

Esophageal obstruction

Esophageal obstruction can be acute or chronic and is characterized clinically by the inability to swallow, regurgitation of feed and water, continuous drooling of saliva, and bloat in ruminants. Acute cases are accompanied by signs of distress including retching and extension of the head. Horses with choke commonly regurgitate a mixture of saliva, feed, and water through the nostrils because of the anatomic characteristics of the equine soft palate.

Etiology

1-Obstruction can be intraluminal and caused by swallowed material or

2 -extraluminal caused by pressure on the esophagus by surrounding organs or tissues.

3- Esophageal paralysis can also result in obstruction, for example, in horses with grass sickness.

- Intraluminal obstructions are usually caused by ingestion of materials that are of inappropriate size and that then become lodged in the esophagus:

- Solid obstructions, especially in cattle, by turnips, onions, potatoes, peaches, apples, oranges, and similar objects.
- Feedstuffs are a common cause of obstruction in horses and occasionally in other species.

Most impactions are caused by routine feedstuffs. Improperly soaked sugarbeet pulp, dry sugarbeet pulp, and cubed and pelleted feed can cause the disease in horses when eaten quickly.

- Eating while sedated
- Foreign bodies in horses include pieces of wood, antimicrobial boluses, and fragments of nasogastric tubes.
- A trichobezoar can cause esophageal obstruction cattle.

Extraluminal Obstructions

- Enlarged lymph nodes in the mediastinum (tuberculosis, neoplasia, *Rhodococcus equi*, *Corynebacterium* spp., strangles, and secondary to pleuritis)
 - Cervical or mediastinal abscess
 - Persistent right aortic arch
- Thymoma

- **Megaesophagus and caudal esophageal muscle hypertrophy in horses can cause esophageal obstruction.**
- **Secondary to esophageal strictures, which can occur subsequent to esophageal trauma or perforation.**

Esophageal Paralysis result in obstruction

- 1- Esophageal paralysis can be caused **by congenital or acquired** abnormalities of the esophagus, and there are many examples of such abnormalities that interfere with swallowing and cause varying degrees of obstruction, even though it may be possible to pass a stomach tube through the esophagus into the stomach or rumen.
- 2 -Esophageal paralysis, diverticulum, or mega esophagus has been recorded in horses and in cattle.
- 3 -Congenital hypertrophy of esophageal musculature and esophagotracheal fistula has been found in calves.
- 4-Congenital esophageal ectasia is recognized in foals, caused by degeneration of musculature and reduced ganglion cells in the myenteric plexus.
- 5-Congenital esophageal dysfunction has also occurred in foals with no detectable histopathological lesion but with **prolonged simultaneous contractions throughout the esophagus.**

- Megaesophagus

Megaesophagus is a dilatation and atony of the body of the esophagus usually associated with asynchronous function of the esophagus and the caudal esophageal sphincter.

It occurs sporadically in cattle and in horses . It is usually a congenital condition that causes regurgitation and aspiration pneumonia.

7- **A mild esophagitis** has been observed in some cases and congenital stenosis of the esophagus in a foal has been associated with megaesophagus.

Esophageal Strictures

- **(esophageal stricture refers to the abnormal narrowing of the esophageal lumen; it often presents as dysphagia, described as difficulty swallowing.)**

These arise as a **result of cicatricial or granulation tissue deposition**, usually as result of previous laceration or trauma of the esophagus. They can occur in the adult horse with a history of previous obstruction , foals and goat.

Other Causes of Obstruction :

- Carcinoma of stomach causing obstruction of cardia
- Squamous cell carcinoma of the esophagus of a horse.
- Cranial esophageal pulsion (pushing outward) diverticulum in a horse
- Esophageal phytobezoar in a horse
- Traumatic rupture of the esophagus from an external injury .
- Esophageal paralysis can also be associated with lesions of encephalitis, in the brainstem .

PATHOGENESIS

An esophageal obstruction results in a physical inability to swallow and, in cattle, inability to eructate, with resulting bloat. In acute obstruction, there is initial spasm at the site of obstruction and forceful, painful peristalsis and swallowing movements.

- Complications of esophageal obstruction include

- laceration and rupture of the esophagus,
- esophagitis,
- stricture and stenosis, and the
- development of a diverticulum., Acquired esophageal diverticula can occur in the horse.
- A traction diverticulum occurs following periesophageal scarring and is of little consequence. **An esophageal pulsion diverticulum is a circumscribed sac of mucosa protruding through a defect in the muscular layer of the esophagus.**

Causes that have been proposed to explain pulsion diverticula include **excessive intraluminal pressure from impacted feed, fluctuations in esophageal pressure, and external trauma.**

-Esophageal stricture and subsequent obstruction secondary to impaction of a diverticulum can also occur.

In megaesophagus, the esophagus is dysfunctional, dilated, and filled with saliva, feed, and water. This results in regurgitation and can lead to aspiration pneumonia. It can be congenital or secondary to other lesions and has been associated with gastric ulceration in foals.

- The body of the equine and bovine esophagus has two functionally different regions: the **caudal portion** and the remainder of the esophageal body (**cranial portion**).

Clinical findings Acute Obstruction or Choke

Cattle

1-The obstruction is usually in the cervical esophagus just above the larynx or at the thoracic inlet.

2-Obstructions can also occur at the base of the heart or the cardia.

3-The animal suddenly stops eating and shows anxiety and restlessness.

4- There are forceful attempts to swallow and regurgitate, salivation, coughing, and continuous chewing movements.

5- **If obstruction is complete, bloating occurs rapidly and adds to the animal's discomfort.**

6- Ruminal movements are continuous and forceful

7-and there can be a systolic murmur audible on auscultation of the heart.

8-However, rarely is the bloat severe enough to seriously affect the cardiovascular system of the animal, such as occurs in primary leguminous (frothy) bloat.

-The acute signs, other than bloat, usually disappear within a few hours. This is caused by relaxation of the initial esophageal spasm and can or cannot be accompanied by onward passage of the obstruction.

- Many obstructions pass on spontaneously, but others can persist for several days and up to a week. In these cases, there is inability to swallow, salivation, and continued bloat.

-Passage of a nasogastric tube is impossible.

- Persistent obstruction causes pressure necrosis of the mucosa and can result in perforation or subsequent stenosis caused by fibrous tissue construction.

Horse

-In the horse with esophageal obstruction caused by feed, the obstruction can occur at any level of the esophagus from the upper cervical region all the way to the thoracic portion.

-The ingestion of large quantities of grain or pelleted feed can cause obstruction over a long portion of the esophagus.

- The clinical findings vary with the location, nature, extent, and duration of the obstruction.

1 -Typically, the major clinical finding is dysphagia with nasal reflux of saliva, feed, and water.

2-Affected horses will usually not attempt further eating but will drink and attempt to swallow water.

3-External palpation of the cervical esophagus can reveal a firm cylindrical swelling along the course of the neck on the left side when the esophagus is obstructed with feed.

- In cases of foreign-body obstruction such as a piece of wood, there can be no palpable abnormality.

Horses with acute esophageal obstruction are commonly difficult to handle because they are panicky and make forceful attempts to swallow or retch.

- They often vigorously extend and flex their necks and stamp their front feet. In some horses it can be difficult to pass a nasogastric tube because they resist the procedure.

- During these episodes of hyperactivity they can sweat profusely, tachycardia can be present, and they can appear to be in abdominal pain.

- Such clinical findings on first examination can resemble colic, but attempted passage of a nasogastric tube as part of the examination of a horse with colic reveals the obstruction.

-Passage of a nasogastric tube is necessary to make the diagnosis and to assess the level of the obstruction.

- Persistent obstruction can occur in the horse and death can occur in either from aspiration pneumonia or, from dehydration.

In foals with esophageal obstruction the clinical findings include nasal reflux of saliva, feed, and milk; reluctance to eat solid feed; and dyspnea if aspiration pneumonia has occurred.

-Chronic Obstruction :-no acute signs of obstruction are evident

Chronic Obstruction

No acute signs of obstruction are evident and in **cattle the earliest** sign is chronic bloat, which is usually of moderate severity and can persist for several days without the appearance of other signs. Rumen contractions can be within the normal range.

In horses and in cattle in which the obstruction is sufficiently severe to interfere with swallowing, a **characteristic syndrome develops**.

1-Swallowing movements are usually normal until the bolus reaches the obstruction, when they are replaced by more forceful movements.

2- Dilatation of the esophagus can cause a pronounced swelling at the base of the neck.

3-The swallowed material either passes slowly through the stenotic area or accumulates and is then regurgitated.

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7- Projectile expulsion of ingested material occurs with esophageal diverticula, but water is retained and there is no impedance to the passage of the stomach tube. In the later stages, there can be no attempt made to eat solid food, but fluids can be taken and swallowed satisfactorily.

8- When there is paralysis of the esophagus, as in megaesophagus, regurgitation does not occur, but the esophagus fills and overflows, and saliva drools from the mouth and nostrils. Aspiration into the lungs can follow.

CLINICAL PATHOLOGY

1- Radiographic examination is helpful to outline the site of stenosis, diverticulum, or dilatation, even in animals as large as the horse.

2- Radiologic examination after a barium swallow is a practicable procedure if the obstruction is in the cervical esophagus.

- 3- 3- Viewing of the internal lumen of the esophagus with a endoscope has completely revolutionized the diagnosis of esophageal malfunction.
- 4- Biopsy samples of lesions and tumor masses can be taken using the endoscope

Differential Diagnosis

1- colic, passage of a nasogastric tube as part of the examination of a horse with colic reveals the obstruction.

1- Diaphragmatic hernia can also be a cause of chronic ruminal tympany in cattle

2- and vagus indigestion, another cause of chronic tympany, are usually accompanied by a systolic cardiac murmur,

-Dysphagia can also result from purely neurogenic defects.

3- Thus early paralytic rabies “choke” is often suspected,

4- Equine encephalomyelitis and

5 -botulism are other diseases in which there is difficulty in swallowing.

6- Cleft palate is a cause of recurrent nasal regurgitation in foals

Treatment

1- esophageal relaxation,

-analgesia and antiinflammatory effect hyoscine:

RX

-dipyrone **0.5 : 0.22 mg/kg BW intravenously** can be used and for analgesia

-and antiinflammatory effect **flunixin meglumine 1.1 mg/kg BW intravenously or**

-phenylbutazone 2 to 4 mg/ kg intravenously are suggested.

- For analgesia **butorphanol 0.02 to 0.1 mg/kg intravenously** can be administered.

2-Pass a Stomach Tube and Allow Object to Move Into Stomach

-The passage of the nasogastric tube is always necessary to locate the obstruction.

-Gentle attempts can be made to push the obstruction caudal, but care must be taken to avoid damage to the esophageal mucosa.

-A fiberoptic endoscope can be used to determine the presence of an obstruction, its nature, and the extent of any injury to the esophageal mucosa.

-In cattle,

1- The important decision is whether to proceed and risk damaging the esophagus or wait and allow the esophageal spasm to relax and the obstruction to pass spontaneously.

-Attempts to push the obstruction too vigorously can injure the mucosa, causing esophagitis and even esophageal perforation.

- 2- Alternatively, leaving a large obstruction in place can restrict blood flow to the local area of mucosa and result in ischemic necrosis.
- 3- **-As a guide in the horse it is suggested that conservative measures (principally sedation, waiting, and lavaging the esophagus) be continued for several hours before attempting radical procedures such as general anesthesia and manipulation or esophagotomy.**
- 4- **Removal by Endoscope** If a **specific** foreign body, such as a piece of wood, is the cause of the obstruction, it can be removed by endoscopy.
- 5- **Manual Removal Through Oral Cavity in Cattle** Solid obstructions in the upper esophagus of cattle can be reached by passing the hand into the pharynx with the aid of a speculum and having an assistant press the foreign body up toward the mouth.
- 6- If all methods fail, it is advisable to leave the object in situ and use treatments aimed at relaxing the esophagus.
In such cases in cattle it can be necessary to trocarize the rumen and leave the cannula in place until the obstruction is relieved. However, this should not be undertaken unless specifically required.

-General Anesthesia in the Horse:

- In horses, attempts to manually remove solid obstructions from the cranial portion of the esophagus require a general anesthetic, a speculum in the mouth, and a manipulator with a small hand.

9- Esophageal Lavage in the Horse Accumulations of feedstuffs,

- which are most common in the horse, can be removed by careful lavage or flushing of the obstructed esophagus.

- Lavage can be performed in the standing horse or in lateral recumbency under general anesthesia.

- Small quantities of warm water, 0.5 to 1 L each time, are pumped through a nasogastric tube and the liquid material is allowed to siphon out through the tube by gravity flow.

-Following relief of obstruction the horse can be offered water to drink and a wet mash of feed for several days.

10-Surgical Removal of Foreign Bodies

Surgical removal by esophagostomy can be necessary if other measures fail.

Gastrotomy or rumenotomy can be necessary to relieve obstructions of the caudal portion of the esophagus adjacent to the cardia.

-11-Cervical Esophagostomy Alimentation

Alimentation of horses with esophageal ruptures can be by Maintenance of nasogastric tubes through the nostrils is difficult but possible.