

**MJF COLLEGE OF VETERINARY AND ANIMAL SCIENCE,
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DEPARTMENT OF VETERINARY PATHOLOGY

DIGESTIVE SYSTEM-I

- ▶ MALFORMATIONS
- ▶ Cleft lip (Chelioschisis) and cleft palate (Palatoschisis)
- ▶ □ Clefts of the mouth are midline fusion defects which occur during embryonic development . □ In cleft palate, the ingesta is likely to enter the respiratory passages and cause aspiration pneumonia and death.

Caries

- ▶ □ Definition
- ▶ ○ Caries means decay of teeth in which the enamel is decalcified followed by softening and discoloration.
- ▶ □ Occurrence ○ Caries is rare in domestic animals.
- ▶ ○ This occurs occasionally in pet dogs with imbalanced and inadequate diets.
- ▶ □ Etiology ○ Disturbances in calcium and phosphorus metabolism as well as dietary deficiencies of these minerals.
- ▶ ○ It is frequently seen in fluorine poisoning.

STOMATITIS

▶ Definition

- ▶ □ This is diffuse inflammation of the mucous membrane of the mouth. □ But when confined to particular parts of the mouth, it is known as:
 - o Gingivitis for inflammation of the gums.
 - o Glossitis for inflammation of the tongue.
 - o Laryngitis for inflammation of the palate.
 - o Cheilitis for inflammation of the lips.
 - o Pharyngitis for inflammation of the pharynx and
 - o Tonsillitis for inflammation of the tonsils.

▶ Occurrence

- ▶ □ Stomatitis is common in animals.

▶ Aetiology

- ▶ □ It may be a primary affection or may occur as secondary to other diseases viz. gastritis or infectious diseases. □ The causes are
 - o Physical □ Trauma by awns, thorns, burrs, wood pieces, glass pieces, sharp bits, irregular sharp teeth, sharp edged feeding utensils.
 - o Thermal injuries: Hot drenches and eating frozen foods.
 - o Chemical : caustic alkalies, corrosive acids, fertilizers.
 - o Deficiency of vitamins □ Hypovitaminosis A especially in fowl □ Niacin deficiency : Black tongue in dogs
 - o Microorganisms □ Bacteria: Actinomyces bovis; Actinobacillus lignieresii; Fusobacterium necrophorum; Pseudomonas aeruginosa; Corynebacterium pyogenes; Streptococci and Staphylococci.
 - Fungi: Candida albicans and Oidium pullorum in poultry.

TYPES OF STOMATITIS

- ▶ Vesicular stomatitis
 - ▶ Vesicles, blebs or blisters containing clear fluid are formed on the mucosa. □ Seen in Foot and mouth disease, infectious vesicular exanthema and infectious vesicular stomatitis. □ Rupture of the blisters results in the formation of erosions, which subsequently heal. □ Catarrhal and vesicular stomatitis may develop into ulcerative variety.
- ▶ Fibrinous and necrotic stomatitis
 - ▶ This is seen in infection by *Fusobacterium necrophorum*.
- ▶ Diphtheritic stomatitis
 - ▶ Fowl pox produces diphtheritic stomatitis and pharyngitis in which a grayish membrane is found.
- ▶ Gangrenous stomatitis
 - ▶ Very severe irritants may cause gangrenous stomatitis.
- ▶ Thrush
 - ▶ Thrush is found in birds. □ Here grey or yellowish thick tenacious material gets attached to the mucous membranes.

- ▶ Ranula
- ▶ □ When the dilatation of the salivary duct and gland occurs as cyst on the floor of the mouth it is called a ranula. □ This is smooth, rounded cyst containing a clear fluid. □ This can be easily ruptured.
- ▶ Sialoliths
- ▶ □ Sialoliths are salivary calculi □ These are common in horses.

OESOPHAGEAL CHOKE

- ▶ Definition
 - ▶ □ Choke is obstruction of the esophagus.
- ▶ Occurrence
 - ▶ □ It occurs in horses and cattle, but more common in the former.
- ▶ Aetiology
 - ▶ □ Old age □ In cattle, large objects of food- beet root, carrot, apples, potatoes, fetal membranes, sticks and wire. In dogs, large bones.
 - ▶ Impacted masses of feed due to improper chewing, bad teeth and rapid gulping of dry feed. □ Lesions of esophagus - stenosis or diverticulum cause repeated choking. □ Enlarged lymph nodes- mediastinal and cervical. □ Enlarged thyroids. □ Neoplasms of adjacent tissue especially thymus - thymoma in new-born animals.

▶ Gross pathology

- ▶ □ In the horses choke occurs in the thoracic area while in cattle and dogs the pharynx is obstructed. □ Choke may be complete or incomplete. □ Complete choke
 - o In complete choke, feed will be returned and water will flow through the nostrils when animal is watered.
 - o Aspiration of the feed will cause secondary foreign-body pneumonia.
 - o In cattle, complete obstruction will cause dangerous tympany.
 - o Because of pressure, ischemia and resultant necrosis and gangrene may develop.
 - o Infection may spread to the surrounding tissues- cellulitis or to the lungs- gangrenous pneumonia.
 - o Resultant sapremia or toxemia is the cause of death in fatal case.
- ▶ □ Partial choke
 - o Partial obstruction will give rise to dilatation of esophagus above the obstruction - the esophageal diverticulum .

▶ Sequelae

- ▶ □ Death due to gangrenous pneumonia, bloat, cellulitis or asphyxiation. □ Esophageal diverticulum □ Rupture of esophagus

- ▶ **DILATATION (ECTASIA)**

- ▶ □ The dilatation of esophagus may be fusiform or cylindrical.

- ▶ **INGLUVITIS**

- ▶ **Definition**

- ▶ □ Inflammation of crop is called ingluvitis.

TYMPANITES OR BLOAT

- ▶ □ Normally animals get rid of gases produced in the rumen by eructation. □ Saliva which has important antifoaming properties plays a significant part in the prevention of bloat. Mucin in saliva prevents formation of froth.
- ▶ Aetiology
- ▶ □ Bloat (or accumulation of gas) can occur o When the gas is produced at too rapid a rate than can be eructated. o When the eructation mechanism is faulty.
- ▶ Types
- ▶ □ Based on course, bloat may be acute or chronic. □ Based on nature of gas, bloat may be dry or frothy.

▶ ACUTE BLOAT

- ▶ This may be due to complete choke in esophagus. □ It may also be due to sudden changes of feed. □ Excessive feeding on legumes that are wet with dew or rain.

▶ Chronic bloat

- ▶ □ The chronic variety occurs whenever there is any hindrance to eructation in the esophagus either within or without pressure by tumors, foreign bodies, enlarged lymph nodes, abscesses, constrictions or diverticula. □ It may occur in lesions of the rumen causing decreased contractions of the ruminal wall as in atony, serosal adhesions, paresis, diffuse lymphomatosis.

▶ Dry bloat

- ▶ □ The dry bloat is less harmful, since in this condition, the gases can be more easily got rid of by eructation.

▶ Frothy bloat

- ▶ □ In the frothy bloat, the gas is trapped as small bubbles in the fluid forming a foamy mass which is not easily eructated.

▶ Aetiology

- ▶ □ The following are supposed to produce frothy bloat
 - o Saponin found in plants is a good saponifying agent.
 - o Water-soluble proteins of the legumes are capable of forming froth. This is probably of greater importance, since, bloat is observed even in animals fed with low- saponin plants.
 - o Factors which increase the viscosity and lowers the surface tension of ruminal contents produce froth.
 - o Normally, in rumen due to bacterial activity, fatty acids are produced which increase the surface tension. If the production of these fatty acids is decreased, the surface tension will be lowered favouring froth production. This is the theory behind the use of vegetable oils in the treatment of bloat.

▶ Pathogenesis

- ▶ □ Some legumes contain HCN, which is toxic, causing paralysis of the ruminal or reticular musculature and so inhibits eructation. □ Some legumes contain phosphatase which with arsenates accelerates fermentation producing a large quantity of CO₂. □ H₂S, CO₂ and CO produced in large quantities causes paralysis of ruminal muscles. □ If fed excessively on green plants only, which do not contain sufficient stiff fibres, the mucosa of the rumen is not adequately scratched to elicit the reflex contraction of the musculature. □ Mechanical stimulation of cardia, especially by roughages, increases the rate of secretion of saliva. But with ingestion of young succulent legumes, too little saliva may be secreted and so foaming is not counteracted and bloat results.

- ▶ Ruminal mucinolytic bacteria may destroy salivary mucin thereby producing frothy bloat. Polysaccharides produced by capsulated ruminal bacteria may be another etiological factor in bloat. □ Interference with the nerve pathways that are responsible for the eructation reflex may also lead to tympany. The receptors for this reflex are in the reticulum and the afferent and efferent nerve fibres are in the vagus nerve. Any lesions in this nerve may, therefore, lead to bloat. □ Distended rumen compresses other abdominal organs and causes passive congestion since the pressure on thin-walled veins impedes circulation. □ Along with this, there is forward thrust on the diaphragm, pressing on the lungs, which become smaller and sometimes atelectatic. □ The result of this is hypoxia and ultimate asphyxia and death.
- ▶ Gross pathology
- ▶ □ In animal that dies of bloat, besides congestion of the abdominal viscera, one may notice hemorrhages on the pleura, pericardium, tracheal mucosa and on bronchial lymph nodes as well as in the lymph nodes of head and neck. □ Blood is tarry, as in Anthrax. □ Liver is pale. □ The rumen or diaphragm may be ruptured sometimes. □ Within few hours of death, the ruminal epithelium peels off.