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## Recurrent Airway Obstruction

### ***Definition***

Recurrent airway obstruction (RAO) is more commonly referred to as “heaves.” There is also an older term that was used to describe RAO in the past, chronic obstructive pulmonary disease (COPD). This title has more recently been discouraged as the disease process in horses has many differences from COPD in humans. RAO is a common chronic, non-infectious airway disease of middle age to adult horses and is characterized by inflammation of the airways due to inhaled allergens such as mold, pollen, dust, or other particulate material. Horses living in dusty barns with decreased ventilation are more at risk of developing this disease, however even with pristine conditions, horses may still develop RAO.

### ***Clinical Signs***

The classic clinical sign of RAO is a “heave line” as was exhibited in the photo of the horse in yesterday’s question. A heave line is hypertrophy, or enlargement, of the external abdominal oblique muscle due to exaggerated effort upon exhalation. This expiratory difficulty is due to bronchoconstriction (narrowing of the lower airway), bronchospasm, and mucous production in response environmental allergens. Horses with a heave line are also likely to exhibit flared nostrils when breathing at rest. Mucopurulent nasal discharge may also be seen that is opaque yellow to clear in appearance. Horses can have difficulty breathing at rest along with severe exercise intolerance. Initially, horses may exhibit occasional coughing particularly in the winter months when housed inside more often. The cough may worsen and increase in frequency over the following years. When examined by a veterinarian, crackles and wheezes are frequently heard upon thoracic auscultation. A fever is not typical.

### ***Diagnosis***

Blood work, including a CBC and chemistry, typically reveals normal values. Airway sampling by means of a bronchoalveolar lavage may be performed. This is a procedure where a small amount of saline is instilled into the lower airways then re-aspirated into a syringe to examine under a microscope. There are distinct changes that will be noted in a sample from a horse with RAO, including a shift in the normal white blood cell population as well as excess mucous production. Thoracic ultrasound can reveal evidence of changes to the lung surface in chronic cases. In a hospital setting, an arterial blood gas may be evaluated revealing poor oxygenation in advanced cases. Thoracic radiographs may be performed as well. Often, in a field setting, a presumptive diagnosis of RAO is made off of a thorough history, physical exam, and response to treatment.

### ***Treatment***

There are three main goals of treatment; decrease airway inflammation, dilate the lower airways, and make changes to the environment to decrease exposure to potential allergens. Decreasing inflammation is achieved by administration of a corticosteroid such as dexamethasone or prednisolone. An inhaled steroid such as fluticasone or ciclesonide may be administered via an inhaler as an alternative. Dilating the airways can be accomplished with a bronchodilator such as an albuterol inhaler. To decrease exposure to allergens, decreasing dust within the feed and barn are critical. This can be achieved by soaking the hay, using a pelleted feed, sprinkling aisles and arenas with water to dampen dust, low dust bedding, and daily turnout on a non-dusty pasture. Furthermore, allowing the horse to be turned out first in the morning and come in last in the evening are a great way to decrease the amount of time the horse is in the barn as dust is being stirred up. Allergy testing with hyposensitization therapy is an alternative option aimed at targeting the allergens a horse is most sensitive to.

### ***Prognosis***

Chronic cases or cases with a secondary bacterial infection may have difficulty responding to treatment. In initial or uncomplicated cases, the prognosis is generally good with proper environmental modifications and strict adherence to a medication protocol. Most horses require life-long treatment however many go on to have successful pleasure riding or show careers.