



LIPHOOK
EQUINE HOSPITAL

Information for Horse Owners on Atypical Myopathy

Atypical myopathy (also known as seasonal pasture myopathy) is a highly fatal muscle disease in horses in the UK and Northern Europe. Although recognised for more than ninety years, cases have become more common in recent years. This distressing disease results in degradation of respiratory, cardiac (heart) and postural muscles. Affected horses show signs of weakness, muscle trembling and pain, and even with intensive veterinary and nursing treatment, the majority of affected horses will die. To make things worse, multiple horses from one field or yard can be affected.

What causes the disease?

For years, vets recognised that horses with atypical myopathy were often kept in pastures with an accumulation of dead leaves and seeds and surrounded by trees, and also that affected horses were often not fed supplementary hay. This pattern led vets and researchers to suspect that an ingested toxin was the cause of the disease. Horses with atypical myopathy have an impaired ability to produce energy from fatty acid and amino acid metabolism in the mitochondria (energy factories) of muscle cells. Researchers established the cause of this catastrophic muscle cell damage in affected horses is a toxin called hypoglycin A.

In the UK, ingestion of seeds or seedlings from the European sycamore tree (scientific name *Acer Pseudoplatanus*) is the most likely source of hypoglycin A. Lower levels of hypoglycin A toxin have been detected in seeds from other trees in the sycamore/maple family. The amount of hypoglycin A in sycamore seeds varies between seeds in the same pasture and even from the same tree! Probably the important factors leading to horses being poisoned by the toxin are the availability of the seeds in the field combined with a lack of alternative food sources e.g. sparse grazing or not feeding extra forage.

What signs do affected horses show?

Horses affected by atypical myopathy cannot metabolise fatty acids, the main energy source of muscle, and so there is rapid and widespread destruction of muscle cells. Principally, the postural muscles are affected and so horses show signs of pain, stiffness, reluctance to move, and lethargy. This can progress to muscle tremors, intense weakness and increased recumbency. If the horse passes urine it is often dark-red or brown coloured due to the presence of myoglobin (muscle protein). There are high concentrations of myoglobin in the blood when the horse has atypical myopathy, and this is filtered by the kidneys into the urine.

Some horses remain rooted to one spot in the field or stable, and vocalise (whinny) and nod their head which may be signs of distress. A few horses present with signs of choke (oesophageal obstruction) such as dropping saliva and food material from the mouth and nostrils. If you think your horse may have atypical myopathy, contact your vet as a matter of urgency.

How do vets diagnose atypical myopathy?

Vets usually develop a strong suspicion of atypical myopathy on the basis of their clinical examination and the horse's recent grazing history. Vets can confirm their suspicions by measuring concentrations of muscle enzymes in a blood sample (e.g. creatine kinase (CK)) that increase markedly with severe muscle damage. If a vet takes a blood sample very early in the disease course, the CK result may underestimate the extent of muscle damage - peak CK levels may take several hours from the start of muscle cell injury. Some horses have high levels of a marker of cardiac muscle damage called cardiac troponin.

Urine analysis shows very dark red coloured urine, due to the presence of myoglobin (muscle protein). If a urine dipstick is used, this will be positive for "blood" – there is no blood in the urine, just myoglobin, but it reacts with the "blood" spot on the dipstick.

A post-mortem examination is strongly recommended in any horse that dies suddenly at pasture and is suspected of suffering from atypical myopathy. Confirming the presence of the disease helps horse owners take action to prevent other horses grazing the same pasture from acquiring the disease.

Whenever a case is seen or suspected, field mates should be removed from the pasture and blood tested for muscle damage (CK test). Just because they are not showing signs does not mean they are safe or unaffected by the toxin. It may be worthwhile giving these co-grazing horses anti-oxidants and B vitamins if their muscles are damaged.

How do vets treat the disease?

Treatment for cases of atypical myopathy is supportive and these horses' needs are best met in a hospital environment where high quality nursing care and 24/7 veterinary monitoring can be provided.

Most horses with atypical myopathy show signs of severe pain that may require multiple types of pain relief including sedatives, opioids (e.g. morphine) and anti-inflammatory painkillers. Lidocaine is a strong pain-killing, anti-inflammatory, anti-oxidant medication that is given as a constant intravenous drip to atypical myopathy cases. Lidocaine may reduce the chance of life-threatening heart rhythm disturbances, too.

Intravenous fluid therapy is an essential part of treatment - it reverses dehydration, protects kidneys from damaging myoglobin, and it helps correct electrolyte disturbances. Hospitalised horses often receive intravenous nutrition to give the surviving muscle cells a constant energy source.

Supplementary vitamins, minerals and anti-oxidants were linked to increased survival rates in one scientific study of atypical myopathy cases. Carnitine and vitamin B1 and B2 may support the muscle cells' energy factories (called mitochondria). Some cases are deficient in Vitamin E and selenium so these might also be given.

Prevention:

The best way to minimise your horse's risk of atypical myopathy is to reduce the chance of it ingesting sycamore seeds. In practical terms, this includes:

- Turning horses out for short periods rather than extended periods of the day (ideally < 6hrs)
- Hoover or pick up sycamore seeds off the pasture
- Fence off areas where sycamore seeds have fallen from trees
- Inspect fields in daylight regularly to ensure seeds have not blown in from nearby sycamore trees
- Supple extra forage (hay/haylage) especially where pasture is poor
- Reduce stocking density so there is plenty of good grass for every horse