

## Hypomagnesemic Tetany of Calves

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**Synonym:** Whole milk tetany.

### Epidemiology:

- 1) It is sporadic disease.
- 2) Generally, 2-4 months old calves are affected.
- 3) Calves receiving greatest quantity of milk and growing fastly are more affected because there is greater need of Mg for incorporation into tissues.

### Etiology:

- 1) **Calves maintained solely on whole milk:** The milk is low in Mg but due to its efficient absorption it is adequate for young calves but efficiency of Mg absorption markedly decreases by 3 months of age.
- 2) **Scouring / Diarrhea:** Due to reduced transit time, there is decreased absorption of Mg.
- 3) **Loss of endogenous Mg:** The loss of endogenous Mg through saliva in calves which are allowed to chew fibrous food material.
- 4) **Hay and silage deficient in Mg:** 2 - 4 months old calves maintained on hay and silage deficient in Mg.
- 5) **Feeding on milk replacer:** Calves maintained on milk replacer which is low in Mg may result in scouring and thereby reduced absorption.

### Clinical Signs:

- 1) Muscular tremor
- 2) Constant movement of ears
- 3) Shaking of head
- 4) Retraction of eyelid

- 5) Ataxia
- 6) Hypersensitivity
- 7) Kicking at belly
- 8) Tetany of limbs
- 9) Convulsions
- 10) Opisthotonus
- 11) Champing of jaws
- 12) Froath at mouth
- 13) Dyspnoea
- 14) Death within  $\frac{1}{2}$  - 1 hrs.

**Clinical pathology:**

- 1) Serum Mg level is below 0.8 Mg /dl
- 2) Serum calcium level as decreased in severe cases but normal in mild cases.

**Diagnosis:**

- 1) **History:** Feeding of whole milk, milk replacer, scouring or diarrhea etc.
- 2) **Clinical signs:** Constant movement of ears, retraction of eyelids, hypersensitivity, tetany of limbs and convulsions.
- 3) **Clinical pathology:** Low serum Mg values (below 0.8 mg %).

**Differential Diagnosis:**

- 1) **Tetanus:**
  - 1) History of umbilical infection.
  - 2) More common in calves below one month of age.
  - 3) Longer course.
  - 4) Prolapse of third eyelid – not typical in calves.
  - 5) Tetany is persistent and more marked.
  - 6) No complete response to Mg therapy.

**2) Encephalitis / Meningitis:**

- 1) High fever
- 2) Comparatively longer course
- 3) Rigidity of neck
- 4) No response to Mg therapy

**3) Lead Poisoning:**

- 1) History of access to lead poison
- 2) Blindness
- 3) No response to Mg therapy



**4) Rabies:**

- 1) History of dog bite
- 2) Ascending paralysis, profuse salivation, longer course
- 3) Tetany is absent
- 4) No response to Mg therapy

**5) Strychnine poisoning:**

- 1) H/o access to strychnine
- 2) Rare in calves.

**6) Polio encephalomalacia:**

- 1) Clonic convulsions.
- 2) Good response to vit. B<sub>1</sub> therapy.
- 3) No response to Mg therapy.

**7) Pesticide Poisoning:**

- 1) H/o access to poison
- 2) Temporary response to Mg therapy

**Treatment:**

- 1) Mag. (10%) sulphate @ 100 ml i/v. Good but transient response because of severe depletion of bone reserves.
- 2) Follow up supplementation of diet with magnesium oxide or carbonate.
- 3) Tranquilizers to avoid death due to respiratory failure.  
e.g. Diazepam @ 0.25 – 0.5 mg/kg body wt. I/M or i/v.

**Control:**

- 1) Provision of good quality hay.
- 2) Supplementation of MgO from 10 days to at least 10 wks of age.  
MgO @1 gm/day upto 5 wks.  
2 gm/day upto 5 - 10 wks.  
3 gm/day upto 10 - 25 wks.

Magnesium carbonate should be given in double dose.

