Localized Tetanus: Rare and Elusive.

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ABSTRACT

Tetanus is acute and fatal infectious disease which is acquired due to contamination of wound with soil or animal feces containing spores of Clostridium tetani. In this case, 24 old male, serving personnel of Nepalese Army, developed localized tetanus, a rare form of tetanus nearly 3 weeks following crocodile bite in his left thigh. It was painful with involvement of only local flexor muscles at the site of injury. The aim is to incite awareness of the rare form of the Tetanus in adult which is often overlooked in clinical practice.

Keywords: Clostridium tetani; Localized tetanus; tetanus.

INTRODUCTION

Tetanus is an acute, often fatal infectious disease caused by an exotoxin produced by Clostridium tetani. Tetanus is a disease of the nervous system characterized by persistent tonic spasm, with violent brief exacerbations. The spasm almost always commences in the muscles of the neck and jaw causing closure of the jaws (trismus, lockjaw) and involves the muscles of the trunk more than those of the limbs. It is always acute in onset and a very large proportion of those affected die[1].

Localized tetanus is the rare form of the tetanus which involves rigidity of the muscles associated with site of spore inoculation. This chronic form of the disease probably reflects partial immunity to tetanospasmin[2]. We report a case of localized tetanus in a young male following a crocodile bite with successful recovery. The aim is to highlight the rare case encountered and the importance to have high index of suspicion.

CASE REPORT

A 24 year old male, serving soldier was brought to Shree Birendra Hospital with history of crocodile bite on his left thigh while crossing a river at Bardia during routine patrolling. On arrival to this hospital, he had avulsive injury of the lateral aspect of left thigh without underlying bony injury. Debridement of the wound was done following day under spinal anaesthesia. For another two weeks or so he was under conservative management under regular dressing and antibiotics including doxycycline and penicillin to cover the possible pathogens involved in crocodile bite.

He then started having increased pain at the injury site with appearance of stiffening and the spasmodic contraction of the flexor group of muscles of the left thigh. The pain was so intense that he had to be given narcotic analgesics. Though he had received the Tetanus toxoid injection after arrival in this hospital, that was more than 24 hours later, he had no history of proper immunization against the tetanus except for few shots during childhood. With the suspicion of Tetanus he was immediately advised 500 units of Tetanus immunoglobulin with intravenous Metronidazole and cefepime to cover other pathogens. The next day, he was taken for generous debribement and intraoperatively the tissue was obtained and stained immediately with Gram stain and it was reported as Gram positive bacilli with drumstick appearance suggestive of Clostridium tetani. However there were no other generalised features of tetanus like trismus, breathing difficulty or the stiffening of the other body parts. On the basis of clinical scenario and microbiological evidence he was thus diagnosed as a case of Localised tetanus.

He underwent repeated debribement and aggressive wound dressing in subsequent days and was managed in ICU setting. He also received regular narcotic analgesic (pethidine, morphine) along with diazepam and oral baclofen for the control of his pain and muscle contraction. He was carefully watched for any signs of generalized tetanus and respiratory difficulty. After about ten days

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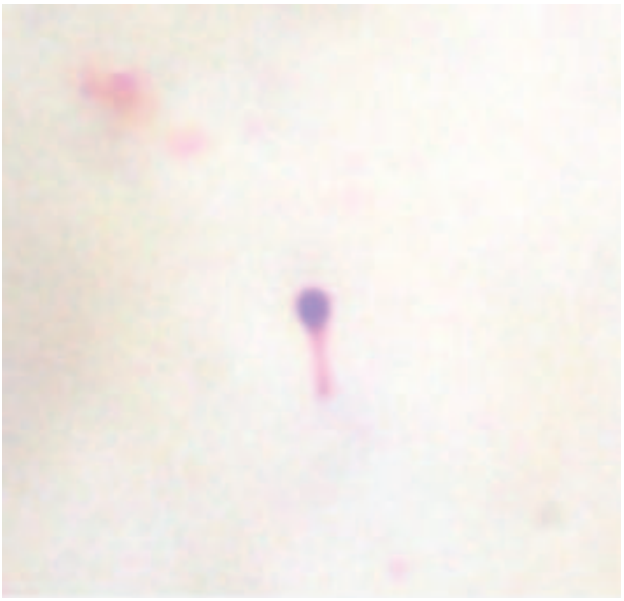

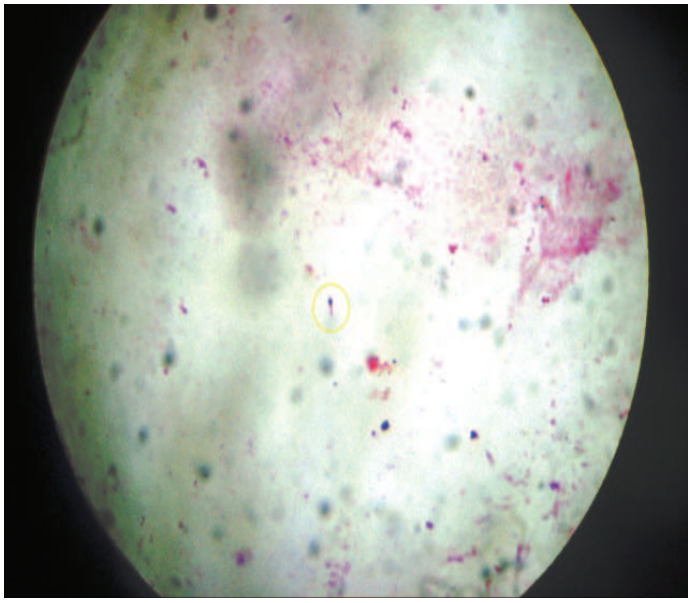

of the diagnosis of the localised tetanus, his analgesia requirement slowly dropped down and the contractions disappeared gradually. After about 2 months period from the day of bite, skin grafting was done from his right thigh and the post operative recovery was uneventful.

DISCUSSION AND REVIEW OF LITERATURE

Tetanus was described by Hippocrates approximately 30 centuries ago[3]. Nicolaier isolated a strychnine-like toxin from anaerobic soil bacteria in 1844. Six years later, Behring and Kitasato described active immunization with tetanus toxiod[5]. Despite of earlier description of preventive measures this disease is still hurdle globally. Though the incidence of tetanus in developed countries is low and has been declining due to effective vaccination programs. But in developing countries, mortality rates due to tetanus are as high as 28 per 100,000[6]. Tetanus cases were highest (340) during year 1997 with death rate 29.1% from Nepal[7].

Tetanus is caused by Clostridium tetani, an obligatory anaerobic bacillus which are Gram positive. Spores of this bacteria is abundantly found in soil, feces, sewage, marine sediments, part of human's indigenous microbiota[8]. Spores of this bacteria can remain viable for many years. Tetanus occurs through contamination of wound with soil or foreign body carrying spores with incubation period ranging from 1to 60 days[9].

The disease process is achieved by exotoxin tetanospasmin. The toxin enters the nervous system primarily through the presynaptic terminals of lower motor neuron, where it produces local failure of neuromuscular transmission. It then exploits the retrograde axonal transport system and is carried to the cell of these neurons in the brainstem and spinal cord, where it expresses its major pathogenic action[6].

Tetanus is classically divided into four clinical types: generalized, localized, cephalic and neonatal. Among them localized is the rare form of the tetanus which involves rigidity of the muscles associated with the site of spore inoculation. Lower motor neuron dysfunction is often present in the most involved muscle. This chronic form of the disease probably reflects partial immunity to tetanospasmin[6].

Tetanus is diagnosed clinically rather than laboratory based. Laboratory diagnosis of the tetanus involves isolation and identification of the causative organism and detection of toxigenicity by animal inoculation.

In our case, tetanus was diagnosed on the background of clinical diagnosis in the possible scenario in an individual who had no prior immunization history against tetanus. Both culture and toxin detection procedures were unable to be performed due to unavailability in our laboratory. However, smear prepared from underneath tissue taken during debribement intraoperatively revealed Gram positive bacilli with typical drumstick appearance. Though the sensitivity of the Gram stain in Tetanus is very poor, combining with history of injury and clinical presentation concluded to the diagnosis of localized tetanus. The patient successfully responded to intravenous metronidazole and aggressive debribement with successful recovery.

CONCLUSION

Localise tetanus is a rare form of disease after local trauma by contaminated object or following animal bites. Tetanus toxoid should be given to all those at high risk of such exposure prior to the deployment in such areas. High index of suspicion is necessary to catch the disease in its early stage and supportive treatment is the mainstay for successful recovery.

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