Parturient Paresis (Milk Fever)

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PARTURIENT PARESIS

- Synonym: Milk Fever/ Post –parturient Hypocalcaemia
- It is the most common in recently calved cows or buffaloes usually within 48 hours after parturition
- Clinically characterized by general muscular weakness, recumbency, circulatory collapse and depression of consciousness

ETIOLOGY

- **The onset of lactation results in the sudden loss of calcium through milk.**
- **Serum calcium levels fall from normal of 10-12 mg/dl to 2-7 mg/dl…… Why?**

✓The sudden increase in the requirement of calcium for the production of colostrum

✓There may be an impairment of absorption of calcium from the intestine at parturition

✓The possibility that mobilization of calcium from storage in the skeleton may not be rapid enough to maintain normal serum levels which may be due to parathyroid insufficiency.

- **Hypocalcemia may be observed at times not related to parturition. Such as**
  - Mild overeating of fermentable CHO
  - IV injection of aminoglycosides antibiotics especially neomycin, dihydro-streptomycine and gentamicin.
  - Oral dosing with zinc oxide as a prophylaxis against facial eczema in ewes.

- **In goats, a decline in serum levels of calcium and phosphorus occurs similar to that in cows but in ewes no such decline occurs at lambing.**

EPIDEMIOLOGY

- Most common in high yielding dairy animals in their 3rd to 5th lactations
- Majority of cases - within the first 48 hours after calving and the danger period extends up to about the 10th day postpartum
- Majority of the treated animals have uneventful recovery but 15-25% cases may get complicated
- Case fatality rate is very low

PATHOGENESIS

- **Normal calcium level in bovines is 8-12 mg/dl.**
- **Clinical signs appears when it falls below 5.5 mg/dl**
- Hypocalcemia may account for muscle weakness, hypothermia and depression of consciousness,
- Atony of skeletal & smooth muscles
- A marked reduction in cardiac output
- Reduction in arterial blood pressure, and
- Reduction in ruminal & abomasal tone & motility
- Clinical signs of early excitement, muscle twitching, tetany of hind limbs, hypersensitivity and convulsions of head & neck.
- Failure of neuromuscular transmission of stimuli in cows with parturient paresis.

CLINICAL SIGNS

A- In cattle: 3 arbitrary stages.

Stage one:

- **Cows are able to stand but show signs of hypersensitivity,**
- **Muscle tremors of the head & limbs**
- **Grinding of teeth**
- **Loss of appetite**
- **Temperature- normal to slightly above normal.**
- **ataxia**

Stage two (Sternal recumbency):

is the most stage commonly seen by Veterinarian

- **The animal is in sternal recumbency with a typical posture of lateral kink in the neck and head resting over flank**
- **Subnormal temperature**
- **Cold extremities**
- **Dilated pupil unresponsive to light**
- **Relaxed anal sphincter**
- **Increased heart rate (80/min) but decreased intensity of heart sound**
- **Weak pulse**
- **Ruminal stasis**

Stage three (Lateral recumbency)

- Loss of consciousness to the point of coma and lies in lateral recumbency
- Heart sound almost inaudible and increased in rate up to 120 beats/ min
- Almost impossible to feel jugular pulse indicative of venous collapse
- Spontaneous recovery is very rare
- Untreated cases deteriorates and death occurs in 12-24 hours

B- sheep and goats

- It shows similarity to that in cattle.
- Early signs are, slight hyperexcitability, muscle tremors and stilted gait soon followed by dullness, sternal recumbency, mild ruminal tympany and head is rested on the ground.
- Response to parenteral treatment with calcium salts is rapid (30 minutes) after SC injection. Death often occurs within 6-12 hours if treatment is not administered. The syndrome is usually more severe in pregnant than lactating ewes.

DIAGNOSIS

- A history of recent parturition in cattle.
- It may be made on the clinical findings mentioned above.
- The diagnosis may be confirmed by a rapid response to treatment with parenteral injection of calcium solutions.
- Biochemical tests on blood samples such as;
  a. Total serum calcium
  b. Serum levels of magnesium
  c. Serum inorganic phosphate levels
  d. Some tissue enzymes.
     - GOT
     - CPK

TREATMENT

- **The standard practice of milk fever treatment is parenteral injection of calcium salts.**
- **Calcium boro-gluconate @ 100-200 g is the drug of choice to be injected as soon as possible to avoid muscular and nervous damages & recumbency.**
- **Recommended route is IV infusion although SC and IP routes are also used.**
- **A general rule for dosing is ONE gram calcium per 45 kilograms of body weight.**

Response to Calcium therapy

- **Muscle tremors**
- **Stronger heart sounds**
- **Decreased heart rate**
- **Eructation defecation and urination once the cow rises.**

Other measures

- **Udder inflation has been used in the past to reduce milk secretion and loss of calcium but the risk of introducing bacteria into the udder is high.**
- **Removal of the calf**
- **Incomplete milking for the first 48 hours has been advised to reduce the incidence of relapse.**

CONTROL

- ✓ **Feeding of high phosphorus/ low calcium diet (3.3:1) in the last month of pregnancy.**
- ✓ **Prophylactic feeding of 150 g of calcium gel given at 24 hr, 1-2 hr before and 10-14 hr after calving.**
- ✓ **Vitamin D3 @ 200 mg orally 4-5 days prior to calving.**