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## Tetanus in calf and its successful treatment: A case report

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### Abstract

A calf with the history of limb stiffness and inability to stand was presented in the TVCC, DSVCKV, Anjora, Durg. Tetanus was determined to be the cause of the calf's symptoms, which included a high fever, muscle twitching, and stiffness that spread from the legs to the entire body. High doses of long acting Benzathine penicillin G 6A, anti-tetanus serum (1500 IU), triflupromazine, meloxicam, fluids, and electrolyte therapy were administered to the calf during treatment. After receiving medication for a week, the calf entirely recovered.

**Keywords:** Calf, muscle stiffness, tetanus, twitching

### Introduction

In mammals, *Clostridium tetani* causes tetanus. This Gram-positive bacterium produces spores, which remain viable for a long time in soil. Many disinfectants cannot kill spores. Deep perforated wounds serve as this organism's entry point into the body. Dirt and bacterial spores have entered these wounds. If the tissue is kept at the oxidation-reduction potential of the flowing blood, *C. tetani* spores cannot grow in healthy tissue or even in wounds (Bizzini, 1986) [7]. Favourable circumstances for this organism's multiplication arise when a small amount of dirt or a foreign object induces tissue necrosis. As bacterial cell undergoes autolysis, the potent neurotoxin is released. The neurotoxin, a zinc-binding protease, inhibits the transmission of impulses by inhibiting the release of neurotransmitters when it cleaves synaptobrevin, a membrane protein linked with vesicles (Montecucco and Schiavo, 1995) [4]. In newborn calves the infected umbilicus becomes the source of infection. Grazing on coarse, fibrous grain also causes injury/wound in mouth and gastrointestinal tract which may lead to the production of toxins. The rumen's native bacterium, *C. tetani*, has the potential to multiply there and produce toxins.

### Case Presentation

One-year-old male calf presented at TVCC, DSVCKV, Anjora, Durg with a history of anorexia. The animal's history revealed that it had previously been wounded with an outdated, non-sterile needle, causing a severe edema at the injection site and animal was unable to suckle milk. The animal was exhibiting tetanus symptoms, like subnormal temperature (99°F), muscular twitching, and limb rigidity that extended throughout the body. Later, strong tonic spasm in involuntary muscles with jerky movements started to develop in the head and neck region. The head and neck gradually expanded backward. Due to its lock jaw condition, the animal was unable to consume both food and water. Drool was coming out of the mouth. The four legs were stretched out. Due to rigidity, the ear and tail were erect (Fig. 1)

### Diagnosis

1. By history and clinical signs.
2. Anticoagulant-infused blood was used to collect the sample. For the purpose of identification, a fresh smear was also made. The smear, after Gram's staining, showed the *Clostridium tetanii* rods which had the appearance of a drumstick.

### Treatment

The affected buffalo calf was treated with long acting Benzathine Penicillin 6A I/M daily for seven days. The calf was given ATS (anti tetanus serum) I/M @ 1,500 IU for 3 days to

neutralize the unbound toxin present at the site of wound and further absorption was prevented as observed by Bhikane *et al.* (2005) [1]. Meloxicam (Melonex) was administered at 0.5 mg/kg b.wt. to lessen the muscular pain and inflammation. Triflupromazine (Sequil) was used at 2.2 mg/kg I/M for muscle relaxation and to prevent hypoxia. For rehydration and neutralization of circulating toxin, DNS @ 20 ml/kg b.wt. I/V was administered for three days. Also, a nervine tonic, Neuroxin M 3 ml I/M was used for seven days. Avil 2ml I/M was used for seven days as antihistaminic. The calf showed improvement in milk intake and muscle stiffness progressively reduced. The calf was able to stand on 5<sup>th</sup> day of treatment and became fully normal in seven days (Fig. 2).

### Results and Discussion

In this case, a contaminated and outdated needle was used to inject fluid into deep tissues, allowing *C. tetani* entry. This led to favourable conditions for organism development and neurotoxic synthesis. The neurotoxic was the reason behind nervous system symptoms (Radostits and others, 2007) [5]. Tetanus antitoxin can be used to neutralise the circulating tetanus toxin because it cannot pass the blood-brain barrier (Coetzer and Tustin, 2004) [3]. Triflupromazine has a modest sedative effect and relaxes the diaphragm and intercostal muscles, which promotes proper breathing. Meloxicam was used to reduce fever and manage muscular pain. The calf's life was saved by hydration therapy because it was unable to swallow the feed due to a locked jaw problem.

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**Fig 1:** Animal showing stretched head and stiff limbs



**Fig 2:** Animal showing improvement able to stand and walk

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