

# Acute Lower Motor Neuron Tetraparesis



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## KEYWORDS

- Flaccid tetraparesis • Polyradiculoneuritis • Botulism • Tick paralysis
- Fulminant myasthenia gravis

## KEY POINTS

- Acute flaccid nonambulatory tetraparesis is a neurologic emergency in dogs and cats that may need intensive care unit treatment in some cases because of respiratory muscle involvement.
- The 4 major disease conditions causing acute flaccid tetraparesis in dogs and cats are idiopathic polyradiculoneuritis, botulism, tick paralysis, and acquired acute fulminating myasthenia gravis.
- A careful and complete neurologic examination on presentation is essential and might be very helpful in differentiating between these diseases.

## INTRODUCTION

Flaccid nonambulatory tetraparesis or tetraplegia is an infrequent neurological presentation, but is characteristic of neuromuscular disease (lower motor neuron [LMN] disease), rather than spinal cord disease. Paresis that begins in the pelvic limbs and progresses to involve the thoracic limbs, resulting in flaccid tetraparesis or tetraplegia within 24 to 72 hours, is actually a common presentation of peripheral nerve or neuromuscular junction disease.<sup>1</sup> The thoracic limbs rarely may be involved first. Often, complete body flaccidity develops with severe decrease or complete loss of spinal reflexes in pelvic and thoracic limbs. Animals with acute generalized LMN tetraparesis commonly show severe motor dysfunction in all 4 limbs, and severe generalized weakness in all muscles of the body. Flaccidity is evident in the limb muscles, but also in the neck and sometimes in muscles of the head. Thus, affected dogs and cats often show inability to walk and support weight in any limb, and inability to hold their heads up in a normal position. In addition, some of the diseases affecting the LMN system might affect cranial nerves, causing difficulties in swallowing, prehending, or chewing food; changes in phonation (bark or meow); or other cranial nerve signs. Finally,

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Vet Clin Small Anim 44 (2014) 1201–1222  
<http://dx.doi.org/10.1016/j.cvsm.2014.07.010>

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respiratory paresis or paralysis may develop in some of these animals as a result of intercostal and/or phrenic nerve involvement.

The 4 major causes of acute LMN tetraparesis are acute idiopathic polyradiculoneuritis (AIP) (coonhound paralysis [CHP]), botulism, tick paralysis, and acute fulminating myasthenia gravis (MG). Less common causes include coral snake envenomation, blue and green algae intoxications, black widow spider envenomation (latter stages), and other rare toxicities (lasalocid). Other diseases causing LMN tetraparesis most often cause chronic progressive clinical signs (ie, endocrinopathies, neoplasia, toxicities and drugs, infectious and inflammatory diseases, hereditary and idiopathic neuropathies), although acute exacerbations may occur.

Clinical differentiation of the 4 major causes of acute LMN tetraparesis should be based on presenting clinical signs, routine diagnostic tests (complete blood cell count, serum biochemistry panel, urinalysis), and complementary diagnostic procedures (cerebrospinal fluid analysis and electrophysiological examination). More specific confirmatory tests (eg, determination of serum anti-acetylcholine receptor antibody titers, muscle and fascicular nerve biopsies) can be performed eventually to reach a definitive diagnosis in some cases.<sup>2</sup> However, the initial emergency approach of an animal with severe, nonambulatory LMN tetraparesis should be the same in all cases, regardless of the underlying cause (Fig. 1), and should be centered on assessing respiration.

#### ACUTE IDIOPATHIC POLYRADICULONEURITIS (COONHOUND PARALYSIS)

Acute idiopathic polyradiculoneuritis (AIP) or coonhound paralysis (CHP) is the most common form of acute polyneuropathy in dogs.<sup>1-3</sup> The syndrome was first described in 1954 as an ascending flaccid paralysis that developed in dogs 7 to 10 days after they had been bitten by a raccoon.<sup>4</sup> Although contact with raccoon saliva seems to have an etiologic role in some cases in America, an identical syndrome has been

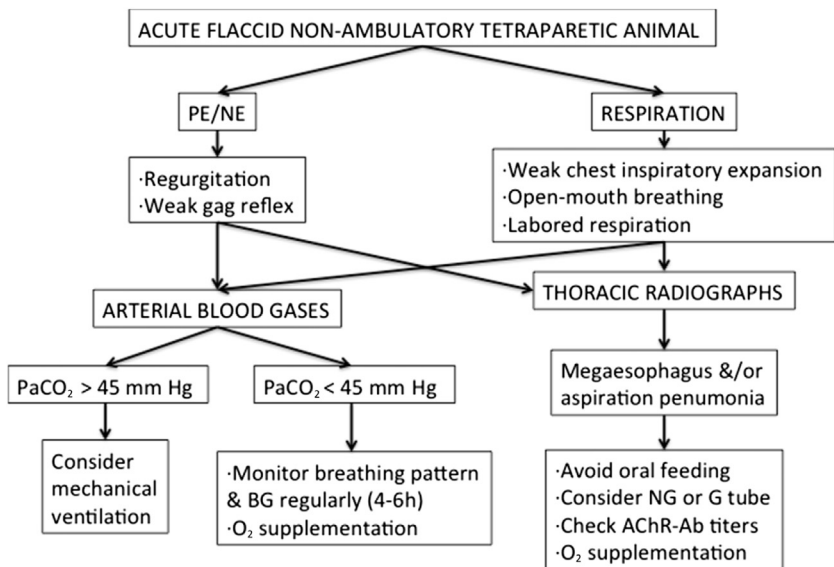


Fig. 1. Emergency approach of an animal with acute nonambulatory lower motor neuron tetraparesis. O<sub>2</sub>, oxygen.

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