Some Poisonings & Conditions of Horses in Eastern Australia

Apart from Tetanus, Strangles and Hendra virus infections, the other major preventable condition of horses is intestinal worm burdens, especially with the large strongyle worms such as Strongylus vulgaris.

There are some other conditions of horses, which are seen at times in horses in natural grazing situations or when feeding on certain pastures.

Some grazing horse poisonings and conditions:
- Poisonous Plants e.g. avocado poisoning, Crotolaria spp poisonings
- Oxalates excess in some grasses & improved pastures
- Paralysis Tick (Ixodes holocyclus) infestations of previously unexposed horses when moved into Scrub Tick areas.

In normal situations, horses are fussy and very choosy eaters. However, when feed is scarce or for horses which were previously handfed, there are some plants which grazing horses may occasionally eat and which are toxic for them. There are also some toxic pasture species affecting horses.

Poisonous plants

Examples of poisonous plants are Avocado trees and fruit and Crotolaria spp (Rattlepod) plants.

Avocado trees and Avocado fruit poisoning.

Growing avocados on your farm can be detrimental to the health of your horses. The leaves, fruit, seeds and bark are poisonous to horses. One early warning sign of poisoning is that horses may show fluid swellings of the head, tongue, and brisket.

- All avocado tree parts and the fruit contain persin which is a cardiac toxin, with leaves being the most toxic part of the tree. The toxic principle persin also causes mastitis.
- Heart muscle (myocardial) injury, mastitis, and colic are seen in horses eating avocado fruit and leaves.

Signs of Avocado poisoning.
- Clinical signs of poisoning are related to myocardial necrosis (death of the heart muscle cells) and these include include difficult breathing, coughing, increased rate of breathing, and high heart rates.
Heart muscle insufficiency can develop within 24–48 hr of eating the plant or fruit, and it is characterized by signs of lethargy, respiratory distress, subcutaneous swellings of head and brisket area, coughing, exercise intolerance, and finally death in cases of severe poisoning (large intake of plant).

Cardiac changes that occur include cardiac arrhythmias (irregular heart beats), and will cause the following signs in the poisoned horse: fluid swellings of the neck, lips, tongue, mouth and ventral abdomen, cyanosis of the mouth lining and gums (bluish discoloration due to lack of oxygen in tissues), anorexia (no eating or appetite), generalized weakness and recumbency (inability to get up).

The heart damage can be fatal and any cardiac changes from poisoning are often irreversible.

Poisonings with similar cardiac effects to avocado toxicity. These other poisonings result from consuming toxins which also cause heart muscle disorders. They include ionophore (e.g. monensin) poisoning, gossypol poisoning from eating whole cottonseed, and cardiac glycoside poisoning from eating Oleander plant.

**Crotolaria spp (Rattlepod) poisoning**

It is also called Kimberley horse disease or Walkabout Disease. These plants are also toxic to cattle, but less so than in horses. There is also another similar horse poisoning called "Birdsville horse disease" from a Crotalaria species found in that area.

Walkabout disease affects horses that graze plants of the genus *Crotalaria*, commonly known as rattlepods. *Crotalaria* plants contain pyrrolizidine alkaloids (PAs) which are liver toxins.

Since *Crotalaria* species are not very palatable, poisoning usually occurs when there is a shortage of feed, which causes horses to graze indiscriminately to survive.

Alternatively, *Crotalaria* poisoning may occur when toxic plants are accidentally incorporated with conserved fodder, such as hay.

Horses are 30 to 40 times more susceptible to *Crotalaria* poisoning than sheep or goats.

Disease process of Crotolaria poisoning in horses.

- The hepatotoxic pyrrolizidine alkaloids in *Crotalaria* spp. cause significant liver disease, resulting in the signs seen with this poisoning.
- Pyrrolizidine alkaloids (PAs) when broken down to their metabolites, are toxic to the liver. Ingesting PAs has a cumulative effect on the liver of a horse.
- Even if a horse has limited, but intermittent access to plants that contain PAs, over time the cumulative liver damage will eventually cause clinical disease and subsequent death.
- Clinical disease may occur immediately after the ingestion of a large dose of toxic PAs, or the disease may progress slowly.
In some cases, there can be delays in disease signs for up to 18 months after horses graze toxic plants.

Clinical Signs of *Crotalaria* Poisoning.

- Anorexia (off feed)
- Weight loss despite being on good feed
- Jaundice of membranes (gums and the whites of eyes go yellow)
- Horse becomes dull and depressed
- Muscle tremors, especially of the head and neck
- Frequent yawning by horse
- Head pressing and stupor in affected horses
- Urine may be copper coloured or red
- Attacks of frenzy and uncontrollable galloping by horse
- Difficulty in swallowing, with horse stopping eating halfway through a mouthful
- Horses often stand with their heads hanging down
- Affected horses appear to be blind and may wander aimlessly, walking in circles or bumping into objects (hence Walkabout disease)
- Horses with effects of ongoing poisoning will drag their hind legs, causing the hooves to have worn tips

Diagnosis of *Crotalaria* Poisoning.

The presence of *Crotalaria* plants in the pasture combined with typical clinical signs and liver damage are highly suggestive of walkabout disease.

- A presumptive diagnosis in a live horse is based on clinical signs and blood tests, plus known or suspected exposure to the toxic plants.
- Blood samples from horses with recent liver damage from *Crotalaria* poisoning will often have elevated liver enzymes, particularly GGT (gamma glutamyltransferase). This liver damage caused by toxic PAs.
- An examination of a liver sample from a horse that has died from walkabout disease, or has been euthanized following the disease, will show distinctive changes typical of PA poisoning.
- Confirmation of the diagnosis requires a blood test or a test of the liver to detect metabolites of PAs. However, such tests will indicate possible poisoning only if the ingestion of the toxic substance has occurred recently.

Prevention of *Crotalaria* spp. poisoning.

Once a horse shows signs of Walkabout disease there is little that can be done to stop disease progression. Therefore, prevention is the best option. Under normal grazing situations with good available pasture levels, horses will avoid consuming *Crotalaria* species.

- During periods of feed shortage, remove horses from paddocks that contain *Crotalaria* plants and feed them good quality hay, or a combination of hay and grain.
• Where possible, remove all *Crotalaria* species from horse paddocks mechanically or by using appropriate herbicides.

**Oxalate excess in some grasses & improved pastures**

Horses can get oxalate damage from grazing high oxalate pastures and grasses like kikuyu, buffel grass, setaria, green panic, pangola grass, guinea grass, purple pigeon grass, para grass and signal grass. The oxalate in the grass binds most of the calcium available in the grass making it unavailable for absorption by the horse eating it. Over time, horses eating diets high in these pasture species will develop a severe calcium deficiency and deformed bony structures such as Bighead.

Bighead is the name of the horse disease resulting from long term calcium deficiency in the horse's diet.

• This condition has severe effects on horses, making movement painful and lameness is a constant issue.
• Kuzungula Setaria is the most dangerous high oxalate grass for horses, with severe bighead appearing in horses grazed on this grass species within one to 3 months.
• During these periods of calcium shortage, horses will mobilise calcium and phosphorus from their bones to keep blood calcium levels stable.
• When calcium deficiency occurs for prolonged periods, horses mobilise so much calcium and phosphorus from their bones that their bones become fibrous and weak.
• Bighead results in the horse's facial bones becoming fibrous and swelling to give the horse a 'bighead' appearance as shown in this photo. This facial swelling appears most commonly in young horses whose facial bones haven't fully formed and hardened, though it is possible for it to occur in mature horses as well.
• This induced calcium deficiency affects a horse's entire skeleton and will result in a shifting lameness and generally sore bones and joints.
• In severe cases, horses will be reluctant to move or may move with an abnormal gait.
• Affected horses also lose weight even though they have access to ample feed.

**Treatment & Prevention of Bighead**

• Adding extra calcium to the diet to balance the calcium to phosphorus ratio will make sure you avoid this problem.
When adding calcium to the diet of horses on high oxalate pastures, phosphorus must also be added. Use a mixture of 2 parts DCP (dicalcium phosphate) to 1 part Limestone (calcium carbonate) mixture, and ensure that the calcium to oxalate ratio in the horse’s diet is 0.5 parts calcium to 1 part oxalate. Mix this with molasses for palatability.

**Scrub (paralysis) Tick (*Ixodes holocyclus*) infestations**

When previously unexposed horses are moved into bad Scrub Tick infested areas, scrub tick paralysis cases can and do occur in eastern Australia.

Having no previous exposure and so having no developed resistance to this tick toxin, such naive (unexposed) horses will develop scrub tick paralysis. If left untreated, even adult horses will go down and can die of scrub tick paralysis.

- Paralysis ticks (*Ixodes holocyclus*) normally live on Australian native wildlife, such as bandicoots, wallabies, echidnas, and wombats. *Ixodes holocyclus* is commonly known as the Australian paralysis tick.
- Native animals are usually immune to the paralysing toxin because of their frequent exposure to tick infestation and natural immunity. However, they do maintain a reservoir of paralysis ticks in a particular area.

Scrub ticks can also cause paralysis in horses and other domestic livestock when these animals have not developed any tick resistance from prior exposure.

- Paralysis ticks tend to be associated with bushy or scrappy areas which harbour the native animal hosts but they can still be picked up in open paddocks and other areas.
- It is usually found in a wide band following the eastern coastline of Australia. Within this range, *Ixodes holocyclus* is the tick most frequently encountered by humans and their pets, and by domestic livestock.
- Paralysis ticks can be found on their native hosts at any time of year. However adult ticks are most commonly seen on their native hosts from July through to December with a peak availability of young adults in spring.
- When paralysis ticks attach dogs and cats, they can result in serious illness or death if untreated.
- The tick’s salivary glands produce a powerful toxin that affects the nervous system of the host.
- The scrub tick injects this powerful toxin when it attaches to an animal, disrupting its normal nerve and muscle function, causing weakness and eventually paralysis.
- Larvae and nymphs secrete small quantities of this toxin when they feed, but it is the larger amount, injected by adult female ticks when they attach, that most commonly causes paralysis in non-native animals.

**Signs of Tick Paralysis.**

Scrub ticks deposit a neurotoxin that affects the nervous system of the animal host.
Some Poisonings & Conditions of Horses

- Paralysis begins with a loss of coordination in the hindquarters.
- Paralysis spreads at varying rates throughout the body, eventually affecting breathing when the chest muscles become involved.
- Once paralysis occurs in an affected animal, it will most likely die, unless it is treated with specific anti-tick serum.

Effect of Scrub Ticks on horses.

The number of paralysis ticks required to cause paralysis in a horse is unknown, but there have been recorded cases of adult horses with only one to two engorged ticks attached being paralysed and unable to stand.

- Horses of any age and size can be affected by tick paralysis. Horses with no prior exposure and resistance to scrub ticks can die.
- Surviving horses can develop serious complications from being recumbent, such as pressure sores, pneumonia and local infections from damaged skin areas.
- Mortality rates in horses can be high if no early diagnosis is made and no early veterinary treatment is done.
- Nursing of a recumbent horse due to an infestation with paralysis ticks is very problematic and expensive, and is often doomed to failure.

Prevention of Scrub Tick Exposure.

- As dead grass or mulch provides ticks with a buffer against environmental extremes of heat and dessication, pasture management strategies such as slashing, which expose free living stages of the tick to dry conditions and extreme temperatures will aid in the control of paralysis ticks.
- There are no reliable treatment chemicals registered for use in horses which give much long-term residual protection to exposed horses.
- In scrub tick areas, maintain tick free paddocks for valuable horses and for mares and foals.

With grazing horses, care needs to be taken to ensure poisonous plants are not present and growing within the pastures, and if Crotolaria or other poisonous species are present, there is plenty of other palatable pasture for the horses.

Ensure a balanced calcium and phosphorus supplement is fed to horses grazing on high oxalate pastures. Check valuable horses in grazing situations regularly to help to avoid losses from any dietary or other health problems.

Contact : John Cronin, Veterinarian
PO Box 18137, Clifford Gardens Toowoomba Qld 4350
Mobile: 0409 334030 | Phone: 07 4614 4000 | Fax: 07 4614 0360
john.cronin@nfw.com.au | www.nfw.com.au