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PNEUMONIA AND PLEURISY IN ADULT HORSES

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Pleura: structure and function
- Visceral and parietal layers
- single layer of mesothelial squamous cells
- overlie loose connective, and adipose tissue
- Incomplete mediastinum
- 80% of horses
- fenestrated in caudal ventral portion

Identification of pleural effusion

Clinical Signs
- small amount of fluid
  ☐ respiratory signs may be absent
- several liters of fluid
  ☐ may be dyspneic at rest, or following slight exertion
- ventral dullness on auscultation and percussion

Laboratory analysis
- differentiate transudate/exudate
- identify neoplastic cells

Differential diagnosis of pleural effusion
- Pleuropneumonia
- Haemothorax
- Neoplasia particularly cranial mediastinal lymphosarcoma
- Right-sided heart failure
- Pericarditis

PLEUROPNEUMONIA

Definition: inflammation of the mesothelial lining of pleural cavity with associated parenchymal disease due to bacterial infection

Pathogenesis
- Mixed bacterial infection
  ☐ Organisms are often that are normal flora of the pharynx: Beta-haemolytic Streptococcus, E coli, Klebsiella spp. Pasteurella spp., Bordatella spp., Bacteroides spp, anaerobes

- Suppression of pulmonary defense mechanisms

- Often follows recent stressful event
  ☐ Prolonged shipping
  ☐ High performance
  ☐ Commingling with other horses
  ☐ Occult or patent respiratory infection
  ☐ Thoracic trauma
  ☐ Surgery and general anaesthesia
• Chronic Sequelae
  o Pulmonary abscess
  o Pleural abscess
  o Bronchopleural fistula

Clinical signs
• Dependent on amount of fluid, pathogen, extent of parenchymal disease, etc
• Flagrant:
  o Febrile, depressed, pitting edema, nasal discharge, guarded cough are common
• Less flagrant
  o Chronic cough, mild transient pyrexia
• Pleurodynia = pleural pain due to inflamed pleura
  o Reduction of pain with chronicity
  o Formation of firm fibrous adhesions
  o Cushion created by fluid
  o Reluctance to move, pointing forelimb
• Auscultation
  o Not consistent, often not useful
  o Absent airway sounds ventrally
  o Dorsal sounds may be normal or abnormal
  o Fluid in the trachea
  o Pleural friction rubs
  o Cardiac sounds radiate over a wide region
  • NB may also have pericarditis
• Percussion
  o Ventral dullness

Thoracic Ultrasonography
• Pleural fluid
  o Volume
  o Location
  o Character (echogenicity increases with cell count, gas bubbles suggest anaerobes)
• Lungs
  o Consolidation
  o Abscessation

Thoracic radiography
• Acute stage
  o Pleural effusion obscures lung pathology
• Chronic stage
  o Identification of consolidation, abscesses and pneumothorax

Laboratory tests
• Transtracheal aspirate
  o Important to obtain sample that is not contaminated by upper airway
  o Bacteriology
  o Cytology to confirm not contaminated by upper airway (squames)
• Examination of the pleural fluid
  o Physical
  o Cytology
  o Bacteriology (culture, antibiotic sensitivity and gram stain)
  o Chemistry (low glucose concentration suggests presence of bacteria)
Treatment

- Acute stages
  - Broad-spectrum antibiotics including anaerobic cover
  - Supportive
  - Drainage - an important therapy
    - Removal of the restrictive forces
    - Re-expansion of the pulmonary tissue
    - Improves pulmonary clearance
      - Removes debris, organisms, inflammatory mediators, toxins etc
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- Chronic stages
  - Pleural and pulmonary abscesses may be amenable to drainage, via resection of intercostal muscle and/or rib
  - Providing they are walled off from the rest of the pleural cavity

Prognosis

- Milder cases, diagnosed early may return to previous career with early and aggressive therapy
- Severe cases can be salvaged for breeding but may require months of antibiotic treatment and multiple surgeries

ASPIRATION PNEUMONIA

- Most commonly located in the right ventral lung lobes
- The most rostral secondary bronchus leads to the right accessory lobe

Risk factors
  - Oesophageal obstruction
  - Spontaneous reflux
  - Dysphagia
  - Pharyngeal paralysis,
  - Guttural pouch mycosis, botulism, lead poisoning, others
  - Cleft palate and NMS in foals

Diagnosis
  - Ultrasonography and radiography
  - Transtracheal aspirate
  - Treatment

Treatment
  - Broad spectrum antibiotics

Prognosis
  - Variable, depends on severity and speed of onset of therapy
INTERSTITIAL PNEUMONIA

- Possible insults
  - Most unidentified
  - Infectious agents
  - Inhaled chemicals
  - Hypersensitivity reactions
  - Endotoxin
  - Mechanical ventilation

- Clinical syndromes
  - Acute
    - Particularly in foals
    - Coughing
    - Dyspnoea
    - Weight loss
    - Depression
    - Anorexia
  - Chronic
    - Dyspnoea
    - Tachypnea
    - Can Remain bright and eating

- Diagnosis
  - Acute
    - Radiographs: generalized alveolar/interstitial pattern
    - BAL: neutrophils or eosinophils
  - Chronic
    - Radiographs: multinodular interstitial lesions
    - Lung biopsy for definitive diagnosis in chronic pulmonary fibrosis

- Therapy
  - Acute cases
    - Suppress inflammation
    - Non-steroidal anti-inflammatory drugs
    - Corticosteroids are more efficacious
    - Alleviate bronchoconstriction
    - Maintain arterial oxygen
      - Intranasal or intratracheal routes
    - Reduce pulmonary hypertension
    - Prevent secondary infection
      - Broad spectrum antibiotics
  - There is no effective treatment for chronic pulmonary fibrosis