

Tetanus

In a Spasm

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worked in equine hospitals both in the UK and Australia. Paula is currently an equine practitioner at WestVETS Animal Hospitals in Queensland.

Her clinical interests include diagnostic imaging, the investigation and management of musculoskeletal issues in the equine athlete, the equine foot, neonatology and internal medicine.

With the new and emerging novel diseases occurring in both human and veterinary medicine, sometimes the old diseases are forgotten. Equine veterinarians still see cases of tetanus despite there being an effective, easily accessible and relatively cheap vaccination. Tetanus is a terrible disease and sadly has a high rate of fatality.

What is tetanus?

Tetanus is a bacterial disease caused by the bacteria **Clostridium tetani** which is a ubiquitous organism found in soil and in the faeces of different animals (including horses). The bacteria can survive as spores in the environment for very long periods

of time. It is found all over the world and can affect humans as well as horses; my small animal colleagues have a case in a dog at the current time who is responding well to treatment because of a prompt diagnosis.

How does it infect the horse?

The bacteria can enter through wounds particularly puncture wounds. Punctures in the sole of the foot are common modes of entry. It can also enter via damage to the mucosa such as punctures and ulcers in the mouth from sharp points on teeth. Other potential entry sites are as a result of damage to mares when foaling, retained placenta, via the umbilicus in foals and through gastric and intestinal ulcers. The bacteria are anaerobic and do not need oxygen to survive so they are able to multiply rapidly in the damaged tissues at the site of the injury.



Sharp teeth can cause damage to the mucosa allowing tetanus to enter.



Foot penetrations are a common entry point for tetanus.



The *Clostridium tetani* bacteria can enter the horse via wounds.

Classic stance of a horse with tetanus.



How does the bacteria affect the horse?

The bacteria produce potent toxins – neurotoxins. There are three neurotoxins (tetanolysin, tetanospasmin and a non-spasmogenic toxin) that affect the central nervous system. The tetanospasmin is the most powerful and is responsible for the clinical signs seen in tetanus cases, as it results in muscular spasms and contractions; it can lead to convulsions, respiratory arrest and death.

What are the clinical signs of tetanus?

Essentially tetanus results in spasm of the striated muscles (skeletal muscles) resulting in increased muscular activity. There are progressive signs of muscle stiffness.

- Ears stand erect
- The tail becomes stiff and stands out
- Walk very stiffly
- Anxious facial expression – looks like the horse is grimacing or smiling
- Difficulty eating
- The third eyelid goes into spasm and protrudes across the eye – this is exacerbated when the horse is startled



Third eyelid across eye in tetanus cases.



- Affected horses are reactive to sound and movement
- Horses may lie down and be unable to get up
- As the disease progresses the horse may have seizures or go into respiratory failure

When do the signs occur?

The incubation period is one to three weeks after infection, but most commonly signs occur at about nine to ten days.

What is the prognosis for a horse with tetanus?

The prognosis is very poor – within a few days of the first signs appearing, up to 80% of cases will die. It is therefore important that if you think your horse has tetanus you should call your vet immediately.

Is tetanus treatable?

If it is diagnosed early then the horse can be treated, but the prognosis is still poor. The treatment is aimed at destroying the bacteria so that no more toxin is produced – this requires large doses of antibiotics – usually penicillin. Tetanus antitoxin is administered in large doses to try and bind any toxin that is circulating. The tetanus antitoxin is administered intravenously and very large doses are required, which can be very expensive (\$1,000 plus).

TETANUS

Sometimes tetanus antitoxin is administered into the subarachnoid space around the spinal cord but this can be difficult in a large horse.

General nursing is essential with the horse being kept away from stimuli in a quiet, darkened box; they require intravenous fluids, muscle relaxants and catheterisation of the bladder. In severe cases, suspending the horse with a sling is required but as a general rule once the horse is lying down, the prognosis worsens and euthanasia on humane grounds is usually more appropriate. Treating a tetanus case can be very expensive (costing thousands of dollars) with a high chance of fatality.

Is tetanus preventable?

Tetanus is easily preventable and relatively cost-effective.

- Paddocks and stables kept safe, clean and free from dangerous and sharp items that may cause injury
- Good first aid – clean wounds as soon as they occur. If they are severe wounds or deep punctures then seek veterinary intervention
- Vaccination



Vaccination

There is a vaccination available (tetanus toxoid) in Australia; it is available either alone or in combination with Strangles vaccination (2 in 1).

- Horses, ponies and donkeys can be vaccinated from three months of age.
- The primary course is two doses intramuscularly four weeks apart
- The Equine Infectious Disease Advisory Board recommends boosters every 12 months
- For immediate short-term prevention the tetanus antitoxin (TAT) can be used. This is used when a horse has a wound but whose vaccination status is not up to date. It may also be used in foals who are unable to have vaccinations before three months of age.
- Pregnant mares should be vaccinated four to six weeks before foaling. This protects both the mare but also the foal via antibodies in the colostrum.



Puncture wounds can be an entry point for tetanus.

MYTHS BUSTED

Tetanus is easy to treat!

This is untrue – about 80% of equine cases will die. Treating tetanus is also expensive. (Myth busted!)

Tetanus is caused by rusty nails or rusty wire

Horses that are injured by rusty items are at risk of tetanus but not because of the rust but because of the tetanus bacteria and spores on the item. (Myth busted!)

Summary

Tetanus is a disease of horses that is seen all over the world. It is caused by a bacteria called Clostridium tetani which is found in soil and in faeces of many domestic animals. The spores produced by the bacteria can live in the soil for years and the bacteria produces neurotoxins which act on the central nervous system causing spasms of the muscles. The bacteria enter the horse via wounds especially punctures. Tetanus has a high fatality rate and treatment is expensive. If your horse shows signs of tetanus then veterinary attention should be sought. Tetanus is easily prevented by vaccination. ↻