

## Tetanus in two captive margay (*Leopardus wiedii*)

Mauricio Jiménez Soto<sup>1\*</sup>, Carlos Morales Retana<sup>2</sup>, Julia Rodríguez<sup>3</sup>, Isabel Hagnauer y Kinndle Blanco<sup>4</sup> y Nancy Astorga Miranda<sup>5</sup>

- 1 Small Animal and Wildlife Hospital, Veterinary Medical School, Universidad Nacional, Heredia, Costa Rica.
- 2 Small Animal and Wildlife Hospital, Veterinary Medical School, Universidad Nacional, Heredia, Costa Rica.
- 3 Las Pumas Rescue Shelter, Guanacaste, Costa Rica.
- 4 PROFELIS Center, Puntarenas, Costa Rica.
- 5 Small Animal and Wildlife Hospital, Veterinary Medical School, Universidad Nacional, Heredia, Costa Rica.

### RESUMEN

Se presentan las observaciones obtenidas de dos casos de felinos silvestres de la especie *Leopardus wiedii*, los cuales presentaron sintomatología asociada con la enfermedad de tétano. Ambos animales se encontraban en dos lugares diferentes para acopio de animales silvestres y fueron trasladados al Hospital de Especies Menores y Silvestres, de la Escuela de Medicina Veterinaria, Universidad Nacional, al presentar signos clínicos de la enfermedad.

A pesar del tratamiento el primer animal murió, sin embargo, el segundo caso evolucionó positivamente hasta su recuperación total.

**Palabras claves:** tétano, *Clostridium tetani*, *Leopardus wiedii*, espasmos, antitoxina.

### ABSTRACT

This review show the observations of 2 cases of wild felines of the *Leopardus wiedii* species which presented clinical signs associated with tetanus disease. Both animals were in two different centers for wild cats in Costa Rica, and were transferred to the Small Animal and Wildlife Hospital, Veterinary Medical School, of the Universidad Nacional, when they started presenting clinical signs of the disease. In spite of the treatment, the first animal died, however the second case evolved positively to a total recovery.

**Keywords:** tetanus, *Clostridium tetani*, *Leopardus wiedii*, spasms.

### Abbreviation key

ALT: Alanine Aminotransferase.

AES: Antitetanus equine serum.

IM: Intramuscular.

---

Recibido: 11 de mayo del 2005

Aceptado: 03 de abril del 2008

\* Autor para correspondencia: PO Box. 33-6000. Phone: (506) 2260-9234, Fax: (506) 2261-1775. [mjimenez@medvet.una.ac.cr](mailto:mjimenez@medvet.una.ac.cr)

Tetanus is a toxicosus disease caused by *Clostridium tetani* that can affect all domestic animals and people. The disease occurs because tetanus spores lodge in a anaerobic environment within the tissue and convert into to a vegetative toxin – producing form (Braund, 1994). Its prevalence in dogs and cats is relatively low compared to other domestic animals, which may be due to the natural resistance of these pets to the toxin (Greene, 1998). The susceptibility of the cat to tetanus toxin (tetanospamin) is 2000 to 7500 times lower than horses, mainly because tetanospamin cannot penetrate into the nervous tissue and bind to its specific receptors (Polizopoulou *et al.*, (2002). By 1990, less than twenty cases of generalized tetanus in cats had been reported worldwide (Lee & Jones, 1996). Due to a lack of literature on domestic and wild feline tetanus, the following observations were reported.

### Case 1

This cat was held in captivity at PRO-FELIS, a wild cat rehabilitation center, established in a former cattle farm, in Puntarenas, Costa Rica.

One male *Leopardus wiedii*, approximately 5 years old, was presented with an upward and rigid tail prior to showing stiffness caudal limbs. It was sent to the Small Animal and Wildlife Hospital, Veterinary Medical School, Universidad Nacional.

Upon general examination, it presented lateral recumbency with profound caudal stiffness in all four limbs, a raised tail, an increased heart rate, breathing difficulty, dehydration and rigidity of the neck muscles. Blood count and chemistry panel showed no significant findings (Table 1).

**Table 1**  
**Blood count from Case 1.**

Parameter	Value
Hematocrit (%)	35
Hemoglobin (g/dl)	10
Mean corpuscular hemoglobin concentration (%)	36,30
Leukocytes (ul)	59,62
Neutrophils Bands (%)	0,34
Neutrophils Mature (%)	52,64
Basophils (%)	0,80
Eosinophils (%)	7,20
Lymphocytes (%)	38,12
Monocytes (%)	0,90

**Table 2**  
**Chemistry panel from Case 1.**

Parameter	Value
Total protein (g/dl)	6,98
Blood urea nitrogen (mg/dl)	40,93
Creatinine (mg/dl)	1,30
ALT (IU/L)	36,48

The field report anamnesis stated that the animal had been tranquilized with a dart, from a blowpipe, several days before. It is possible that the needle was contaminated with *C. tetani* as the clinical signs correspond with the literature. Therefore a treatment for tetanus was begun.

Antitetanus equine serum AES (5.000 IU) (Colorado) was administered daily intramuscularly, for the following two days. Antimicrobial therapy was established with IM benzil-penicillin-procaine (20.000 IU) (Kela for Phenix Belgium) at a dose of .0.1 ml/kg every 12 hours. Midazolam (Roche) IM was used to control the reflex spasm. Supportive therapy with lactated Ringer's solution (Baxter) was administered intravenously to maintain the margay's hydration. After two weeks the cat died due to respiratory paralysis. A post mortem study was not carried out.

## Case 2

This cat was held at Las Pumas Rescue Shelter, located in Guanacaste, Costa Rica. One 17 month-old, captive, 4 kg, non-vaccinated, male *L. wiedii* from,

was admitted to HEMS, because generalized and severe hyperesthesia was noticed. During the clinical examination, both pelvic limbs were extended caudally and showed resistance to passive flexion; stiffness was less pronounced for the thoracic limbs. Dehydration, hypersalivation, breathing difficulty, heart rate (120 bites/min) and rectal temperature (39.5°C) increased. During neurological examination, the cat was classified as depressed. Flexor reflexes and patellar reflexes could not be evaluated and the head and the tail muscles showed stiffness.

No wound was observed during clinical examination, however, the clinical history indicated that the cat was in the same cage with the mother and had been separated three weeks before it started to show the clinical signs. It was thought that possibly during the separation period, a wire made a wound in the left pelvic limb where a scar was noted. Based on the clinical signs, the presumptive diagnosis was generalized tetanus.

According to the diagnosis, treatment included a single dose of penicillin

(200.000 IU) at a dose of 0.1 ml/kg IM, AES (5000 IU) and Midazolam 1.5 ml to control muscular spasm the first day. Subsequently, benzil-penicillin- procaine was administered for 5 days subcutaneously at a dose of 0.1 ml/kg every 8 hours. Diazepam (0.2mg/kg) (Valium\*; Sabex, Inc., Canada) IM was administered every 8 hours for 10 days. For an additional five days, Valium\* was administered depending on the rigidity degree. AES (1.500 IU) was repeated every three days at a dose of 300 IU/kg. The supportive therapy consisted of dextrose 5% (Baxter) and lactated Ringer's IV at a rate of 2ml/kg/h as the animal could not eat any solid food or drink. The cat was maintained on soft bedding in a quiet dark environment with minimum stimulation.

Four days after initial treatment, the animal was able to swallow canned food. The next day, pieces of soft meat with mineral oil and fresh water was offered and swallowed successfully. Ten days after being hospitalized the Diazepam was discontinued and antibiotic therapy continued for 5 more days. The cat's status progressively improved and was subsequently returned to the shelter without further medical treatment. At the shelter, the cat care was the same as before illness and after a three month period, the animal appeared normal.

## Acknowledgements

To Dra. Ana Meneses, Clinical Analyses Laboratory, Veterinary Medical School, for the assessments of the blood work, To Dra. Gaby Dolz, Christopher Vaughan, P.hD. and Gabriela Beita for the reviewing of this manuscript.

## LITERATURE CITED

- Braund, K.G. 1994. Tetanus. In *Clinical Syndromes in Veterinary Neurology*. Mosby-Wolf, pp. 271-272.
- Greene, C.E. 1998. Tetanus. In *Infectious Disease of the Dog and Cat*. W.B. Saunders Company Ltd. Philadelphia, Pennsylvania, pp. 267-273.
- Lee, E.A. & B.R. Jones. 1996. Localized tetanus in two cats after ovariohysterectomy. *New Zealand Veterinary Journal* 44: 105-108.
- Polizopoulou, Z.S., G. Kazakos, G. Georgiadis, N. Soubasis, & Ch. Koutinas. 2002. Case Report. Presumed localized tetanus in two cats. *Journal of Feline Medicine and Surgery* 4: 209-212.