**Diseases of the Respiratory System**

**RHINITIS**

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**- Rhinitis (inflammation of the nasal mucosa)**

**is characterized clinically by sneezing, wheezing, and stertor during inspiration and a nasal discharge that may be serous, mucoid, or purulent in consistency depending on the cause.**

**ETIOLOGY  
- Rhinitis usually occurs in conjunction with inflammation of other parts of the respiratory tract.   
- It is present as a minor lesion in most bacterial and viral pneumonias but the diseases listed are those in which it occurs as an obvious and important part of the syndrome.  
Cattle  
- Catarrhal rhinitis in infectious bovine rhinotracheitis, adenoviruses and and respiratory syncytial virus infections  
- Ulcerative/erosive rhinitis in bovine malignant catarrh, mucosal disease, rinderpest   
- Rhinosporidiosis caused by fungi, the blood fluke Schistosoma nasalis and the supposedly allergic 'summer snuffles' also known as atopic rhinitis .  
- Familial allergic rhinitis in cattle in which the progeny of affected cows are susceptible to allergic rhinitis  
- Bovine nasal eosinophilic granuloma due to Nocardia Sp**

**Horses  
- Glanders, strangles, and epizootic lymphangitis  
- Infections with the viruses of equine viral rhinopneumonitis (herpesvirus-1), equine viral arteritis, influenza H3N8 equine rhinovirus, parainfluenza virus, reovirus, adenovirus  
- Chronic rhinitis claimed to be caused by dust in dusty stables, and acute rhinitis occurring after inhalation of smoke and fumes.  
- Nasal granulomas due to chronic infections with Pseudoallescheria boydii and Aspergillus, Conidiobolus and Mucoraceous fungi.  
- Equine grass sickness (dysautonomia, pp 1988-1990) in the chronic form causes rhinitis sicca.  
Sheep and goats  
- Melioidosis, bluetongue, rarely contagious ecthyma and sheep pox  
- Oestrus ovis and Elaeophora schneideri infestations  
- Allergic rhinitis.  
- Purulent rhinitis and otitis associated with P aeruginosa in sheep showered with contaminated wash.  
PATHOGENESIS  
- Rhinitis is of minor importance as a disease process except in severe cases when it causes obstruction of the passage of air through the nasal cavities.  
- Its major importance is as an indication of the presence of some specific diseases.   
- The type of lesion produced is important.   
- The erosive and ulcerative lesions of rinderpest, bovine malignant catarrh and mucosal disease, the ulcerative lesions of glanders, melioidosis, and epizootic lymphangitis and the granular rhinitis of the anterior nares in allergic rhinitis all have diagnostic significance.  
- Secondary bacterial invasion of facial tissue of swine appears to be the basis of necrotic rhinitis.**

**CLINICAL FINDINGS  
- The primary clinical finding in rhinitis is a nasal discharge, which is usually serous initially but soon becomes mucoid and, in bacterial infections, purulent.**

**- Erythema, erosion, or ulceration may be visible oninspecton.   
- The inflammation may be unilateral or bilateral.**

**- Sneezing is characteristic in the early acute stages and this is followed in the later stages by snorting and the expulsion of large amounts of mucopurulent discharge.   
- A chronic unilateral purulent nasal discharge lasting  
several weeks or months in horses suggests nasal granulomas associated with mycotic infections.**

**'Summer snuffles'   
- 'Summer snuffles' of cattle presents a characteristic syndrome involving several animals in a herd.  
- Cases occur in the spring and autumn when the pasture is in flower and warm moist environmental, conditions prevail.   
- The disease may be most common in Channel Island breeds.  
- There is a sudden onset of dyspnea with a profuse nasal discharge of thick, orange to yellow material that varies from a mucopurulent to caseous consistency.  
- Sneezing, irritation, and obstruction are severe.   
- The irritation may cause the animal to shake its head, rub its nose along the ground or poke its muzzle repeatedly into hedges and bushes.**

**- Sticks and twigs may be pushed up into the nostrils as a result and cause laceration and bleeding.   
- Stertorous, difficult respiration accompanied by mouth breathing may be evident when both nostrils are obstructed.  
- In the most severe cases a distinct pseudomembrane is formed that is later snorted out as a complete nasal cast. - In the chronic stages multiple proliferative nonerosive nodules 2-8 mm in cliameter and 4 mm high with marked mucosal edema are visible in the anterior nares.  
Familial allergic rhinitis  
- In familial allergic rhinitis in cattle, the clinical signs begin in the spring and last until late fall.**

**- Affected animals exhibit episodes of violent sneezing and extreme pruritus manifested by rubbing their nostrils on the ground, trees, and other inanimate objects and frequently scratching the nares with their hind feet.  
- Dyspnea and loud snoring sounds are common and affected animals frequently clean their nostrils with their tongues.   
- The external nares contain a thick mucoid discharge and the nasal mucosa is edematous and hyperemic.   
- The clinical abnormalities resolve during the winter months.   
- All affected animals are positive to intradermal skin testing for a wide variety of allergens.**

**Mycotic rhinitis  
- Mycotic rhinitis in the horse is characterized by noisy respirations, circumferential narrowing of both nasal passages and thickening of the nasal septum.  
- The nasal conchae and turbinates may be roughened and edematous, and the ventral meati decreased in size bilaterally.  
- The nasal discharge may be unilateral or bilateral.  
- Endoscopically, granulomas may be found in almost any location in the nasal cavities and extending on to the soft palate and into the maxillary sinus.**

**Endoscopic examination  
- Endoscopic examination using a flexible fiberoptic endoscope or a rigid endoscope is very useful for the visual inspection oflesions affecting the nasal mucosae of horses and cattle that are not visible externally.**

**- Radiographic or computed tomographic imaging can be used to detect atrophiC rhinitis, although use of these techniques on a wide scale is clearly not practical.  
CLINICAL PATHOLOGY  
- Examination of nasal swabs of scrapings for bacteria, inclusion bodies or fungi may aid in diagnosis.  
- Discharges in allergic rhinitis usually contain many more eosinophils than normal.   
- Nasal mucosal biopsy specimens are useful for microbiological and histopathological examination.**

**NECROPSY FINDINGS  
- Rhinitis is not a fatal condition, although animals may die of specific diseases in which rhinitis is a prominent lesion.  
DIFFERENTIAL DIAGNOSIS  
- Rhinitis is readily recognizable clinically.  
- Differentiation of the specific diseases listed under Etiology, above, is discussed under their respective headings.  
 - Allergic rhinitis in cattle must be differentiated from maduromycosis, rhinosporidiosis, and infection with the pasture mite (Tyrophagus palmarum) .   
- The differential diagnosis may be difficult if allergic rhinitis occurs secondary to some of these infections.**

**- Rhinitis in the horse must be differentiated from inflammation of the facial sinuses or guttural pouches in which the nasal discharge is usually purulent and  
persistent and often unilateral, and there is an absence of signs of nasal irritation.  
- A malodorous nasal discharge, frontal bone distortion, draining tracts at the poll, and neurological abnormalities are common in cattle with chronic frontal sinusitis as a  
complication of dehorning.**

**TREATMENT  
- Specific treatment aimed at control of individual causative agents is described under each disease.   
- Thick tenacious exudate that is causing nasal obstruction  
may be removed gently and the nasal cavities irrigated with saline.   
- A nasal decongestant sprayed up into the nostrils may provide some relief.   
- The removal of the exudate from each nostril followed by irrigation with a mixture of saline and antimicrobials will  
provide relief and minimize the development of a secondary bacterial rhinitis.  
- Animals affected with allergic rhinitis should be taken off the pasture for about a week and treated with antihistamine preparations.**

**References**

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