



Unit : Hypomagnesaemic Tetany in Cattle

Lesson : 5

Hypomagnesemic tetany of calves

Dr.S.Kavitha, Ph.D.,

Professor and Head
Department of Veterinary Clinical Medicine,
Madras Veterinary College,
Chennai - 600 007. Tamilnadu



Hypomagnesemic Tetany of Calves

Etiology

- **The disease results when the dietary intake of magnesium is inadequate for the requirements of the calf.**
- **Affected animals may have concurrent hypocalcemia**
- **Milk has low concentrations of magnesium.**
- **The intake of magnesium will be inadequate for requirements once this body weight is reached**





Risk factors

- ▶ Calves 2 to 4 months of age, on whole milk or milk-replacer diets and poor or no roughage.
- ▶ Diarrhea and chewing of bedding or other coarse fiber may exacerbate the deficiency
- ▶ In the young calf, magnesium is absorbed in the intestine; however, **the efficiency of magnesium absorption decreases from 87% to approximately 30% at 3 months of age, when maximum susceptibility to the disease occurs.**



Pathogenesis

- ▶ Calves are born with normal Mg - 2 to 2.5 mg/dL but the concentrations fall gradually in the succeeding 2 to 3 months, often to below 0.8 mg/ dL.
- ▶ Tetany does not occur - below 0.6 mg/dL



Clinical findings

- ▶ Hyperesthesia
- ▶ Shaking of the head, opisthotonus, ataxia without circling.
- ▶ Initially, the calves are apprehensive, show agitation and retraction of the eyelids when approached, and are **hypersensitive to all external stimuli, but they show no tetany.**



Clinical findings

- ▶ Later, fine muscle tremors appear, followed by kicking at the belly, frothing at the mouth, and spasticity of the limbs.
- ▶ Convulsions follow, beginning with stamping of the feet, head retraction, chomping of the jaws, and falling.
- ▶ Respiratory movements cease
- ▶ Tonic and clonic movements of the limbs
- ▶ Involuntary passage of urine and feces



- **Muscle tremors**
- **Kicking at the belly**
- **Frothing at the mouth**
- **Spasticity of the limbs.**
- **Stamping of the feet, head retraction, chomping of the jaws, and falling.**
- **Convulsions**
- **Respiratory movements cease**



Stamping of the feet





Clinical Pathology

- ▶ Normal values are 2.2 to -2.7 mg/dL
- ▶ Mg - below 0.8 mg/dl - severe hypomagnesemia





Treatment

- ▶ 100 mL of a 10% solution of magnesium sulfate
- ▶ A magnesium sulfate enema in warm water (containing 15 g of magnesium sulfate) was associated with a rapid response in hypomagnesemic 3-month-old calves.
- ▶ Follow-up supplementation of the diet with magnesium oxide or carbonate as described later is advisable



I/V or S/C of 10%
MgSo₄ solution



15gm of Mgso₄
solution Enema



Summary

- ▶ Hypomagnesemic tetany is common in cows grazing on cereal grain grass
- ▶ Acute excitatory neurological signs are common
- ▶ CSF is diagnostic if collected within 12hrs of death
- ▶ Mg along with calcium IV solution are recommended therapy
- ▶ Hypomagnesemic tetany is common in calves raised on milk replacer diet



Thank you