

The Child Who Cries When She Smiles: A Cephalic Tetanus Case Presentation

Zafer Bağcı, MD

Department of Pediatrics, Konya Education and Research Hospital, University of Health Sciences, Konya, Turkey

ABSTRACT

Introduction: Tetanus is a preventable infectious disease with vaccination. Cephalic tetanus is the rarest form in which local tetanus can involve the cranial nerves.

Case Report: In this case report, we aimed to evaluate a case of cephalic tetanus in a 16-month-old girl who had never been vaccinated and had an interesting clinical presentation.

Discussion: We believe that this is the first case reported in the literature of cephalic tetanus in such a young child wherein the disease originated from a wound on the cheek mucosa. The clinical symptom presented in this case could only be associated with this disease (a child who cries when she smiles).

Conclusion: In addition to detailed anamnesis and meticulous physical examination, the clinical symptoms that we have described for the first time in a child with cephalic tetanus should also be considered for early and accurate diagnosis.

Keywords: Cephalic tetanus, child, cheek mucosa

INTRODUCTION:

Tetanus is an infectious disease with high mortality rates; it progresses with tonic muscle spasms and is caused by exotoxin (tetanospasmin) of the anaerobic bacterium *Clostridium tetani*. Tetanus is a preventable disease; therefore, vaccination is vital for prevention. The risk of exposure in general population is high due to the prevalence of *C. tetani* spores in nature; spores usually enter the body through trauma and open injury¹⁻³.

Tetanus is divided into four clinical types: generalised, localised, cephalic and neonatal tetanus. Generalised tetanus is the most common form of the disease constituting 80% of the cases. Cephalic tetanus is the rarest form in which local tetanus can involve the cranial nerves. In two-thirds of the patients with cephalic tetanus, the disease may revert to the generalised form; mortality rate is 15%–20%⁴. In this case report, we aimed to evaluate a case of cephalic tetanus in a 16-month-old girl who had never been vaccinated and had an interesting clinical presentation with the disease development on a wound surface on the cheek mucosa; she was successfully treated as a result of early diagnosis.

CASE REPORT:

A 16-month-old girl from Somalia was brought to the emergency room of a training and research hospital in Somalia-Mogadishu with complaints of extreme restlessness, mouth sores, difficulty in feeding and constant crying. Patient history revealed that a wound developed in her mouth 2 weeks ago, she had been extremely restless for 2 days and had been crying constantly. Her salivation had increased; she had difficulty feeding because she could not close her mouth completely. Physical examination revealed a mucosal erosion of 5 mm in diameter on the inner surface of the right cheek as well as rigidity in both the jaw and neck muscles. Interestingly, during the examination, it was found that as soon as the child smiled at her mother, risus sardonicus developed on her face and she started crying (Figure 1). This clinical symptom occurred every time the child smiled at her mother. Therefore, it created the impression of a ‘child who cries when she smiles’. Findings of other physical examinations, such as complete blood count, electrolyte levels, urinalysis, chest X-ray and head and neck computed tomography

of the patient, were all within normal limits. Detailed anamnesis from the mother revealed that the child had never been vaccinated against tetanus; the mother had seen the child playing with soil about a week ago and the soil had been removed from her mouth. Based on patient history and clinical findings, the patient was diagnosed with cephalic tetanus. After 0.5 ml tetanus vaccine and 250 IU tetanus immunoglobulin (HTIG) administration, the patient was hospitalised in the paediatric clinic, penicillin was intravenously administered and metronidazole treatment was initiated. Midazolam was given intermittently for sedation. After 10 days of treatment in a room with light and sound isolation, the patient was discharged with full recovery.

DISCUSSION:

Tetanus results from inadequate immunisation and is considered a problem characteristic of failed public health systems⁵. The national vaccination program was insufficient in the Somalia region where our patient lived; He was never vaccinated against tetanus. Crushing and penetrating injuries and infected surgical wounds that facilitate anaerobic bacterial growth create a favourable environment for tetanus toxin production⁶. Cephalic tetanus usually develops after craniofacial injury and sometimes during the course of otitis media^{5,7}. Cephalic tetanus cases of dental origin and the ones associated with stomatitis have also been previously reported^{8,9}. In our case, it is highly probable that the entry site for the tetanus spores was the wound on the right cheek mucosa, which was contaminated by the soil ingested into the mouth by the patient. To the best of our knowledge, this is the first case reported in the literature in which tetanus developed due to a wound on the cheek mucosa.

Cephalic tetanus is a rare form of localised tetanus defined as paralysis of one or more cranial nerves along with the trismus. It accounts for 1%–3% of the total number of reported tetanus cases¹⁰. Approximately two-thirds of cephalic tetanus cases progress to generalised tetanus with poor prognosis. Prognosis is good in patients who have not progressed to generalised tetanus. In our patient, signs and symptoms were limited with bilateral facial nerve palsy and involvement of the jaw and neck muscles. Our patient did not progress to generalised tetanus because of early diagnosis and immediate treatment.

Treatment for cephalic tetanus is the same as that for generalised tetanus. The treatment aims to eliminate toxin production and involves antitoxin administration, active immunisation and supportive care. In our patient, we performed vaccination and HTIG administration and initiated intravenous penicillin and metronidazole treatment. In addition to light and sound isolation, intermittent midazolam treatment was used for sedation. The patient's clinical signs and symptoms gradually improved; she was discharged with full recovery after 10 days of treatment.

Cephalic tetanus is a rare type of tetanus; it is unique because it is characterised by muscle spasms and paralysis. Early diagnosis is very important because the disease can transform into its generalised form¹⁰. This is the first case reported in the literature in terms of being cephalic tetanus seen in such a young child and that the disease originated from a wound on the cheek mucosa; the case presenting with a clinical symptom that can only be associated with this disease (a child who cries when she smiles).

CONCLUSION:

In patients with cephalic tetanus, cranial nerve palsy accompanying trismus may make early and accurate diagnosis extremely difficult. In addition to detailed anamnesis and meticulous physical examination, the clinical symptom that we have described for the first time in a child with cephalic tetanus should also be considered for early and accurate diagnosis.

ACKNOWLEDGMENT:

The patient's parents has signed in her native language the consent form for the figure that discloses her face. The author declares that there are no conflicts of interest. The assistance of all who took part in the care of the patient is gratefully acknowledged.

References:

- 1- Cook TM, Protheroe RT, Handel JM. Tetanus: a review of the literature. *Br J Anesth* 2001;87:477-87.
- 2- Topçu AW, Söyletir G, Doğanay M. *Infectious diseases and microbiology*. Nobel Bookstore: Istanbul; 2002:1043-1049.
- 3- Bleck TP. *Clostridium tetani (Tetanus)*. In: Mandell GL, Bennet JE, Dolin R, editors. *Mandell, Douglas, and Bennett's Principles and Practice of Infectious Disease*. 6th ed. Philadelphia: Elsevier, Churchill Livingstone; 2005. p. 2817-22.
- 4- Edlich RF, Hill LG, Mahler CA et al. Management and prevention of tetanus. *J Long Term Eff Med Implants* 2003;13(3):139-54.
- 5- Alhaji MA, Abdulhafiz U, Atuanya CI et al. Cephalic Tetanus: A Case Report. *Case Reports in Infectious Diseases*. 2011;2.
- 6- Ataro P, Mushatt D, Ahsan S. Tetanus: a review. *South Med J*. 2011;104:613-617.
- 7- Ogun OA, Ashaye AO, Oba SO. Cephalic tetanus: a case report of a rare complication of orbito-ocular injury in a Nigerian. *Nigerian Journal of Ophthalmology* 2005;13(1):32-35.
- 8- Burgess, JA et al. Report of Cases: Reviewing Cephalic Tetanus. *The Journal of the American Dental Association*. 1992;123(7):67-70.
- 9- Bernardes M, Lo Presti S, Ratzan K. 2018. A case of cephalic tetanus in an elderly patient with trismus. *Case Rep Infect Dis*;1247256:1-3.
- 10- Jagoda A, Riggio S, Burguières T. Cephalic tetanus: a case report and review of the literature. *American Journal of Emergency Medicine* 1988;6(2):128-130.

Figure-1



Tetanic spasm of the patient.