagia, and muscle rigidity and spasm, or a localized form with symptoms like muscle rigidity and spasm that are restricted to the anatomic site of the injury (7). A rare form of localized tetanus known as cephalic tetanus is defined by the involvement of the cranial nerves in the facial region. The seventh cranial nerve is the one that is affected the most, but the clinical picture also includes unusual palsies of the cranial nerves III, IV, VI, VII, IX, X, and XII, either alone or in any combination (8,9).

## Case description

This is a 37-year-old male patient who presented to the emergency department after sustaining a fall-down accident from a standing position for 3hr duration. He sustained the injury due to his bilateral lower extremity weakness, which occurred a week back to his presentation. The weakness started in the leg but didn't inhibit him from walking. Associated with this, he has right-side facial deviation, which was manifested after the lower extremity weakness, difficulty of swallowing, and difficulty opening his mouth for 3 days' duration. Two weeks before his presentation he had a fall-down accident in the mud where he stated that he sustained an injury to his head and got mild bleeding. He used to drink alcohol for the past 8 years and he discontinued it 8 days before his presentation.

On physical examination, he looks acutely sick-looking in general appearance. On vital signs, he had blood pressure with the highest record of 144/86 and lowest record of 127/82mmhg. Pulse rates range from the '90s and 100's. Other vital signs are in a normal range. He had a healing scar over his posterior head. He had ptosis in the right eye. On the

musculoskeletal system, there as a spastic lower extremity. In the central nervous system examination, GCS was 15, pupils were midsize and reactive; there was a right side, facial deviation, the reflex was 2/4 on both upper and lower extremities, and power was 4/5 in the lower extremity and 5/5 on the upper extremity.

Then, he was investigated with CBC, electrolyte, organ function test, CT scan, chest, and pelvic x-ray. On laboratory investigation, all findings were normal except mild hypokalemia of 3.11. On imaging investigation, all were normal except for the brain CT scan finding of prominent sulci and gyrus which was indicative of atrophied brain parenchyma secondary to chronic alcohol use. Chest X-ray shows left lateral third clavicular fracture. The patient was not having the spasms right away on admission; rather he started having frequent spasms, diaphoresis, locked jaw after a day of admission. Most of his presentation, especially facial deviation, was confused as a stroke and Bell's palsy. This condition also looked like alcohol withdrawal symptoms, evidenced by his history of chronic alcohol use and recent cessation. He was also given TAT 3000 IU IM Stat on arrival and anti-pain Tramadol 50 mg IV TID. Since the top differential for his diaphoresis and irritability was alcohol withdrawal, he was being given maintenance fluids with normal saline, vitamin B complex, and dextrose 40%.

After a day of his admission, the patient exhibited symptoms including spasms, diaphoresis, and a locked jaw, leading to a diagnosis of cephalic tetanus. He received treatment including medications such as diazepam, Chlorpromazine, and Metronidazole, GI and DVT prophylaxis, KCL. Supportive treatments such as minimizing sensory stimuli, catheterization, fever control, and fluid management were also provided. As his condition worsened and progressed to generalized tetanus, the patient was transferred to the intensive care unit (ICU) for closer monitoring. With time, the patient showed signs of improvement. After staying in the ICU for one month, the patient was referred to another healthcare facility based on the requests of the patient and their family. Currently, the patient has fully recovered and is in a good state of health.

## Discussion

A rare form of localized tetanus known as cephalic tetanus is defined by the involvement of the cranial nerves in the facial region. The generalized form of tetanus can develop from either local or cephalic tetanus. The masticator muscles are typically the first to experience muscular rigidity, followed by lock-jaw, and the disease then typically spreads in a

descending manner with the involvement of the systemic muscles (10,11,12,13). The incidence of cephalic tetanus ranges from 0.9% to 3.0% (15). The seventh cranial nerve is the one that is most usually affected, although the clinical picture also includes unusual palsies of cranial nerves III, IV, VI, VII, IX, X, and XII, whether they occur alone or in any combination (8,9).

It accounts for 1 to 3% of the total number of reported cases of tetanus and has a mortality of 15 to 30% (14). The incubation period is 1 to 14 days, and approximately two-thirds of cases progress to generalized tetanus (13,14,15,16,17). Patients presented with dysphagia, masticatory muscular spasm, facial asymmetry, cough, shortness of breath, rigidity of the neck muscles, dysarthria, and trismus. As a result of the facial nerve palsy frequently developing before trismus, the first diagnosis of Bell's palsy and stroke were made, which made the presentation unusual (17,18,19,20). Similarly in our case, the earlier manifestations of facial palsy, labile high blood pressure and inability to move extremities made it look like a stroke mimic. The severity of tetanus is usually inversely proportional to the duration of the incubation period with, periods of seven days or less carrying a grave prognosis (21). In our patient, since all the active symptoms came within a short duration, it will have a worse prognosis.

Potential life-threatening complications of tetanus include pneumonia (30%) due to aspiration and laryngospasm, rhabdomyolysis (13%), upper gastrointestinal bleeding (9%), and cardiovascular instability (9%) (Transient cardiac arrest, tachy/bradycardia, arrhythmias, and hypertension) due to stimulation of the autonomic nervous system, acute renal failure (4%) and secondary wound infection (4%). Mortality usually results from respiratory failure, cardiovascular collapse, or associated autonomic dysfunctions (21,22,23).

Treatment includes passive immunotherapy, debridement of contaminated wounds, and antibiotic. Supportive care includes sedation, neuromuscular blockade, and management of autonomic instability (21,22,23,24). The case looks like cephalic tetanus, which later progressed to generalized tetanus. Prognostic factors that have been observed in tetanus patients include older age, short incubation period and period of onset, severe and generalized types, dysautonomia, pneumonia, Sepsis, hypoxemia, and renal failure (25).

## Conclusion

Our patient presented with clinical features mimicking stroke and Bell's palsy but later was accurately diagnosed with a cephalic tetanus

progressing to generalized one. Tetanus continues to be a public health issue despite increased vaccination rates in low-income nations. This case report emphasizes the value of thorough history-taking and meticulous clinical monitoring to detect unusual illness manifestations.

## Abbreviations

GCS; Glasgow coma scale, CBC; complete blood count, TAT; Tetanus toxoid, IM; intramuscular, IV; intravenous, QID; four times a day, TID; three times a day, BID; two times a day, SC; subcutaneous, KCL; potassium chloride, PO; per oral, ICU; Intensive care unit, UFH; unfractionated heparin

## Declarations

### Consent for publication

Patient consented to the publication of this case report in the Millennium Journal of Health.

### Ethical declaration

Written informed consent was obtained from the patient for publication of this case report. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

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### Competing interest

All authors read and approved the final manuscript. The authors declare that they have no competing interests.

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