Recurrent Airway Obstruction (RAO)

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Article By Dr. Steve Fisch, DVM

Recurrent airway obstruction, otherwise known as heaves, chronic obstructive lung disease, chronic airway disease, etc. is a common respiratory disease which shows signs of bronchospasm, mucous production and an accumulation of cells called neutrophils which indicate infection or inflammation. The main indicator of this disease is a recurrent cough. This cough may express itself as anything from a one or two coughs as the horse starts working to a horse that spends most of the day coughing. The more extreme cases exhibit respiratory difficulty.

The majority of RAO cases are the result of hypersensitivity in the lungs to inhaled allergens. The most common antigens are dust and molds. Periodic bronchoconstriction will cause an accumulation of mucus and neutrophils. Most of these cases are in horses kept in barns. There is a similar condition in the southern part of the United States that is called summer pasture associated obstructive disease. The condition in these horses usually improves when the horse is stabled because it is usually caused by certain grasses and their seed heads.

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ABOVE: The most common antigens are dust and molds. Periodic bronchoconstriction will cause an accumulation of mucus and neutrophils. Most of these cases are in horses kept in barns.

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Besides a chronic cough of varying degrees, other signs include nasal discharge and labored expiration of air. Horses with severe cases will have "heave lines". The heave lines are actually hypertrophied abdominal muscles which assist in pushing air out of the lungs. The reason the lungs need assistance in getting the air out of the lungs versus into the lungs such as in cases of pneumonia, is that the bronchioles are swollen to such an extent that the air is trapped in the bronchioles and alveoli where the exchange of oxygen takes place. The more advanced cases will exhibit flared nostrils and increased respiratory rates. When the lungs are listened to the veterinarian will hear expiratory wheezes in the lungs and there may be a rattle in the trachea from excess mucous. Some horses end up spending so much energy breathing that they actually lose weight. Blood work will many times be normal unless there is a secondary bacterial infection. If the case has been fairly long standing, there will many times be a secondary bacterial infection and that infection will need to be treated with the appropriate antibiotics.

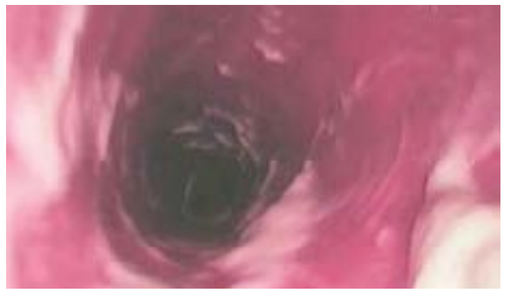
ABOVE: Very visible "heave line."

The diagnosis is many times based on clinical signs and history of the horse. The most accurate way to diagnose RAO is with bronchoalveolar lavage (BAL). Certain cells such as neutrophils and eosinophils in the BAL are indicators of RAO. A BAL is fairly easy to perform. A special tube is inserted into the lungs and 60 to 200 mls of sterile lactated ringers is infused into the lungs. When the horse coughs the fluid back up it is collected in the same tube and evaluated microscopically. This fluid can be cultured but the better way to culture the lungs is with a transtracheal wash (TTW).

LEFT: There is a similar condition in the southern part of the United States that is called summer pasture associated obstructive disease. The condition in these horses usually improves when the horse is stabled because it is usually caused by certain grasses and their seed heads.

Picture provided by AVS Equine Hospital

ABOVE: This is a photo of the division of the bronchi deep in the lungs. A small amount of mucous is shown.
BELOW: A severe amount of mucous in the trachea.



A TTW is a little more invasive than a BAL because it requires that a small incision be made into the trachea. However the fluid that is obtained is more accurate for culture for infection as it doesn't pass through the nose but comes straight from the trachea. It is performed with a small amount of sterile fluid being infused into the lungs and collecting what the horse coughs up similar to the BAL. The fluid is cultured and the horse is treated with the appropriate antibiotics. Other ways to add to the diagnostic data are thoracic radiographs and ultrasound. However these diagnostic modalities greatly add to the expense and are probably less valuable than history, physical exam and a BAL.

The most important treatment by far for RAO is to manage the environment. Many horses will respond very favorably to merely decreasing the amount of mold and dust in the environment. Make sure the shavings are clean and dust free. Round bales can be major culprits in creating RAO horses. Round bales that get any amount of mold in them at all require the horse to put his head directly into the mold and dust and breathe them into his lungs. Hay should be free of dust and if need be the hay should be watered down before feeding. Grain should also be dust free and soaked if needed. Pastures should be kept mowed and as free of weeds and grass that is seeding out as possible.

There are a few treatments for RAO including acupuncture, systemic corticosteroids, clenbuterol, and some aerosolized corticosteroids have been used successfully to treat RAO. It is important to remember that even with drug therapy if the environment is not treated and the causative agent not removed, then it will be difficult to treat many cases of RAO. Systemic corticosteroids have the negative side affect of suppressing the immune system and being a possible cause of laminitis. Clenbuterol is expensive and can cause high heart rates and sweating when given at high doses. It is a good bronchodilator however and does not have laminitis causing properties. The aerosol corticosteroids work well in many cases but they require treatment every 4 to 12hours. They are normally effective in mild to moderate cases of RAO and can be used along with systemic therapy in more severe cases. Due to the low bioavailability the aerosolized corticosteroid have less potential for adrenal gland suppression. There are different types of aerosolized corticosteroids so it is good to discuss these with your equine veterinarian and decide which one will work best in your situation. There will usually be a response with most of these treatments within 24 hours but all treatments should be based on an accurate diagnosis and examination by your equine veterinarian.

As always an ounce of prevention is worth a pound of cure. Always keep your barn, feed and hay as dust free as possible. Early and accurate diagnosis is always better than a delayed diagnosis and treatment. If RAO has gone on in the lungs for some time, the damage and fibrosis in the lungs may be irreversible. RAO is like a snowball. The longer it goes untreated the worse it gets and the more irreversible it becomes. Whenever you have the first inkling that your horse has a respiratory problem, always get it checked out by your equine veterinarian. The initial stages of RAO can prevent a horse from performing to his maximum ability. The advanced stages may prevent him from living.

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