

RUMINAL TYMPANY (BLOAT)

Ruminal tympany is abnormal distension of the rumen and reticulum caused by excessive retention of the gases of fermentation; either in the form of a persistent foam mixed with the rumen contents or as free gas separated from the ingesta. Normally, gas bubbles produced in the rumen coalesce, separate from the rumen contents to form pockets of free gas above the level of the contents, and finally are eliminated by eructation.

Etiology

1- Primary Ruminal Tympany (Frothy Bloat)

Primary ruminal tympany or frothy bloat is caused by the production of stable foam that traps the normal gases of fermentation in the rumen. The essential feature is that coalescence of the small gas bubbles is inhibited and intraruminal pressure increases because eructation cannot occur.

Leguminous or is caused by bloating forages ingested by cattle on pasture. Alfalfa hay may also cause bloat. **Feedlot bloat** is caused by feeding finely ground grain which changes the total numbers and proportions of certain ruminal protozoa and bacteria result in stable foam.

2- Secondary Ruminal Tympany (Free-Gas Bloat)

Physical obstruction to eructation occurs in esophageal obstruction caused by a foreign body, by stenosis of the esophagus, by pressure from enlargements outside the esophagus, such as tuberculous lymphadenitis or bovine viral leukosis involvement of bronchial lymph nodes, or by obstruction of the cardia.

Pathogenesis

The gas bubbles produced in the rumen fluid coalesce, separate from the rumen contents to form pockets of free gas above the level of the contents, and are finally eliminated by eructation. Much of the gas of fermentation will be eructated. A grass-fed cow can produce 100 L during the first hour of feeding. A cow maintained on a legume diet may produce 200 L/h. In **frothy bloat**, the gas bubbles remain dispersed throughout the rumen contents, producing an abnormal increase in the volume of the ruminoreticular contents and, consequently, **inhibiting eructation**.

The characteristic frothiness of ruminal contents is caused by **inadequate coalescence of gas bubbles**. In **free-gas bloat** the gas bubbles coalesce and separate from the rumen fluid, but the animals cannot eructate the pockets of free gas because of abnormalities of the reticulorumen or esophagus.

Most cases of naturally occurring pasture or feedlot bloat are not accompanied by ruminal atony. **Frothiness of the ruminal contents** interferes with **function of the cardia** and there is an exponential increase in intraruminal pressure with increasing rumen volume, the pressure exerted by the distended rumen on the diaphragm is very high, which results in reduced lung capacity and death from hypoxia.

Clinical Signs

Bloat may cause sudden death. The main signs is over distention of rumen usually more in the upper left flank, animal stop grazing, abdominal

pain, animal is discomfort , dyspnea with mouth breathing, protrusion of the tongue, salivation and head extension, increase respiratory rate, increase frequency of defecation and urination, in early stage increase ruminal movements and in later decrease or complete absent. There is tympanic sound in percussion in case of frothy tympany these sound present in upper and lower part of the rumen, but in secondary only in the upper part.

In milled cases the animal uncomfortable, graze for only start time and decrease milk production.

Diagnosis

- a- Case history.
- b- Clinical signs including abdominal distention especially in the left side. Diagnosis between primary and secondary tympany by percussion, stomach tube, and by trocarization by trocar and cannula.

Differential diagnosis

- 1- Esophageal stenosis (obstruction) also associated with difficult swallowing and by using stomach tube for detection the side of obstruction.
- 2- Vagus indigestion abdominal distention occurs gradually over several days or weeks with scant feces.
- 3- Tetanus by prolapse of the third eyelid.
- 4- Sudden death may also cause by other diseases such as black leg, lightning struck, anthrax, snake bite and these diseases there is other signs which are characteristic.

Treatments

In emergency cases rumenotomy or trocarization and antifoaming agents can be administered through the cannula which can be left for a few hours until the animal returns to normal condition.

In less severe cases passing stomach tube, the antifoaming agents include:

- 1- Nontoxic vegetable oils such as corn, soya bean or peanut or mineral oil such as turpentine oil, the dose of oil 250 ml (cattle) and 50 ml for sheep.
- 2- Surfactant agents can mix with oil such as diacetyl sodium sulfosuccinate or polaxalin or alcoholic methoxylate. The surfactant is more effective than oil and can be given by drenching or stomach tube or ruminal cannula. The effect of these agents can be enhanced if they are thoroughly mixed with ruminal contents.

Control

- 1- If the bloat-producing pasture is the source of feed, antifoaming should be administered to the animal before they access to the pasture. These antifoaming agents must be mixed with water and separated in a limited pasture area or the anti-foaming agents mixed with feed or water supplies.

Also, the antifoaming can be painted on the flank from which the animal licks on this area.

- 2- Oil can be given at the rate 60-120 ml /animal. The dose of polaxaline is 10-120 mg per animal.
- 3- Alcoholic methoxylate can be used as a block and it is very effective, block containing 10% also slow release device containing antifoaming agent is placed in the rumen.