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Understanding Equine Asthma (Heaves)[1]

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Many terms and abbreviations have been used over the years for various inflammatory, allergic, and hyperreactive airway conditions causing cough in the horse. Previous terminology included inflammatory airway disease (IAD), recurrent airway obstruction (ROA), chronic obstructive pulmonary disease (COPD) and heaves. Recently, the American College of Veterinary Internal Medicine proposed that these various syndromes be all characterized under the term "equine asthma." Similar to human asthma, equine asthma is characterized by lower airway inflammation and bronchoconstriction. This article provides an overview for horse owner of how equine asthma is recognized and treated.

Equine Asthma

Equine asthma is a common respiratory disease of horses characterized by airway narrowing (bronchoconstriction), inflammation, mucus production, and bronchospasm. Horses with moderate to severe asthma usually have an increased respiratory rate and intermittent cough at rest. Other common clinical signs include nasal discharge, exercise intolerance, and respiratory difficulty. The classic "heave line" that can be seen along the bottom edge of the ribs is due to hypertrophy of the abdominal muscles, which are assisting in breathing and become enlarged from excess work. Young horses are often more mildly affected, and may only show exercise intolerance and intermittent cough when working, but appear totally normal at rest. Severely affected horses may also exhibit weight loss, anorexia, and even respiratory distress. Most affected horses do not have a fever unless a secondary bacterial pneumonia has occurred.

Two different forms of asthma are recognized in the horse: **barn-associated asthma** observed more commonly in stalled horses fed hay, and **summer pasture-associated asthma** observed more commonly in horses living on pasture in the Southeast.

Causes

Most evidence suggests that equine asthma is the result of the lung's hypersensitivity to inhaled allergens, although multiple theories exist regarding exactly why it occurs. The most common allergic triggers for equine asthma are mold, organic dust, and endotoxin present in hay and straw. This disease occurs worldwide with the highest prevalence in stabled horses fed hay in the northeastern and midwestern United States. The average age of onset in asthma-affected horses is 9-12 years, and both genders are commonly affected. Winter and spring appear to be the most common seasons for exacerbation of barn-associated asthma, while pasture-associated asthma appears to have the most severe symptoms in the summer or early fall. There does appear to be a heritable component to the etiology of this condition; the incidence of asthma in horses with healthy parents is approximately 10%, and increases to 44% if both parents are affected.

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Diagnosis

Diagnosis of equine asthma can be done by a veterinarian on the basis of history and characteristic clinical examination findings in the majority of horses. Additional diagnostic tests to confirm and characterize the lower airway inflammation include upper airway and tracheal endoscopy, bronchoalveolar lavage (BAL), pulmonary function testing, thoracic radiographs (X-rays), and ultrasound examination. Bronchoalveolar lavage is helpful in horses with poor performance and coughing, but may be unnecessary in horses with severe disease and compatible clinical signs. Excess white blood cells called neutrophils are seen in BAL samples from affected horses and confirm the presence of lower airway inflammation. Radiographs are recommended for horses that fail to respond to standard therapy or to further characterize inflammation in the lungs. A transtracheal wash (TTW) may be performed in horses with signs of an underlying infection (fever, opaque nasal discharge, abnormal values on bloodwork), as identifying and treating any concurrent infection is important for the success of any asthma treatment plan.

Environmental Management

The most important treatment for equine asthma is environmental and dietary management to reduce exposure to organic dusts and mold. It is important to remember that although medications will alleviate the clinical signs of asthma, respiratory disease will return if the horse remains in a mold/dust-filled environment once the medications are discontinued. Asthma is a chronic disease that will require life-long management changes for the horse. Many horses with mild to moderate disease can be successfully managed with environmental and dietary changes alone without additional drug therapy. The most common triggers for asthma are organic dusts, mold, and endotoxin present in hay, bedding, and pasture, and management focuses on minimizing exposure to these allergens.

Recommendations for Managing Horses with Asthma

- Maintaining horses on pasture full-time is generally recommended for those with barn-associated asthma, while horses with pasture-associated asthma should avoid access to pasture except for the winter months.
- Avoid feeding round bales. Round bale hay is high in endotoxin and organic dust content, and access to round bales is a common risk factor for equine asthma.
- Horses that must be stalled or have pasture-associated asthma should be kept in a clean, well-ventilated environment. Avoid storing hay above the stalls in a barn loft, and minimize sweeping or blowing barn aisles when affected horses are in the barn.
- Straw is not recommended as bedding for asthma affected horses, and low dust bedding such as chopped paper, peat moss, or cardboard should be considered.
- Soaking hay and feed in water prior to feeding may lower dust content and alleviate the signs in mildly to moderately affected individuals. Severely affected horses may require that all hay be removed from the diet and be transitioned to a complete pelleted feed.
- Studies have shown that some asthmatic horses improve with omega-3 supplementation. Several commercial oil-based supplements are available over the counter and may be administered according to label.

Pharmacological Treatments

In addition to environmental management, systemic corticosteroids (potent anti-inflammatories) and aerosolized bronchodilators are the most immediately helpful therapy for moderately to severely affected horses and horses in respiratory distress. Intravenous administration of dexamethasone should improve lung function within 2 hours of administration. Dexamethasone may be continued for one to several weeks at a tapering dose for severe cases. For management of less severely affected cases of asthma, oral prednisolone is generally considered to be less potent drug that may have fewer side effects. Oral prednisone is poorly bioavailable and not recommended for treatment of asthma in horses. Consult your veterinarian for more specific dosages and a treatment schedule if your horse is affected by asthma.

For severe cases of equine asthma, administering a rapidly acting bronchodilators (such as albuterol) in addition to corticosteroids may be helpful for opening airways and relieving clinical signs. Aerosolized albuterol improves lung function and breathing by 70% within 5 minutes of administration; however, the beneficial effects last only 1–3 hours. Administration of albuterol will also improve the pulmonary distribution of other aerosolized medications, such as aerosolized corticosteroids, and speed mucus clearance from the lungs. Clenbuterol is an oral bronchodilator that provides long-acting bronchodilation in horses with moderate to severe asthma but has reduced effectiveness if administered for more than 14 days. Since bronchodilators have minimal to no anti-inflammatory activity, they should not generally be used alone for the treatment of asthma.

In the past 10 years, advancements have been made in aerosolized treatment options for equine asthma. Aerosolized corticosteroids are effective in horses with mild to moderate asthma and can be used in conjunction with systemic therapy in severe cases. Inhaled corticosteroid therapies are often preferred by veterinarians because of reduced side effects compared to systemic administration (immune system suppression, risk of laminitis in horses with metabolic syndrome). However, inhaled therapies tend to require an upfront financial investment to purchase the mask and medications. Despite the financial costs, inhaled treatments target inflammation and allergy directly at the site of the problem in the lungs. Several inhaler devices designed for horses are commercially available. Some aerosolize liquid medications, while other utilize metered-dose-inhaler (MDI) devices designs for human use. The most common aerosolized medications for administration to horses via equine inhaler devices are beclomethasone diproprionate and fluticasone propionate. Recently, the corticosteroid ciclesonide was added to the list of FDA-approved inhaled medication options for asthmatic horses. It is delivered via a patented proprietary device and is approved for the treatment of moderate to severe equine asthma. Inhaled medications may have the added benefit of being safe to administer regularly or intermittently as low dose, long term, aerosolized corticosteroid treatment to horses in need of continuous therapy. Depending on the clinical signs and severity of asthma, horses with this condition can be managed successfully for much if not most of their lives. Many of these horses are able to be excellent pleasure, trail riding, or even competition horses with dedicated owners who understand that it is a considered a chronic condition that will require life-long management.

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