K-STATE Kansas State University Research and Extension

FORAGE FACTS

Publication Series

GRASS TETANY

INTRODUCTION

Grass tetany, also called grass staggers, wheat pasture poisoning, magnesium tetany and hypomagnesia, is a magnesium deficiency of ruminants usually associated with the grazing of cool-season grasses during spring. It is most prevalent among older cows in early lactation, but may also affect young or dry cows and growing calves. Grass tetany occurs most frequently when cattle are grazing lush, immature grass, but occasionally occurs when cattle are fed dry forages (winter tetany).

CAUSES

Grass tetany is a nutritional or metabolic disorder characterized by low blood magnesium, yet it is not just a simple magnesium deficiency. Low blood magnesium may be caused by (1) a diet low in magnesium, (2) a diet with nutrient imbalances that interfere with magnesium metabolism, or (3) high levels of milk production. When blood magnesium drops too low, proper nerve impulse transmission fails, causing the disorder.

Magnesium needs are greater for lactating than for nonlactating animals and greater for older than for younger animals. There are differences among bovine breeds in susceptibility to grass tetany with Brahman and Brahman crossbreds being more tolerant and European breeds being less tolerant. Many factors influence forage magnesium concentration and availability. The principal factor is a high level of potassium, which negatively affects soil magnesium uptake by plants and the availability of the forage magnesium to the animal. High nitrogen content of grass seems to also be associated with low blood magnesium. High nitrogen fertilizer may reduce magnesium availability, especially on soils high in potassium or aluminum.

Grass tetany occurs most frequently in the spring, often following a cool period (temperatures between 45 and 60˚F) when grass is rapidly growing, but also is seen in the fall with new growth of cool-season grass or wheat pasture. It occurs most frequently in cows that are nursing calves under 2 months of age, and is more likely to occur in beef herds than in dairy herds. Grass tetany seldom occurs when legumes and legume grass mixtures are a major portion of an animal's diet. Legumes may contain over twice the concentration of magnesium as do grasses grown on the same soil.

SYMPTOMS

Quite frequently, clinical signs of grass tetany are not observed and the only sign is a dead animal. Affected animals may become excitable—exhibiting a wild stare with erect ears and appear to be blind. They are uncoordinated and tend to lean backward and stumble or go down. The following progressive series of signs have been observed in cattle affected by grass tetany: (1) grazing away from the herd, (2) irritability, (3) muscular twitching in the flank, (4) wide-eyed and staring, (5) muscular incoordination, (6) staggering, (7) collapse, (8) thrashing, (9) head thrown back, (10) coma and (11) death.

PREVENTION

The prevention of grass tetany depends largely on avoiding conditions that contribute to the disorder. Some of the management practices to avoid grass tetany include:

- Avoid grazing cattle on new grass until it is 4 to 6 inches tall because magnesium is less available in very immature plants.
- Feed legume hay or graze mixed legume-grass pastures since legumes are higher in magnesium than grasses.
- Graze less susceptible animals on high risk pastures. Heifers, dry cows or cows with calves over 4 months old, and stocker cattle are less likely to develop tetany.
- Feed a magnesium supplement.

In areas where tetany frequently occurs, routinely feed cattle supplemental magnesium which increases blood magnesium levels and alleviates much of the grass tetany problem. Magnesium is not stored by the body, so care must be taken to ensure that each animal receives the proper amount on a daily basis. Begin supplementation before cattle are turned out on tetany-prone pasture, and continue until the threat is minimal. Magnesium oxide is a good source of magnesium, but since it is not palatable, it should be included in a highly palatable energy or mineral supplement. Magnesium oxide (54 to 60 percent magnesium) can be added at the rate of 75 to 150 pounds per ton of supplement when 1 pound per head is fed daily. Alternatively, a "High Mag" mineral containing 8 to 10 percent magnesium, should be fed free choice.

TREATMENT

Treatment results vary from excellent to poor depending on the clinical stage of the animal at the time of treatment. If treatment is started within one to two hours after clinical signs develop, the results are usually a quick recovery; however, in a large pasture it may be difficult to quickly identify sick cattle. Pasture cattle should be observed at least twice a day when they are first turned to grass. Treatment of animals that are in a coma may be too late. The normal treatment is intravenous injection of a commercial preparation of magnesium and calcium in a dextrose base. Consult your veterinarian, and have medication on hand before turning cattle out to graze.

SUMMARY

Grass tetany is a result of a magnesium deficiency. Clinical signs usually begin with nervousness and staggering and progress to falling, coma and death. Grass tetany is always an emergency requiring immediate medical attention. Treatment consists of intravenous administration of a magnesium and calcium solution. The injection of magnesium sulfate under the skin may provide a high level of magnesium in the blood in 15 minutes. The best prevention methods include keeping cattle off new grass until it is 4 to 6 inches tall and supplementing magnesium on a daily basis when conditions are favorable for grass tetany.

Contact: Dale Blasi
Extension Specialist
Forage Nutrition and Management
Telephone: 785-532-1249
FAX: 785-532-7059
E-mail: dblasi@oz.oznet.ksu.edu

Kansas State University Agricultural Experiment Station and Cooperative Extension Service