

# A Calf Affected with Moniezia Infection and Its Therapeutic Management



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## **Abstract**

The current study documents the emergence of a Moniezia Species infection in a calf and its effective therapeutic therapy. An eight-month-old calf with a history of inappetence, weight loss, diarrhea, and the cooked rice appearance of lengthy segments of adult worms un the feces was brought to Upzilla Veterinary Hospital in Boalkhali, Chattogram. The triangular-shaped eggs of the Moniezia species were identifiable by microscopic analysis, validating the diagnosis. The calf was treated with Bol. Niclosam containing Niclosamide and Levamisole along with a zinc preparation and appetizer. Successful recovery after two weeks of treatment reported.

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**Key words:** Moniezia species, Weight loss, Cooked rice, Triangular shaped, Bol. Niclosam.

# Chapter 1

## Introduction

Bangladesh is a populous, heavily dependent on agriculture nation with low per capita income. Bangladesh's post-harvesting and agriculture processes both require livestock as a vital component. The majority (98%) of cattle in rural regions is raised by small-scale, landless farmers who need the money. (8)

Worldwide, animal diseases account for roughly 20% of production losses; however, in Bangladesh, these losses might reach 30% to 50%. One of the major challenges of raising livestock in Bangladesh, according to some, is parasitism. (9)

Infestations of parasites are the main factor preventing the population growth of livestock in Bangladesh. The hot, humid climate in Bangladesh often encourages the growth and survival of ecto-parasites and endo-parasites, which produce parasitic violence. The economic impact of parasitic infections on animals is significant.

Most of the cattle population in Bangladesh is from indigenous cattle breed or not very high quality genetic merit containing breeds. Most animals are reared in house under the age old traditional husbandry practices. Many cattle are overloaded with working pressure and most of them didn't get the proper nutritional requirement that a working cattle need. As results the general nutritional status of the cattle is in subnormal level, which greatly increase susceptibility towards various parasitic disease. (10)

For the majority of rural Bangladeshi people, cattle are one of the most essential livestock species regarding dairy, meat, manure, and drought power sources. They also play a significant part in Bangladesh's rural agricultural economy. Reduced milk production, loss of appetite, diarrhoea etc in cattle due to parasite infestation, which also results in improper absorption of crucial minerals like calcium and vitamins, are just a few examples of how gastro intestinal parasites affect the health and productivity.

Various helminths, such as trematodes, cestodes, nematodes, and other protozoan parasites, are among the gastrointestinal parasites. Cestodes, also known as tapeworms, are flat worms that can live in ruminants' gastrointestinal tracts. (1)

Adult tapeworms have a head or scolex, a neck and a segmented body known as proglottid which has a complete set of reproductive organs. The most prevalent intestinal tapeworms found in ruminants are of the *Moniezia* species, and they are found all over the world. The life cycle of the *moniezia* species must be completed with ruminants serving as the final host and oribatid mites as the intermediate hosts. Ingestion of the infected mites harboring *Moniezia* Cystercoids causes infection in the latter hosts to begin. The ruminant small intestine is where the larvae grow into adult worms and cause the development of *Monieziasis*, which leads to gastrointestinal illnesses and causes major financial losses to the livestock sectors. (2)(3)

Typically, *Moniezia* Species is categorized as having minimal pathogenicity. Pathogenicity is caused by the host's failure to exhibit distinct or severe symptoms. However, there has been noted that a discernible reduction in growth rate in infected calves. (3)

Upzilla Veterinary Hospital, Boalkhali of Chattogram district in Bangladesh is one of the most vulnerable Upzilla of parasitic infestations for its some of area are lowlands and swampy area, climatic conditions as well as weather of that region. This study will help to understand the *Moniezia* infection and its therapeutic management.

## Chapter 2

### Materials and methods

#### 2.1 Case history

A male crossbreed calf, eight months old and weighing 65kg, was brought to Upazila Veterinary Hospital in Boalkhali, Chattogram. At the time, the calf had a history of inappetence, diarrhea, and chronic weight loss. The calf was not dewormed or vaccinated in accordance with the standard protocol.

#### 2.2 Clinical Examination and Lab diagnosis

A thorough examination revealed a normal body temperature (102.1°F), pink mucus membranes, a heart rate of 105 beats per minute, and a breathing rate of 35 breaths per minute that was within the usual range. Direct fecal examination revealed the presence of cooked rice look of proglottids within feces and Microscopic examination revealed triangular shaped characteristics eggs, indicating that the calf is positive for *Moniezia* infection with gastrointestinal problems.



Fig 1: Gross examination of feces and cooked rice appearance

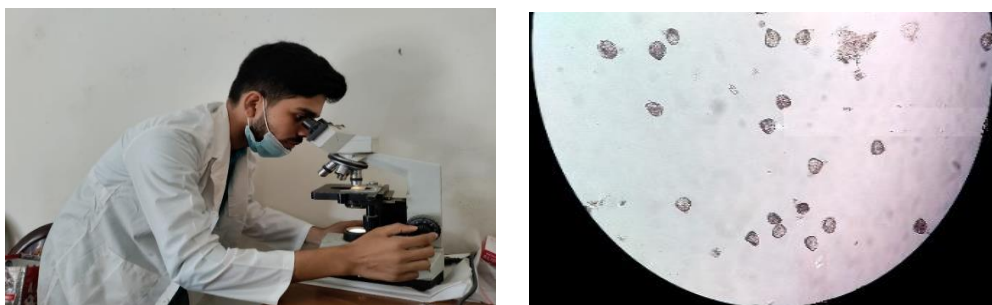


Fig 2: Microscopic examination of feces and Triangular shaped eggs



### **2.3 Treatment**

As for the treatment, it went like this: Bol. Niclosam Plus, containing Niclosamide and Levamisole, is taken once daily for three days, along with Bol. Zinc Vet, containing zinc in one bolus once daily for 10 days, and Pulv. AppeVet an appetizer, half of the sachet in 1.5 liters of drinking water twice daily for 7 days.

## Chapter 3

### Result and Discussion

The animal began to improve on the fifth day following treatment, and after two weeks of therapy, a full recovery was observed. Two weeks later, a second analysis of the fecal sample revealed that it had neither proglottids nor parasite eggs. (4)

The mature tapeworm is white in appearance and is made up of segments with a maximum width of 25 mm and a maximum length of 600 CM. A scolex (head) that is attached with the intestinal wall and it is mostly found in the small intestine. Their triangle-shaped eggs can be easily identified through fecal analysis. Every egg contains a single tapeworm embryo. (5)

Infection with *Moniezia* Species is relatively uncommon in older animals but quite common in calves during their earlier lifetime. In temperate regions, the summertime foraging oribatid mite vector activity can be linked with seasonal variation in the incidence of *Moniezia* infection as well as grazing nature of the animal.(3)

Heavy infections were typically associated with clinical Symptoms such as anemia, declination in growth, potbelly appearance, and rough coated hair.

The diagnosis is made by analyzing a sample of excrement that contains eggs or, more frequently, by looking for gravid proglottids, which resemble cooked rice. It should be noted that estimating fecal eggs is not a reliable indicator of the severity of *Moniezia* infection in ruminants because eggs are not present in feces until the proglottides have burst. The quantity of infection in this instance was likewise unrelated to the presence of eggs in the feces. (2)

The affected calf was successfully treated with a combine bolus preparation of Niclosamide and Levamisole at dose of 160mg per kg body weight. This results in complete removal of parasite segments in feces within three days.

The phosphorylation process in the cestode mitochondria is inhibited by niclosamide bolus. The proximal and scolex segments are destroyed by the medication both in vitro and in vivo. Because the loosened scolex might have been digested in the intestine, it might be tough to spot the scolex in the feces. (6)

The tapeworm's Inability to absorb glucose and the cestode's mitochondria's inability to complete oxidative phosphorylation are what give Niclosamide Bolus its cestocidal properties. The worms are killed by the lactic acid buildup that occurs as a result of the Krebs cycle being blocked. (6)

Levamisole functions as a ganglionic stimulant (cholinomimetic), inducing paralysis that results in the passive elimination of worms. It also inhibits the enzyme fumarate reductase, which reduces the amount of metabolic energy available to both immature and mature forms. (7)

## **Chapter 4**

### **Conclusion**

Although gastrointestinal (GI) parasitism by the *Moniezia* species typically only affects adults in a moderate way, it has a negative impact on the productivity and growth of sensitive animals, especially calves, which causes marginal farmers to lose money. The diagnosis was made based on the observation of gross adult mature worms in the feces, and the gross specimen was then examined under a microscope to confirm the diagnosis. The combination of niclosamide and levamisole, as well as supportive therapy, appropriate care, and management, can be used to successfully treat the affected animal.

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## **Biography**

The author Mohammad Robiul Hossen, son of Mohammed Samir Hossen and Kamrun Nahar ,passed his Secondary School Certificate (SSC) examination from Noapara Muslim High School, Noapara, Raozan,Chittagong, in 2013 and Higher School Certificate (HSC) examination from CUET College, Chittagong in 2015. Thereafter, he enrolled for Doctor of Veterinary Medicine (DVM) degree in Chattogram Veterinary and Animal Sciences University (CVASU), Bangladesh and now is an intern student in this university.