



“Tick Paralysis”

DID YOU KNOW?

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Tick paralysis is caused by a salivary neurotoxin released from the attachment of a female tick. The neurotoxin causes a decrease in the release of acetylcholine from motor nerve terminals resulting in a flaccid, lower motor neuron quadraparesis.

There are only 4 species of ticks in the United States that produce the toxin. The two species of ticks that are prevalent in our area and may cause tick paralysis are *Dermacentor variabilis* (American Dog tick) and *Dermacentor andersoni* (Rocky mountain wood tick). Not all female ticks of these species produce the neurotoxin. In the United States cats are not affected by these particular tick toxins.

Clinical signs usually occur after 5-9 days of tick attachment. Animals with tick paralysis will often present with ataxia initially characterized by a stiff gait. The stiff gait will then progress to a rapid ascending lower motor neuron weakness. Rear limb weakness is followed by forelimb weakness. If treatment is not initiated, quadriparesis may occur in 24 to 72 hours. The neurologic exam will reveal decreased to absent conscious proprioception and spinal reflexes. Pain perception and mentation are normal. Dogs generally retain the ability to wag their tails. Cranial nerves will occasionally be affected. The most common cranial nerve deficits elicit signs of facial muscle weakness, change in vocal tone, difficulty swallowing and decreased jaw tone. Animals that are not treated or are severely affected may develop respiratory muscle paralysis that may lead to death.

Treatment consists of removing all ticks and supportive care. Animals often begin to improve within hours of tick removal. Discuss consistent monthly treatment protocols to prevent further tick infestation. If clinical signs do not improve after removal of ticks or if no ticks are found and tick paralysis is still a differential, consider an insecticidal dip.

Other differentials for lower motor neurons signs include botulism, myasthenia gravis and polyradiculoneuritis (Coonhound paralysis). Animals with polyradiculoneuritis will demonstrate hyperesthesia. Hyperesthesia does not occur with tick paralysis or botulism.

Tick paralysis has a good prognosis if diagnosed and treated early.

References:

- Nelson R, Couto C.G. Small Animal Internal Medicine, 3rd ed. St. Louis, Mosby, 2003, p 1057-8.
- Ettinger S.J, Feldman E.C. Textbook of Veterinary Internal Medicine, Volume 1, 5th ed. Philadelphia, W.B. Saunders Company, 2000, pp. 627-8.
- Kline K.L: Tick Paralysis. In Cote, E: *Clinical Veterinary Advisor*. St. Louis, Mosby, Elsevier, 2007, pp. 1086-7.

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