



Unit : Rumen and omasal impaction and dysfunction in cattle

Lesson : 3

# SARA, Ruminant drinkers & Ruminant alkalosis

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# Introduction

- **Continuous ingestion of concentrates over a prolonged period**
- **Microbial alterations**
  - Lactate-using and lactate-producing organisms - present more
  - Proportion of cellulolytic bacteria - less
  - Starch and glucose fermenting bacterial species - proliferate
- **High rate of fermentation - production of high concentrations of VFAs**
- **leading to moderately acidic ruminal fluid with pH (5 to 5.5)**
- **Ruminal buffering is impaired**
- **Butyric and propionic acids stimulate proliferation of the ruminal papillae epithelium – Ruminal parakeratosis**

# Pathogenesis

Fermentation of non structural carbohydrate



Increased VFA and lactate in rumen



Decrease pH



Affects cellulolytic bacteria



Decreased fiber digestion



Affects production

# Clinical signs

- Dairy herds – affected
- High incidence of abomasal diseases
- Intermittent diarrhoea
- Suboptimal appetite or cyclic feed intake
- Decreased dry matter intake
- Loss of body condition
- Milk fat depression
- Reduced milk production
- Liver abscess – saw dust liver
- Haemoptysis & epistaxis associated with venal caval thrombosis & pulmonary haemorrhage
- Low rumen pH & decreased rumen motility
- Change in osmolarity of rumen fluid
- Bacterial endotoxins - laminitis

# Clinical signs

## Laminitis

- Ridges in dorsal hoof wall
- Sole ulceration
- Sole haemorrhage
- White line lesions
- Misshapen hooves

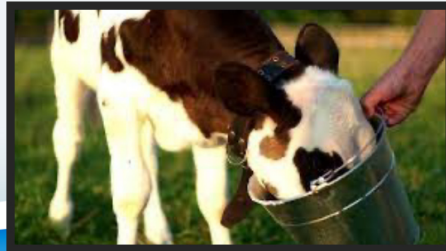


# Treatment and prevention

- Antacids – Magnesium hydroxide 500g /450 kg BW
- Buffering diet
- Feeding roughage before concentrates
- Split feeding of concentrates

# Ruminal Drinkers

- Hand fed calves
- Absence of suckling reflex
- Indigestion of calves fed with milk replacers
- Occurs within 5 to 6 weeks after calving –  
milk diet fed in buckets
- Insufficient closure of reticular groove
- Ingested milk enters into rumen



# Clinical signs

- Recurrent tympany
- Inappetence
- Unthriftiness
- Clay like feces
- Distended ventral half of abdomen (left side)
- Fluid splashing sounds
- Large volume of foul smelling or acid smelling, grayish white fluid from rumen with casein clots
- Reluctant to move
- Marked ruminal parakeratosis
- Villous atrophy – proximal jejunum





# Diagnosis

- History
- Clinical signs
- Acetaminophen absorption test
  - Paracetamol 20-30 mg/kg mixed with 2 lit of milk
  - Calf with ruminal drinkers with flat acetaminophen absorption curve

# Treatment

- Draining rumen contents
- Addition of 1 to 2 lit of warm water and siphon out
- Don't give milk in bucket
- Milk with small nipple hole
- Allow to suck on the herdsman's fingers



# Ruminal Alkalosis

## Etiology

- Alkaline ruminal fluid pH occurs
- Reduced microbial fermentation and continuous ingestion of saliva
- Prolonged anorexia
- Microfloral inactivity due to poorly digestible roughage
- Simple indigestion
- Excessive ammonia genesis with high protein diets
- Elevated ammonia concentration with pH above 7.5
- Overfeeding of nonprotein nitrogen sources such as urea, biuret, and ammonium phosphate

# Clinical Signs

- Ruminal hypomotility
- Bloat
- Vomiting
- Diarrhoea
- Abdominal pain
- Muscle tremors
- Muscular weakness
- Incoordination
- Tachypnoea
- CNS excitation

# Diagnosis



- Ruminal pH  
– more than 7.5
- Strong odour of ammonia

# Treatment



- Acetic acid or vinegar 2 to 6 liters diluted with water administered by passing stomach tube
- Normal saline intravenously



*Thank  
you*