

Beyond Bell's Palsy: Cephalic Tetanus Unveiled

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ABSTRACT

Tetanus, although rare in vaccinated regions, remains common in developing countries. Cephalic tetanus, caused by *Clostridium tetani*, is a rare, potentially fatal neurological condition. The presenting symptoms include spasms, rigidity, and paralysis in the head and neck. This case report describes a 5-year-old girl with unilateral facial paralysis initially diagnosed as Bell's palsy. Subsequent development of trismus and dysphagia led to a revised diagnosis of cephalic tetanus. Peripheral facial palsy may be an early sign of cephalic tetanus and should be considered in patients with relevant exposure history. Our patient's recent nasal foreign body removal raised suspicion of cephalic tetanus, confirmed through clinical findings. Treatment with tetanus immunoglobulin and antibiotics led to gradual improvement. This case emphasizes the importance of considering cephalic tetanus in the differential diagnosis of facial nerve palsy, especially if there is a history of foreign body exposure. Early recognition and treatment are essential for favorable outcomes.

Keywords: Tetanus, Bell's palsy, Trismus, Foreign Body

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INTRODUCTION

Tetanus causes significant morbidity and mortality among children under the age of five, particularly in underdeveloped countries¹. Despite a global decline in incidence, tetanus mortality in Pakistan remains alarmingly high, at approximately 50%². Cephalic tetanus is a rare form of tetanus, marked by trismus and cranial nerve palsy³, with the seventh nerve being most frequently affected⁴. In its early stages, clinicians often misdiagnose cephalic tetanus as less serious illnesses such as Bell's palsy, temporomandibular joint dysfunction, malaria, or hysteria⁵. We present a case of a 5-year-old unvaccinated girl from Karachi, Pakistan, who contracted cephalic tetanus.

CASE PRESENTATION

A 5-year-old unimmunized girl was admitted with

complaints of a 7-day history of deviation of the right side of the mouth, followed by neck stiffness, and fit-like activity associated with difficulty in swallowing for 1 day. Initially, she was treated at a clinic as a case of Bell's palsy with oral steroids. Due to the progression of symptoms leading to neck stiffness and fit-like activity as described by her parents, she was started on oral sodium valproate. She was advised to have an electroencephalogram, facial radiograph, and CT scan of the brain. The electroencephalogram and CT scan were normal however the facial radiograph revealed a foreign body in the left nostril which was removed by the otolaryngologist (Fig 1 and 2). Despite all measures her symptoms persisted and she developed difficulty in swallowing, for which she was admitted to our setup.

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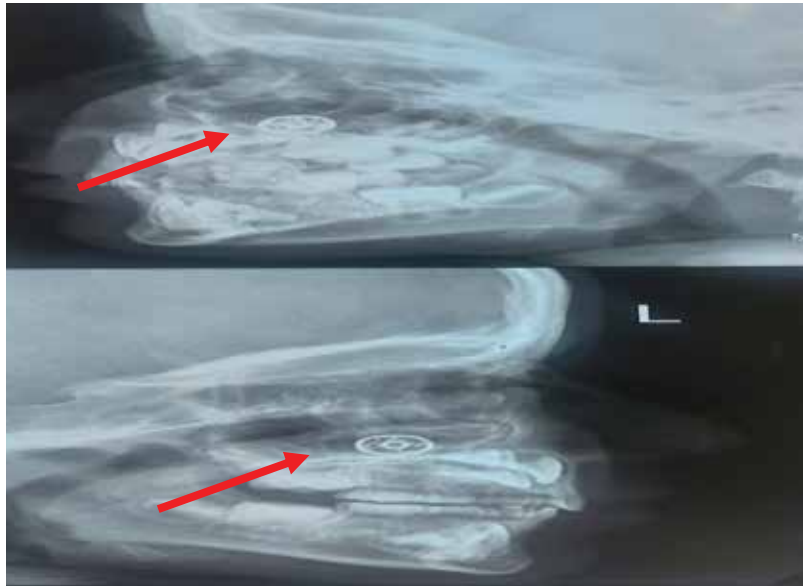


Figure 1: Lateral Radiograph of The Paranasal Sinus, Demonstrating Foreign Body in Left Nostril



Figure 2: Rusted Button Removed from Left Nostril

Her history was insignificant. She was not immunized due to parental negligence. Her nutritional and developmental history was also normal. Physical examination revealed an anxious child, who was orientated to time, place, and person. She was maintaining her vitals and oxygen saturation. General physical examination and systemic examination were unremarkable. However, on central nervous system examination neck rigidity was present. Cranial nerves were also intact. The child was admitted to the Pediatric high dependency unit HDU. Based on the history and physical findings initial diagnosis of meningoencephalitis was made and a Lumbar Puncture was done which was normal. During the nasopharyngeal suctioning, the child was noted to have clenching of teeth, cyanosis, and frequent spasms of facial muscles, without the involvement of other parts of the body. However, the child was conscious during these episodes which raised the suspicion of tetanus. A spatula test was performed which was also positive (**Fig 3**). Her diagnosis was reviewed and she was then managed as a case of cephalic tetanus. To minimize the stimuli, the patient was shifted to the isolation unit on the second day of hospitalization, and oxygen support was given. Tetanus toxoid and immunoglobulin were administered intramuscularly, alongside combination therapy involving sedatives (intravenous diazepam, oral phenobarbitone, and intravenous chlorpromazine) to control spasms, and antibiotics (benzylpenicillin, metronidazole, and azithromycin). Careful nursing attention was provided, including mouth and skin care, bladder and bowel function management, and frequent position changes. Nasogastric tube feeding was initiated. Over the next two weeks, the frequency of facial spasms and trismus decreased, enabling the tapering of sedation and initiation of baclofen therapy. The nasogastric tube feeding was gradually reduced leading to the introduction of an oral diet. The patient was discharged home with oral diazepam, on the 17th day of hospitalization. She had no spasms and trismus and she could manage to walk with support. Parents were advised to continue catch-up immunization, and a follow-up visit one week after discharge revealed minimal residual symptoms.



Figure 3: Positive Spatula Test

DISCUSSIONS

Tetanus, though preventable by vaccine, continues to be a major public health issue in developing countries despite the availability and inclusion of an effective vaccine in the Expanded Program on Immunization (EPI) ⁶. According to the latest WHO data published in 2020, Pakistan ranks seventh among countries with tetanus deaths, accounting for 7,541 fatalities or 0.52% of total deaths ⁷. Cephalic tetanus, a rare variant of localized tetanus, represents approximately 1–3% of all reported tetanus cases ¹. Typically, it manifests with trismus and involvement of cranial nerves. While the facial nerve is most frequently involved, other nerves like III, IV, VI, and XII may also be affected ⁸. In some cases, facial paralysis may occur before trismus, potentially leading to delays in diagnosis and treatment. The onset can be triggered by a facial wound, including a puncture, chronic otitis media, or a dental or oral lesion ⁴. In our case, it was a nasal foreign body. Approximately two-thirds of cephalic tetanus cases advance to generalized tetanus, with a poor outcome. Patients who have not advanced to the generalized form generally have a favorable outcome ⁹. Autonomic dysfunction frequently occurs in tetanus, it typically begins towards the end of the first week and lasts for 7–14 days. This dysfunction is caused by the impact of tetanus toxin on the brainstem and autonomic neurons ¹⁰.

The diagnosis of tetanus is clinical as there's no definitive investigation available. Tetanus symptoms can resemble various other medical conditions such as drug-induced dystonia, meningitis, convulsions, hypocalcemic fits, rabies, strychnine poisoning, and stroke, but often lack the distinctive characteristics of tetanus⁸. Our patient was initially presumed to have meningoencephalitis, however the presence of trismus and risus sardonicus raised the suspicion of cephalic tetanus. Fortunately, the patient's signs and symptoms were restricted to unilateral peripheral facial nerve palsy and involvement of the jaw and neck muscles. She did not advance to generalized

tetanus, neither had she developed autonomic dysfunction. Treatment of tetanus consists of nursing care, administration of sedatives, muscle relaxants, and antibiotics, resulting in good outcomes ¹. However, given the potential risk of progression, close monitoring inside a medical intensive care unit and isolation in a dark and quiet room is warranted ⁴.

Treatment focuses on eliminating toxin production, achieved through administering tetanus immunoglobulin to neutralize circulating toxins and initiating active immunization ¹¹. In our patient, we administered vaccination and human tetanus immunoglobulin. Additionally, sedation and muscle relaxants were started along with intravenous penicillin and metronidazole therapy. Severe cases of tetanus can develop life-threatening respiratory and cardiovascular complications. Approximately half of tetanus-related deaths are attributed to respiratory issues. Respiratory failure, cardiovascular complications such as sustained but fluctuating hypertension and tachycardia, along with secondary complications like stress ulcers, thrombosis, and bed sores are common. Other complications include temporomandibular and shoulder joint dislocations and vertebral fractures. Acute renal failure secondary to rhabdomyolysis is a frequent complication of generalized tetanus. Pneumonia and sepsis pose significant risks in intensive care settings and require prompt recognition and aggressive treatment to prevent fatalities. Inappropriate antidiuretic hormone secretion may occur in tetanus but typically resolves with proper fluid and electrolyte management¹². Fortunately, our patient did not develop any of these complications and recovered uneventfully.

CONCLUSION

Cephalic tetanus is an uncommon form of tetanus. Cranial nerve palsy preceding trismus could indeed make the diagnosis extremely challenging. In our case, meningitis secondary to the nasal foreign body was the initial working diagnosis. A high index

of suspicion is imperative for early diagnosis to successfully initiate appropriate management and prevent morbidity and mortality. Complete vaccination is the only option to protect our children from tetanus, a disease with serious complications, a high fatality rate, and significant treatment costs.

DECLARATION

Not applicable

CONFLICT OF INTEREST

The authors have confirmed no conflict of interest.

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PATIENT CONSENT

Consent was obtained from the parents before writing the case report.

AUTHORS' CONTRIBUTIONS

All authors contributed equally.

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