**Diseases of the Respiratory System**

**LARYNGITIS, TRACHEITIS,BRONCHITIS**

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**- Inflammation of the air passages usually involves all levels and no attempt is made here to differentiate between inflammations of various parts of the tract.**

**- They are all characterized by cough, noisy inspiration and some degree of inspiratory embarrassment.**

**ETIOLOGY**

* **All infections of the upper respiratory tract cause inflammation, either acutely or as chronic diseases.**
* **In most diseases the laryngitis, tracheitis, and bronchitis form only a part of the syndrome and the causes listed below are those diseases in which upper respiratory infection is a prominent feature.**

**Cattle  
- Infectious bovine rhinotracheitis (bovine herpesvirus -I), calf diphtheria (necrotic laryngitis), *Histophilus somnus*.  
- Tracheal stenosis in feedlot cattle, 'honker cattle', etiology unknown .  
- Congenital cavitation of the arytenoid may contribute to laryngeal abscess development.  
*Syngamus laryngeus* infests the larynx of cattle in the tropics.   
Sheep  
Chronic infection with *Actinomyces pyogenes*.  
 Horses  
Equine herpesvirus (EHV), equine viral arteritis (EVA), equine viral influenza (EVI), strangles (*S. equi*) - Idiopathic ulceration of the mucosa covering the arytenoid cartilages.**

**PATHOGENESIS  
- Irritation of the mucosa causes frequent coughing, and swelling causes partial obstruction of the air passages, with resulting inspiratory dyspnea.   
- Necrotic laryngitis in calves is associated with marked changes in pulmonary function, modifies tracheal dynamics and disturbs the growth process by increasing the energetic cost of breathing; this can result in impaired feed intake and predisposition to secondary pulmonary infection and subsequent respiratory failure from pro­gressive exhaustion.**

**CLINICAL FINDINGS  
- Coughing and inspiratory dyspnea with laryngeal roaring or stridor are the common clinical signs.  
- In the early stages of acute infections the cough is usually dry and nonproductive and is easily induced by grasping the trachea or larynx, or by exposure to cold air or dusty atmospheres.  
- In acute laryngitis, the soft tissues around the larynx are usually enlarged and painful on palpation.**

**- In chronic affections, the cough may be less frequent and distressing and is usually dry and harsh.   
- If the lesions cause much exudation or ulceration of the mucosa, as in bacterial tracheobronchitis secondary to infectious bovine rhinotracheitis in cattle, the cough is moist, and thick mucus, flecks of blood and is in fibrin may be coughed up.**

**- The cough is very painful and the animal makes attempts to suppress it.  
- Fever and toxemia are common and affected animals cannot eat or drink normally.  
- Inspiratory dyspnea varies with the degree of obstruction and is usually accompanied by a loud stridor and harsh breath sounds on each inspiration.  
- These are best heard over the trachea although they are quite audible over the base of the lung, being most distinct on inspiration.**

**- The respiratory movements are usually deeper than normal and the inspiratory phase more prolonged,  
 - Additional signs indicative of the presence of a primary specific disease, may also be present.  
Examination of the larynx  
 is usually possible through the oral cavity using a cylindrical speculum of appropriate size and a bright, pointed source of light.   
- This is done relatively easily in cattle, sheep, and pigs but is difficult in the horse, and forceful.**

**- Lesions of the mucosae of the arytenoid cartilages and the vault of the larynx are usually visible if care and time are taken.  
- In laryngitis, there is usually an excessive quantity of mucus, which may contain flecks of blood or pus in the pharynx.  
- Palpation of the pharyngeal and laryngeal areas may reveal lesions not readily visible through a speculum.  
 - The use of a fiberoptic endoscope allows a detailed examination of the upper respiratory tract.**

**- Inflammation or lesions of the larynx may be severe enough to cause marked inspiratory dyspnea diphtheria and death be from large asphyxia.  
- In calves and young cattle with lesion may enough (or have a pedicle and act like a valve) to cause severe inspiratory dyspnea, cyanosis, anxiety and rapid death.  
 - The excitement associated with loading for transportation to a clinic or of a clinical examination, particularly the oral examination of the larynx, can exaggerate the dyspnea and necessitate an emergency tracheotomy.   
 - During opening of the larynx, lesions in the upper part of the trachea are sometimes visible.   
- The use of a fiberoptic endoscope allows a detailed examination of the upper respiratory tract.  
 - Most cases of bacterial laryngitis will heal without obvious residual sign after several days of antimicrobial therapy.**

**- Some cases in cattle become chronic in spite of therapy due to the inflammation extending down into the arytenoid cartilages resulting in a chronic chondritis due to a sequestrum similar to osteomyelitis.  
- Abscess formation is another common cause of chronicity.   
- Secondary bacterial infection of primary viral diseases, or extension of bacterial infections to the lungs commonly results in pneumonia.**

**Tracheal stenosis in cattle is characterized by extensive edema and hemorrhage of the dorsal wall of the trachea, resulting in coughing (honking), dyspnea.   
 - Affected animals may be found dead without any premonitory signs.  
CLINICAL PATHOLOGY  
Laboratory examinations may be of value in determining the presence of specific diseases. complete occlusion of the trachea may occur.**

**NECROPSY FINDINGS  
- Upper respiratory infections are not usually fatal but lesions vary from acute catarrhal inflammation to chronic granulomatous lesions depending upon the duration and severity of the infection.  
- When secondary bacterial invasion occurs a diphtheritic pseudomembrane may be present and be accompanied by an accumulation of exudate and necrotic material at the tracheal bifurcation and in the dependent bronchi.**

**DIAGNOSIS  
- Inflammation of the larynx usually results in coughing, and inspiratory dyspnea with a stertor and loud abnormal laryngeal sounds on auscultation over the trachea and over the base of the lungs on inspiration.   
- Lesions of the larynx are usually visible by laryngoscopic examination, those of the trachea and major bronchi are not so obvious unless special endoscopic procedures are used.**

**- Every reasonable effort should be used to inspect the larynx and trachea   
- Obstruction of the nasal cavities and other parts of the upper respiratory tract may also be difficult to distinguish unless other signs are present.**

**TREATMENT  
- Most of the common viral infections of larynx, trachea, and major bronchi will resolve spontaneously if the affected animals are rested, not worked and not exposed to inclement weather and dusty feeds.  
- Secondary bacterial complications must be recognized and treated with the appropriate antimicrobial.  
- The bacterial infections can result in severe inflammation with necrosis and granulomatous lesions and must be treated with antimicrobials.  
- Calves with calf diphtheria should be treated with a broad-spectrum antimicrobial daily for at least 3-5 days.  
- Several days are usually required for the animal to return to normal.**  **- A broad -spectrum antimicrobial daily or more often for up to 3 weeks or more may be necessary for treatment of the chondritis.**

**- NSAIDs such as flunixin meglumide may be used in an attempt to reduce the laryngeal edema associated with some severe cases of bacterial laryngitis in cattle.  
- Animals with severe lesions and marked inspiratory dyspnea may require a tracheotomy and insertion of a tracheotomy tube for several days until the lesion heals.  
- The tube must be removed, cleaned out and replaced at least once daily because of the accumulation of dried mucus plugs which interfere with respiration.  
- The techniques of tracheotomy and permanent tracheostomy in the horse have been described.**

**- Surgical excision of chronic granulomatous lesions and abscesses of the larynx may be indicated following failure of longterm antimicrobial therapy but postoperative complications of laryngeal and pharyngeal paralysis may occur.  
- Laryngotomy as a treatment for chronic laryngeal obstruction in cattle with long term survival of 58% has been described .  
- Tracheolaryngostomy of calves with chronic laryngeal obstruction due to necrobacillosis has been used with a high degree of success.**

**- Under general anesthesia and dorsal recumbency, an incision is made over the lower third of the thyroid and cricoid cartilages and the first two tracheal rings.  
- The larynx is easily visualized and necrotic tissue removed using a curette.  
- The edges of the cartilages are sutured closed.   
- A wedge­shaped piece of the first two tracheal rings is removed to create a tracheostomy, which is allowed to close after about 1 week when the postoperative swelling has subsided with the aid of daily care of the surgical site and the possible use of flunixin meglumide.   
- No tracheotomy tube is required.**

**References**

**O. M. Radostits, C.C.Gay, K. W. Hinchcliff, and P. D. Constable ( 2011 ): VETERINARY MEDICINE**

**A textbook of the diseases of cattle, horses, sheep, pigs and goats,10thedition. Publisher SAUNDERS. www.elsevierhealth.com**