

Exercise-induced pulmonary hemorrhage of horses (EIPH, Bleeders)...

Its an Epistaxis and pulmonary hemorrhage of horses occur during or after strenuous exercise or strong high speedy race.

Epidemiology....

1-Its primarily a disease of horses,(Thoroughbred or Standardbred racehorses. The disorder is uncommon in endurance horses or draft breeds) although it has been reported in racing camels.

2-The disease depending on the breed, age and sex of horses the type of racing and the time.

3-Horses in, steeplechase races سباق الحواجز are more affected

Pathogenesis...

1-

a-The cause of EIPH is rupture of alveolar capillary membranes with subsequent extravasation of blood into interstitial and alveolar spaces. The source of blood in such instances is the pulmonary circulation.

b-Rupture of alveolar capillaries occurs due to increase in transmural pressure (pressure difference between the inside of the capillary and the alveolar lumen) since when the transmural stress exceeds the tensile strength of the capillary wall, the capillary will ruptures.

c-During exercise, the absolute magnitudes of both pulmonary capillary pressure and alveolar pressure will increase, with a consequent increase in transmural pressure, therefore pulmonary artery pressure will also increase due to large cardiac output during exercise which will result in decrease intra pleural (negative pressure) or alveolar pressure followed by rupture(pressure difference) or alveolar capillary membranes.

2-Other theories of the pathogenesis of EIPH include: small-airway disease, upper airway obstruction, hemostatic abnormalities,changes in blood viscosity and erythrocyte shape, intrathoracic sheer forces associated with gait, and bronchial artery angiogenesis.

3- Regardless of the cause, rupture of pulmonary capillaries and subsequent hemorrhage into airways and interstitium causes inflammation of both airways and interstitium with subsequent development of fibrosis and alteration of tissue compliance.

Clinical findings....

1-Poor athletic performance or epistaxis are the most common presenting complaints for horses with EIPH.

2-Epistaxis due to EIPH occurs during or shortly after exercise and is usually first noticed at the end of a race, particularly when the horse is returned to the paddock.

3-Rectal temperature and heart and breathing rates may be elevated as a consequence of exercise in horses examined soon after exercise.

4-The Epistaxis is bilateral and the affected horse lower their head down with Coughing as a result of blood in the larynx and pharynx.

5-Respiratory distress and abnormal lung sound are only heard when a lot of respiratory hemorrhage present .

6- Tracheobronchoscopy examination ... grading scale are used to evaluation

Grade 0: No blood will detected in the pharynx, larynx, trachea or bronchi.

Grade 1: Presence of one or more flecks of blood .

Grade 2: One long stream of blood will present .

Grade 3: Multiple, distinct streams of blood covering more than one-third of the tracheal circumference. No blood pooling at the thoracic inlet

Grade 4. Multiple, coalescing streams of blood covering > 90% of the tracheal surface with pooling of blood at the thoracic inlet.

Clinical pathology

Is done by Examination of airway secretions or lavage fluid... The presence of red cells or macrophages containing either red cells or the breakdown products of hemoglobin (hemosiderophages) in tracheal or bronchoalveolar lavage fluid provides evidence of EIPH.

Treatment

1- Prevention of stress failure of the pulmonary capillaries...

This can be done by reducing pulmonary capillary pressure by administration of Furosemide .

2- Nitric oxide is a potent vasodilator in many vascular beds.

Administration of nitroglycerin (a nitric oxide donor) reduces pulmonary artery pressure of standing horses but does not affect pulmonary artery pressure of horses during intense exercise

2-Corticosteroids are often administered, either by inhalation, or parenterally, in an attempt to reduce pulmonary inflammation and minimize fibrosis.

3-aAminocaproic acid, a potent inhibitor of fibrin degradation, has been administered to horses to prevent EIPH. Moreover estrogens are given to horses with the expectation of improving hemostasis. Furthermore Vitamin K can also be used to minimize bleeding time

4-Administration of Aspirin to inhibit platelet aggregation.

5-Increase Capillary integrity to prevent hemorrhage by using Vit.C.

Prognosis

The prognosis for racing for horses with clinically significant EIPH is guarded because of the progressive nature of the disease. Horses that have experienced severe EIPH on one occasion are likely to do so again regardless of treatment. However, the risk of horses experiencing a repeated bout of severe hemorrhage and the effect of EIPH on career longevity are unknown.