

Understanding Atypical Myopathy

Though low in incidence, the seasonal condition has a high mortality rate



Once a horse is lying down, the chance of recovery is poor even with specialist care

In the last few years we have seen an increasing number of cases of a serious, life threatening condition known as Atypical Myopathy or Atypical Myoglobinuria (AM) in horses in the UK and parts of Europe. It is a seasonal condition, with the vast majority of cases seen in autumn and, to a lesser extent, spring. It was first reported in 1942 but the incidence had been fairly sporadic and probably not well reported until recent years, when the number of reported cases has grown significantly. In response to this increase in cases, a specialist group was established at the University of Liege to collate and investigate details of as many cases as possible. In the autumn of 2013, over 400 cases were reported to this group from various European countries, more than 50 of them from the UK.

While this is not a huge number of cases in the overall scheme of things, this condition is of importance because it has a very high mortality rate, with more than 70% of affected horses dying or requiring euthanasia even with intensive veterinary treatment.

One or several horses of any age or gender may be affected at a single location. They are characteristically living out and not being exercised regularly, if at all. Affected horses may appear stiff or reluctant to move or can look as though they are setfast, but without having done any exercise! There will be muscle weakness and tremors may be obvious. Some horses are found recumbent and may be unable

to stand, even with assistance. They may appear bright initially but soon become dull and disinterested in their surroundings. Most will show signs of pain and some cases can be confused with horses with colic or laminitis. Even recumbent horses might appear keen to eat, but many lose their appetite completely.

If the horse is seen to urinate, the urine will be dark brown due to the myoglobin released by the breakdown of muscle tissue. Severely affected horses will be recumbent, totally unable to move and will have difficulty breathing as the respiratory muscles become affected. Gut function may also be affected. Death can occur as a result of failure of the respiratory muscles or due to organ failure from systemic electrolyte imbalances and other related complications.

Diagnosis is based on clinical signs and the presence of dark urine, if some can be visualised or collected. The best diagnostic test is to measure the levels of the muscle enzymes, CK and AST in a blood sample. These will be markedly elevated even though the animal will not have done any strenuous exercise.

At Rossdale Equine Hospital we have seen cases with a CK level of over 600,000iu/l (when a normal horse has a value of less than 250iu/l). For comparison, a horse with set fast (azoturia) might have a CK of 3,000 to 30,000 and be in significant discomfort. If there is any suspicion that your horse might be affected by this condition and a blood test result cannot be obtained very quickly, it may be worth asking

your vet to try to collect a urine sample using a catheter so that it can be inspected immediately.

Treatment must be instigated as a matter of urgency if the affected horse is to have any chance of survival. However, treatment can be only supportive and symptomatic as there is no miracle 'cure'. Intravenous fluids and electrolytes must be given to correct imbalances and 'flush' out the toxins released by the damaged muscles. Good nursing is essential and should include keeping the horse warm (rugs, bandages, shelter, etc) and offering appetising feed and water. Pain relief is needed in the form of non steroidal anti-inflammatory medicines and/or opiates.

Even if caught early and the horse is still standing and eating, the outlook is, at best, only poor to fair. Once an affected horse is recumbent, the prognosis is considered very poor. More information about prognosis can be gleaned from looking at the horse's systemic acid-base and electrolyte status, but this needs ready access to laboratory facilities. Due to the intensive nature of treatment and monitoring of these cases, it is definitely worth considering referral to a specialist centre or veterinary hospital where everything needed is at hand.

Finding the cause

When the number of reported cases started to increase, there was a huge amount of speculation about the possible cause of this rather devastating condition. It was strongly believed that some sort of toxin had to be involved, but the difficulty came in trying to find the source and mechanism of action. There were several factors common to virtually all of the pastures where cases had occurred:

- The animals were grazing on sparse or overgrazed pasture.
- There was an accumulation of dead leaves, dead wood and overhanging branches, either in or adjacent to the affected pasture
- There was little or no supplementary feed or hay provided.

At around the same time as we were experiencing the dramatic increase in cases here, in the USA they were also seeing a rapidly increasing number of cases of a very similar condition known as Seasonal Pasture Myopathy (SPM). Workers in Minnesota had discovered that the symptoms were caused by damage to the processes involved in energy generation by



Horse owners are advised to cut over-hanging branches of sycamore trees

muscle cells. After extensive work and a great deal of collaboration, it has been confirmed that the symptoms seen in horses affected by both AM and SPM are caused by the toxin hypoglycin A. This toxin blocks one of the processes needed to utilise fat stores for energy.

In the UK, this toxin is found in the seeds of various Acer trees, including the Sycamore or European Sycamore Maple (*Acer pseudoplatanus*), and in the USA in the seeds of the Box Elder (*Acer negundo*) amongst others. On virtually all of the affected properties in Europe, there were Sycamore trees on or bordering the affected pastures. The common Field Maple (*Acer Campestre*) does not appear to be implicated in this disease.

What else do we know?

The characteristic 'winged' seeds of the Sycamore are known as 'helicopters' because of the way they spin as they fall. They can contain

highly variable levels of toxin and this might explain, in part, why some horses and some premises are affected while others are not.

The amount of toxin can vary between seeds on a single tree as well as between trees on the same property. Other factors might include the number of seeds produced by a tree or trees, their dispersal by the weather and how many are ingested. Horses might only start to eat the seeds when there has been a depletion of other palatable forage as a result of overgrazing, drought or cold. Speculative estimates suggest that eating anywhere from 165 to 8,000 seeds may cause the disease. The seedlings are also toxic and this explains the second peak in the number of cases we have seen in the spring.

Cases are more likely to occur in animals that are not receiving supplementary feed as the quality and quantity of their grazing falls off in the autumn. In these animals there is a negative energy balance, i.e. they are having to use their



Sycamore seeds should be cleared from paddocks where horses are grazing

body stores of fat and other tissues to provide energy because they are not getting enough to eat. This means they are more likely to eat the seeds and also that the toxin is more likely to cause damage to the muscle cells.

Prevention is always better than cure

There are a few steps which are recommended to try to prevent any occurrence or reoccurrence of this condition on a premises:

- Over-hanging branches of Sycamore trees should be cut back or fenced off from paddocks.
- It is important to check paddocks for seeds which may have blown in from adjoining properties, tree belts or paddocks.
- Sycamore seeds should be vacuumed or swept/raked up throughout the time that they are falling from the trees.
- Horses should not be allowed to graze Sycamore seedlings. These should be mown short to avoid horses ingesting the leaves.
- Wherever there are Sycamore trees in or surrounding the paddocks, horses in those paddocks should ideally be allowed to graze for only a limited part of the day and additional forage should be fed.
- Reduce stock density to avoid overgrazing. This is not a very common condition and good management practices can be used to ensure that your horses do not become affected by it.

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