

# Tetanus in Cat: From Neglected Wound to Neuromuscular Disorder—Case Report

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**Abstract:** Tetanus is caused by the bacterium, *Clostridium tetani*, and can infect both domestic animals and man. The disease is rarely diagnosed in cats, as a consequence of their increased resistance to the neurotoxin, tetanospasmin. Mortality in animals is generally high (80%). To date these authors have not been able to locate any reports of mortality rates specific to cats. Clinical diagnosis is based on clinical signs and a history of an untreated penetrating wound. This case report describes the development of moderate generalized tetanus in an approximately six month old female stray cat, found with an untreated wound on the side of its neck. This report describes clinical signs, treatment and recovery of the animal.

**Key words:** Feline, neglected wound, tetanus, therapy.

## 1. Clinical Presentation

An approximately six month old, domestic shorthaired, female cat was presented in lateral recumbency with extensor rigidity of the neck, shoulders and elbows and partial flexion of the carpal joints. An old wound, already crusted over, was noted on the left side of the neck. Interestingly, rigid extension and caudal displacement was more pronounced on the right thoracic limb. The owner reported the cat had been found five days prior, and the cat did not initially display any signs of weakness. The owner treated the wound by daily cleansing with iodine. On the sixth day, the cat developed stiffness in its neck, inability to eat and lameness in the left thoracic limb. This condition rapidly progressed during that day, to the extent that cat became unable to vocalize. On physical examination the cat displayed extension and rigidity of its front limbs, more pronounced in the right forelimb, right hind limb, tail and neck (Fig. 2). Heart rate and respiratory rate were normal, and the rectal temperature was 39.9 °C. Abdominal palpation revealed a distended urinary

bladder and feces- filled intestines. X-ray examination confirmed these findings and an absence of radiographic indicators of spinal trauma or other pathological conditions was noted (Fig. 1).

## 2. Therapy

The wound was debrided and irrigated with hydrogen peroxide (3% concentration) and chlorhexidine (0.5 % concentration) after removal of the crust. Metronidazole (Efloran, Krka, Slovenia) at a dose of 15 mg/kg and vitamin B complex (vitamins B complex + C, Norbrook, Northern Ireland) were dissolved in saline 0.9% and administered in a slow intravenous infusion (rate 2 mL/kg/h), once daily. In addition, amoxicillin with clavulanic acid (Synulox, Pfizer) was given subcutaneously at a dose of 8.75 mg/kg/24 h. Diazepam (0.2 mg/kg (IV)) was administered every 12 h, resulting in a minimal reduction of muscle rigidity. During the first five days of treatment, manual expression of the urinary bladder was necessary, due to external urethral sphincter hypertonus. During the same period the cat was unable to prehend and chew canned food, but was able to swallow. Therefore, assisted feeding was prescribed with high-fibre food combined with lactulose at dose

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**Fig. 1** Rigid extension of the neck and wound presentation after scab removing.



**Fig. 2** Clinical presentation of the cat at the second day of treatment.



**Fig. 3** Distended urinary bladder and intestines filled with feces are shown.

of 1 mL/4.5 kg/12 h. The cat was sent home with specific instructions regarding bedding, feeding and minimizing CNS stimulation.

After five days of therapy the cat began to vocalize. The rigidity of neck, limbs and tail decreased and minimal movement of the head was observed. Five days later she was able to stand with mild motor activity difficulties. Following day 15 of treatment the cat has been able to walk on a level surface without

visible ataxia. On the 23rd day the client reported the cat had successfully jumped from floor to sofa and back for the first time.

### 3. Discussion

Although cats are known to be resistant to the effects of the *Clostridium tetani* exotoxin, cases of tetanus in this species have been reported [1, 2]. Signs can be limited to a single limb, causing monoparesis associated with extensor rigidity [1] or manifest in all four limbs [2]. Rapid onset and generalization of clinical signs is more likely if the wound is located near the head [3]. This phenomenon reflects the typical course of tetanus, as the majority of the toxin is absorbed by the peripheral nerve terminals near the wound and transported intra-axonally to the spinal cord [2]. In the present case, the entry point for the clostridial organisms was the wound on the left side of the neck. Consequently, muscle rigidity was evident first in the region of the neck and in thoracic limbs, subsequently involving the pelvic limbs and the tail. Carpal joints were in partial flexion. Thoracic limb rigidity with elbow extension and carpal flexion has been previously described in cats with tetanus, and this seems to be a feature of this disease in cats, while dogs with tetanus present with carpal extension [2].

In this case, the presentation of rapidly progressive extensor rigidity could be due to the cat's age. Younger animals generally demonstrate a more severe form of tetanus as a result of their immature natural immunity [4]. Diagnosis is based on clinical signs and a history of a recent or old wound [2, 4, 5]. The first clinical sign of tetanus in cats occurs between two days and three weeks post injury [6]. In this case, the incubation period was unknown, because the cat was found injured. The incubation period was known to be longer than 5 days (period from adoption to first clinical sign), though.

Treatment was directed at controlling the infection (surgical wound debridement and administration of Metronidazole), neutralizing the toxin and relieving

the spasticity [5]. We did not use tetanus antitoxin, in consideration of the onset of symptoms and the time of patient presentation. Antitoxin neutralizes only unbound circulating toxin; it has no effect on bound toxin. Therefore, it should be administered as soon as possible, though it does not necessarily speed the rate of recovery [3]. The benefit of tetanus antitoxin in cats remains uncertain, insofar as there is too little information in the literature regarding its safety and efficacy [7]. Resolving tetanus in cats without the use of antitoxin has been previously reported [6, 8]. Prompt presumptive diagnosis and beginning of adequate therapy potent recovery.

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