

INFLAMMATORY AIRWAY DISEASE IN HORSES

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Inflammatory airway disease (IAD) is one of the most common performance limiting conditions of competition horses. It is typically seen in 4-year-old and older horses, but may occasionally be seen in 3-year-old horses.

IAD is a condition associated with stabling. It occurs more frequently where ventilation is poor, when forage quality is poor and in damp warm conditions favouring fungal growth. There is some evidence in the literature that endotoxins may also be players in the development of IAD¹.

Diagnosis

Most racehorses with IAD present with poor performance. Other presentations include exercise-induced pulmonary haemorrhage (this may be apparent from the nostrils after exercise, or only on post-exercise tracheal endoscopy) or abnormal breathing patterns during and after exercise. One of the most common ways trainers explain the abnormal breathing pattern to me is that the horse “does the entire gallop on one breath”. Pleasure horses usually present with recurrent airway obstruction, rather than IAD. This is a much more advanced condition in the same spectrum of disease as IAD. These horses are usually presented for coughing, especially during exercise, or increased inspiratory effort. Some pleasure horses present with fulminant heaves, where the increase in respiratory effort is so great that they are dyspneic and increased muscle development of the respiratory muscles can be seen (so called “heave-lines”). These horses will have wheezing noises associated with inspiration on thoracic auscultation. It is extremely rare to see such advanced inflammatory airway disease in racehorses that they can be diagnosed on auscultation.

The gold standard for diagnosis is a bronchoalveolar lavage. I much prefer the “blind” method for bronchoalveolar lavage (BAL), using a specially designed tube with an inflatable cuff on the end. The alternative is to use an endoscope, but the sample yield is very poor compared to the “blind” method. To perform the blind method, you need a BAL tube, four 60ml syringes filled with sterile 0.9% saline, two 60ml syringes filled with 10ml 2% mepivacaine and 50ml 0.9% saline, one empty 5ml syringe, a sample pot and sedation.

A twitch can be helpful in many horses. It is preferable to include butorphanol in the sedation protocol, as this is mildly anti-ptussive. However, adding butorphanol to the sedation is not nearly as effective at suppressing coughing as using local anaesthetic in the first two syringes, which is why I prepare two syringes with mepivacaine. After the horse is sedated, the horse is held with the head moderately extended. The tube is passed down the ventral meatus of the nose and into the trachea. I inject small amounts of the fluid from one of the mepivacaine containing syringes from the moment the BAL tube is introduced into the nose to decrease resistance by the horse and coughing. If a horse coughs once the tube has passed through the larynx, you can get marked bruising of the arytenoids – especially if the technique is performed with an endoscope. The BAL tube is advanced until it wedges in a bronchus. It is then held in place and the cuff is inflated. The remainder of the mepivacaine containing fluid (usually only half of the second syringe by this stage) is injected, followed by all four saline syringes. The fluid is then withdrawn with the same syringes, keeping them in the order that that they are used. The last syringe (or the last two syringes pooled) are used for the sample to submit to the laboratory.

The laboratory should be asked to perform a cell count and cell differential, including a mast cell stain. An increased percentage of mature neutrophils (>10% of the white cells in the sample) is used to diagnose IAD. Supporting evidence is an increased total cell count and, in chronic cases, an increased mast cell percentage (>2%). We have found that there is some variability of interpretation between laboratories, so these percentages may vary in some labs.

Tracheal washes are often used to diagnose IAD. They have the advantage that they are perhaps simpler to perform, and may not require the animal to be sedated². However, there is little agreement between the results of a BAL and a tracheal wash in the same horse³⁻⁵. Furthermore, unlike BAL cytology, there is no association between tracheal wash cytology and racing performance⁶. Therefore, the American College of Veterinary Internal Medicine recommended that the term IAD only be applied to horses where the diagnosis was made by BAL⁷. The visual appearance of the trachea, particularly the presence of tracheal mucus, is much more closely associated with performance than cytology of a tracheal wash in both racehorses⁶ and sport horses⁸. Perhaps, therefore, an initial provisional diagnosis of IAD can be made based on tracheal mucus in training yards. This should be followed up with a BAL to confirm the diagnosis when feasible.

Treatment

The best treatments for IAD are those that clean up the environment of the horse. This involves improving ventilation, improving forage quality and testing for fungal contaminants, and improving cleanliness in the stable. All feed should be fed from the floor, to encourage the horse to spend more time with its head down. This aids the natural clearance mechanisms for the trachea, which are based on the horse grazing with its head down for much of the day. Ideally, stables should be mucked out to the floor at least twice a week. However, this is very labour intensive and increases bedding costs and may be impossible to achieve in the current economy.

An alternative to improving the stable environment is to train the horse from the field. However, there are a lot of interpretations of "training from the field" and it needs to be spelt out clearly to the trainer. Many trainers will still bring horses into a stable for tacking up or on days when the weather is bad. Other trainers will look at all the horses trotting in an arena prior to exercise. These arenas are some of the most dusty environments that there are and undo all the good work of keeping the horse in the field. I have found that the best way to explain the situation to the trainer is to liken IAD to an allergy - and explain that any exposure to the stable environment or to dust will make things as bad as they ever were. Most people are familiar with the very small amounts of peanuts that can set off an allergic attack - and so this helps emphasise the importance of completely avoiding potential triggers for IAD. The problem with using environment changes as the sole treatment for performance horses is that all the good work can be undone in the stables at the racetrack or competition and sometimes also during transport.

The best alternative or adjunctive treatments to environment change are inhaled corticosteroids. Newer generation inhaled corticosteroids, such as fluticasone, only pass in very small amounts into the blood. Therefore the withdrawal period prior to competition is much shorter than systemic corticosteroids and they have the potential to still be active in the lungs when they are no longer detectable in the urine or blood.

The two most commonly used inhaled corticosteroids are fluticasone and beclomethasone. Fluticasone (1000 to 2500 mcg per horse q12-24h) appears to be more effective and has a shorter withdrawal prior to competition than beclomethasone (500 to 3750 mcg per horse q12-24h), but fluticasone is more expensive. There are two methods of administering these drugs – via metered dose inhaler (MDI) and spacer, or via nebuliser.

The spacer masks for the metered dose inhalers are much cheaper to purchase than the nebulisers. However, they risk improper use and not all the drug getting into the horse. The most important things for a MDI mask are to time actuation of the MDI for just before inspiration and to wash the mask once weekly in washing up liquid and allow to drip dry. The reason that washing is so important is that the masks build up static electricity, which results in the drug sticking to the plastic and not arriving in the horse. It is also important to leave at least 30 seconds between each actuation of the MDI with these masks. Nebulisers are generally more reliable at delivering drugs, but some nebulisers are not effective if the animal puts its head down and the liquid is not completely level. We have had good success with the Flexineb nebuliser from Nortev.

Clenbuterol (ventipulmin) is a traditional treatment for IAD and RAO. It has the convenience of being an orally administered drug. However, it only addresses one aspect of the pathology (bronchoconstriction) without treating the underlying inflammation. Furthermore, there is marked tachyphylaxis with clenbuterol so that doses have to be escalated. Lastly, there is a long withdrawal for competition meaning that horses are left with no treatment at the time of performance. Mast cell stabilizers are another treatment that was previously used for these conditions. They do not seem to be very efficacious.

Ipratropium appears to be the bronchodilator of choice in the horse, although it has a slower onset than inhaled beta-2 agonists such as salbuterol and salmeterol. Ipratropium is given by metered dose inhaler, and the same precautions with the use of the MDI mask apply as for the inhaled corticosteroids. Ipratropium is usually only required for clinical RAO and not for IAD.

References

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