> Veterinary

Rhinopneumonia

Why does it keep popping up?

Recently, the horse-loving world has been startled again by reports about the neurological variant of rhinopneumonia. There are also reports about the abortion variant every year. The cold variant of rhinopneumonia is less spoken about, despite the fact that it is by far the most common.

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Rhinopneumonia (rhino = nose) is caused by the Equine Herpesvirus 1 or 4 (EHV-1 / EHV-4). The Equine Herpes Virus occurs worldwide and is animal species specific. This means EHV-1 and EHV-4 are not dangerous for humans or other animal species than horses. EHV-1 has several variants, but all variants can sometimes cause abortion neurological or symptoms. This makes distinguishing between variants only important from a scientific point of view.

Contamination

Contamination with EHV-1 or EHV-4 virus particles



A two-month pregnant mare with the EHV-1 that has become ataxic and can barely walk with help. Picture from October 2018.

occurs as a result of ingestion of these virus particles through inhalation or through contact with infectious animals or contaminated objects, such as a bit or hands of humans. In the vast majority of cases, the virus multiplies in the nose and throat and occasionally in the deeper airways. This is how the virus causes cold symptoms. Sometimes the mucous layer in the nose, throat, trachea and further branches becomes so severely damaged, that the virus can penetrate into the underlying tissues. The

virus particles can then be taken up in the white blood cells, come to the lymph nodes and then also circulate in the blood (this is called viraemia = virus in the blood). Usually only EHV-1 penetrates this far and can reach areas like the uterus, brain and spinal cord.

Effects

When the virus settles in the uterus, a vascular inflammation develops in the innermost layer of the uterine wall and the placenta and the fetus are rejected. An abortion then follows. The susceptibility of the uterine wall to such an infection is much greater in the second part of the pregnancy than in the first part. If the virus settles in the nervous tissue of the spinal cord or brain, a vascular infection develops there too, which can lead to small clots in various places in the spinal cord (myelopathy) and / or in the brain (encephalopathy). As a result, the sick horse can start to show all kinds of (neurological) nervous symptoms.

Cold variant

The common cold variant is usually caused by EHV-4 and sometimes EHV-1. This form is most commonly seen in young animals and usually has a good prognosis (chance of recovery). In the Netherlands, more than 90% of adult horses have antibodies against EHV-4 and at least 30% have antibodies against EHV-1 (data from Dr Kees van Maanen, Royal GD, Deventer). The time between infection and symptoms (incubation period) is usually 3-10 days.



The same pregnant mare tries to get up, which she can't. Later, with help, she was able to get up.

Catheterizing urine from the same mare.

Abortion variant

The abortion variant is usually caused by EHV-1, but occasionally also by EHV-4. If a mare is infected before the 120th day of pregnancy, an abortion almost never occurs. If the infection occurs later, the abortion is usually seen in the last trimester of pregnancy. Also, often a little too early, a live foal can be born that is immediately very ill. The prognosis of these foals is very poor: they

almost always die, even with very intensive treatment. The time between infection and the abortion / birth of a very sick foal can vary from seven days to several months. If a mare aborts, it is advisable to have the foal examined, especially if there are more pregnant mares on the farm. In the case of a proven rhinopneumonia- abortion on the farm, intensive treatment of the next sick foal is usually not worthwhile.

Neurological variant

The occurrence of neurological variant is relatively rare. However, this variant has a huge impact in the horse world. In the Netherlands, neurological EHV-1 outbreaks have been reported every autumn, winter or spring since 1980. Sometimes there is a link between infected farms and sometimes the origin of an infection cannot be traced. The time between infection and symptoms is six to ten days, but sometimes only two days. Sometimes symptoms are seen earlier, such as some cold symptoms and/ or a fever (not wanting to eat for a day).

The symptoms of the neurological form usually start suddenly and can vary widely:

- > Floppy tail
- > Overfilled bladder that is about to leak
- > Mild ataxia (walking like a drunken man) evolving to complete paralysis

Clinical symptoms usually progress to their most severe form within two to three days.



Diagnosis

In the case of a cold or neurological form of rhinopneumonia, the vet can make a diagnosis by taking a nasal swab and blood (in purple tube) and sending it to the laboratory. In the case of an abortion, a swab of the mare's vagina, a piece of the placenta and / or a piece of the foal's lungs can be sent in. The presence of EHV-1 or EHV-4 can be detected by means of a PCR (a very sensitive laboratory test). The results usually arrive after one or two working days. In the event of an abortion, the foal with the amniotic membranes can also be sent in for a full section. That is more expensive, but then other causes of abortion can also be determined. Make sure that the packaging of foals with afterbirth is done very neatly, because the foal, the amniotic membranes and the amniotic fluid contain a lot of virus particles and are therefore very contagious! If the neurological variant turns out to be EHV-1, the owner will be asked for permission to report this to the Horses Sector Council, with the first two digits of the postal code.



Treatment

With the cold variant, the sick horses usually recover without treatment. Sometimes, however, bacteria come into play and veterinary treatment is necessary. With the abortion variant, the mare does not need any further treatment. However, it is wise to isolate her immediately and not to breed the mare in foal heat. This has the



Hemorrhage caused by EHV-1 in the spinal cord as seen under the microscope.

additional advantage that the mare can remain isolated for the first four weeks. In the neurological form, the treatment is much more extensive, both in medication as in care.

Medicine

It is recommended that a horse with the neurological form of rhinopneumonia is treated by the veterinarian with:

- > Painkillers / Anti-inflammatories to reduce inflammation
- > Aspirin to prevent blood clots
- > Virus-inhibiting substances experiences with this are mixed, but there are positive reports if treatment is started on time. Also, the medicine has become more affordable nowadays.

Support

There are many measures that increase the chances for a horse with the neurological form of rhinopneumonia, but they often require veterinary assistance:

- > Place the horse in a spacious stall with a soft bottom (for example, make 'boxes' in the indoor riding arena with large bales of straw); the horse can get up more easily and, if necessary, be helped with this.
- > Regularly walk by hand if the horse can still do so, possibly with extra help at the tail and next to the legs
- > At least twice, preferably three times a day empty the bladder with a urinary catheter after thorough cleaning of the vulva or penis tip (and rinsing with, for example, Betadine®)

dissolved in physiological saline); in geldings and stallions with neurological symptoms it is usually possible to grasp the penis without sedation

Horses that can no longer stand

If the horse can no longer stand, it must be carefully discussed how to proceed. If the horse is still attentive, wants to drink and eat and has strength in the legs, an attempt can be made to hoist the animal in 'pants'. In the first instance, this should be done with the vet, because enormous forces are released when hoisting, especially if a horse resists, and the situation can quickly become very dangerous. After the hoist, the horse must want stand on his own legs. 'Hanging them up' is really not possible. The horse can also be rolled onto each side every 4 to 6 hours for 1-2 days. Sometimes they can then suddenly get up on their own. This is only possible if the horse 'accepts' the lying down and does not 'fight'. Furthermore, it should be realized that horses that need all this, usually do not fully recover. So the outcome 'can only be used as a pasture companion' has to be acceptable. Euthanasia is often a fair choice for the horse at this stage and is really necessary if the horse no longer wants to eat or drink.



Thoroughbred gelding with EHV-1 in 'pants'.

A mare with EHV-1 can't stand anymore, but still shows a good appetite.

Horses that can / cannot get up just yet

For these horses it's essential that they can move freely in an indoor arena, a paddock or small pasture with good fencing by themselves. They then have more space to get up themselves or to be helped at the head and tail. A birth alarm girth can prove useful here if continuous monitoring is not possible.

Isolation

In an outbreak of rhinopneumonia one should try to separate infected horses from uninfected horses. That means one has to take temperatures of all the horses twice a day, every day, and all horses with a fever have to be separated immediately. Preferably, work with separate caretakers for the healthy and the sick groups and if that is not possible, work from 'clean' to 'infected'. Horses that had an abortion and horses with neurological symptoms, who often no longer have a fever, also have to be isolated. There often is no room for all this at Dutch farms, so in that case, discuss with your own veterinarian how things should be dealt with.

Cleaning

Hygiene is of course essential for all infectious equine diseases, but certainly for rhino pneumonia. The following tips apply for correct barn cleaning and disinfection in the context of herpes viruses:

- > Remove all bedding (straw, sawdust or flax) and dispose of it as soon as possible: meaning off the property.
- > Thoroughly clean the floor and walls by scrubbing with a brush and water and soap (do not use a high-pressure cleaner for cleaning, as the virus can then spread in the air via small water droplets, unless stables are completely empty)
- > Allow the floor and walls to dry properly (viruses are not very resistant to dehydration)
- > Then disinfect with Halamid® or another suitable disinfectant in the concentration prescribed for viruses and let it work for twenty minutes
- > Then rinse well with water
- > Finally let it dry well

Prevention

Vaccination with a registered rhinopneumonia vaccine gives good protection against the common cold variant. That means to administer the primary vaccination between 5-6 months of age with two injections 4-6 weeks apart and then repeat this twice a year. In well-vaccinated groups, abortion is less common, although breakthroughs of the abortion variant may occur. No vaccine claims to protect against the neurological form of rhinopneumonia and outbreaks occur in both unvaccinated and well-vaccinated groups. Vaccinated horses, however, excrete less virus in the event of an infection, which reduces the risk of spreading.

Not allowing horses from outside to enter a farm and not going off property yourself of course reduces the risk of infectious diseases being introduced, but this is not a realistic option on many farms. After all, most people keep horses to go to competitions or out on hacks, etc. An outbreak can also occur on a fully closed farm, because more than 30% of the Dutch horses carry the EHV-1 virus and those horses can, for example, start shedding virus again under stressful conditions.

If all horses in the Netherlands were to be fully vaccinated, this would of course reduce the infection pressure, but as it currently looks, neither the government, nor the sports organizations or registries/ studbooks will make vaccinations against rhinopneumonia compulsory.