



Zuku Review FlashNotes™

Equine Neuroaxonal Dystrophy (NAD) & Equine Degenerative Myeloencephalopathy (EDM)

Extended Version

Classic case: Weanling foal with **slowly progressive ataxia** and weakness of **all four limbs**

Presentation:

General

- Neurodegenerative disorder-causes ataxia and in severe cases, paresis, in young horses.
- Appears to have a **genetic basis**
- **Vitamin E deficiency is also common finding,**
 - BUT low serum vit. E can also occur in apparently UNAaffected related individuals.
- Equine degenerative myeloencephalopathy (EDM) is thought to be a more severe manifestation of equine neuroaxonal dystrophy (NAD)
- Second most common equine neuro disease (EPM is #1)

History and signalment

- **Suckling and weanling foals**
 - Usually less than 6 months
 - Never over 2 y of age
- **Lack of access to vitamin E-rich forage**
 - Dirt lots
 - Heated, pelleted feed
 - Sun-baked forage
- Insidious onset of clinical signs
- Closer inspection of other foals on the farm may reveal further cases
- Hereditary basis in Appaloosa, Standardbred, Paso Fino



Appaloosa foals, a breed thought to have a familial predisposition to NAD/EDM

Image courtesy, Kumana

Clinical signs

- Symmetric ataxia and weakness in the pelvic limbs or all four limbs
 - Usually pelvic limbs are more profoundly affected than thoracic limbs
 - Clumsiness
 - Places limbs in strange positions while standing
- Rarely progresses to recumbency - usually will plateau
- Hypometria
- Falls while running
- Hyporeflexia over the neck and trunk
 - Slap test (thoracolaryngeal reflex)
 - Cutaneous trunci reflex
 - Cervicofacial reflex

DDX:

Vertebral malformation/malarticulation, equine protozoal myelitis, discospondylitis



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Test(s) of choice:

Serum vitamin E concentration

- Young animals in early disease – very low to undetectable
- Older animal far into the disease may have normal levels

CSF vitamin E concentration

Rx of choice:

Vitamin E supplementation may result in stabilization **but is not curative**

Prognosis:

Poor for recovery – although a few have recovered with 2 years of vitamin E supplementation

Good for plateau of clinical signs and normal lifespan

Prevention:

Rich green forage

Vitamin E supplementation in groups where disease is prevalent

Pearls:

- Thought to be due to **vitamin E deficiency with familial (genetic) component** in horses
 - Possibly a disorder of vitamin E metabolism
 - Much less common than it was a decade ago
- NAD also occurs in humans, dogs, cats and sheep.
- Genetic basis proven in humans, suspected in dogs, cats and sheep.

Refs: Veterinary Neuroanatomy and Clinical Neurology, de Lahunta and Glass, 3rd ed. p 294-296, Large Animal Neurology, Mayhew, 2nd ed. p366-368, Finno, et al., *Equine degenerative myeloencephalopathy in Lusitano horses*, J Vet Intern Med. 2011 Nov-Dec;25(6):1439-46, DVM360 (online): UC-Davis shows vitamin E role in treating equine neurologic disease, and Merck Manual, 10th ed (online): Degenerative diseases of the spinal column and cord.