

RECURRENT RUMINAL BLOAT IN A NEONATAL CROSSBRED CALF – A CASE OF RUMINAL DRINKER DUE TO ESOPHAGEAL GROOVE DYSFUNCTION AND ITS MANAGEMENT

C. Jayanthi^{1*}, C. S. Arunaman² and G. Vijayakumar³

Department of Clinics
Madras Veterinary College
Tamil Nadu Veterinary and Animal Sciences University
Chennai - 600 007

ABSTRACT

Esophageal groove dysfunction is a fatal cause in neonatal calves if unattended at the early stage. In healthy suckling calves the milk should bypass the rumen and reticulum and enter abomasum which is the true stomach for enzymatic digestion of milk protein. In esophageal groove dysfunction the milk enters rumen where fermentation due to microbes leads to high accumulation of gas hence abdominal distension which proves fatal to the calf. An eight days old female crossbred calf solely on dam's milk was presented with left sided abdominal distension. On clinical examination the case was diagnosed to be a ruminal drinker due to esophageal groove dysfunction. The calf was relieved of gas by passing atraumatic flexible stomach tube and oral antibiotic to control bacterial fermentation. The calf was weaned gradually from dam's milk and allowed to feed with the Dam for rumen flora inoculation and early initiation of concentrate and roughage feeding. The calf was free of ruminal bloat post treatment.

Keywords: Ruminal drinker, Esophageal groove dysfunction, Neonatal ruminal bloat

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INTRODUCTION

Ruminal drinking is a condition that has been extensively reported in pre – ruminant calves, and is characterised by an insufficient esophageal groove reflex that causes ingested milk to spill into the

reticulum and / or rumen instead of entering the abomasums directly. In calves, milk that spills into the rumen undergoes rapid microbial fermentation producing lactic acid and other volatile fatty acids, and lowering the ruminal pH. This reduced pH predisposes the animals to ulceration and necrosis of the rumen mucosa, as well as maldigestion and recurrent tympany (Adetunji *et al.*, 2016). One of the common cause for high mortality rate among neonatal calves is ruminal bloat. In India calf mortality due

¹ Assistant Professor

* Corresponding author : vet_jayanthi@yahoo.com

² Associate Professor and Head

Department of Veterinary Medicine, Veterinary College and Research Institute, Theni.

³ Professor and Head

to bloat or tympany is 6.04% (Mandal *et al.*, 2019). This occurs when gas produced during fermentation builds up in rumen and is unable to escape. It can be life threatening and often requires prompt medical attention (Kaba *et al.*, 2018). This report presents a clinical case of calf being a ruminal drinker managed successfully without surgical intervention.

HISTORY AND OBSERVATION

An eight days old female crossbred (Jersey X Native Breed) calf was presented with severe distension of abdomen prominent on the left paralumbar fossa (Fig 1). History revealed that the calf was only on natural suckling of the dam's milk since birth. The calf was not fed with starter ration or concentrates or roughage at the time of presentation. The distension was noticed by the owner since two days. Since then, the calf was reluctant to walk and refused to suckle milk from the dam. On clinical observation, the coat was dry. The calf was dull and unable to walk normally. Breathing was shallow and rapid with congested conjunctival mucous membrane. The left paralumbar fossa was distended with a tympanic sound on simultaneous percussion and auscultation. Simultaneous succession and auscultation revealed fluid splashing sound. Dung was pasty and clay colored. Palpation of cervical esophagus revealed no abnormalities or foreign body. The rectal temperature was 39°C, heart rate was 170 bpm and respiratory rate was 55 per minute. The heart rate was rhythmic. The lymph nodes were palpable and the size was normal.

TREATMENT AND DISCUSSION

The differentiation of esophageal choke and abomasal bloat was based on the history and clinical observation. An atraumatic flexible stomach tube was passed orally after lubricating the tip with liquid paraffin. The tube was advanced slowly after proper restraining until free gas was relieved through the tube. The relieved gas had putrid odour, followed by putrid liquid being oozing through the oral tube. The stomach tube was slowly withdrawn. The tip of the tube had milk clots suggesting milk in the rumen. Oral tetracycline powder was administered to restrict microbial fermentation followed by 100 ml of liquid paraffin to prevent free gas formation. The owner was advised to report after three days and to continue milk until then. On the third day of presentation, there was moderate bloat and calf appeared to have improved. But, still, the calf was reluctant to suckle. The owner was advised to wean the calf and to gradually introduce concentrate and roughage feeding along with the dam. One week post introduction of concentrate feeding the bloat was less and the calf appeared better (Fig 2). After one month weight gain was noticed, the calf started ruminating and was totally weaned from dam's milk.

The most common cause of ruminal bloat in calves that solely consume milk, is failure of esophageal groove closure (Andrews *et al.*, 2004). For the first two weeks after birth, a calf is monogastric, a simple stomach animal, using only the

abomasum to digest the milk. Milk bypasses the rumen and reticulum to enter into abomasum, where digestion and absorption takes place. Milk entering into the rumen and reticulum is dangerous to the newborn calf hence the importance of esophageal groove in diverting milk from the esophagus into the abomasum. If calves suckled milk from a rubber nipple it usually passed into the abomasum, while to the rumen if it was drunk from a bucket concluding that the closure of the esophageal groove is triggered when the calf directly suckles the milk from a dam. In the present case the calf suckled milk but still was a ruminal drinker suggesting esophageal groove dysfunction.

In the present case, passing of stomach tube revealed milk clots (Fig 3, Fig. 4, Fig. 5) indicative of presence of milk in the rumen. The gas that was relieved

through the stomach tube suggests that the fermented gas was from the rumen and not from abomasum which was indicative of esophageal groove dysfunction. If the bloat was due to esophageal choke there would have been resistance in passing the stomach tube and recurrence of bloat would not have occurred after three days of follow up. Hence, abomasal bloat and choke were ruled out in the present case and diagnosed as ruminal drinker due to esophageal groove dysfunction.

Despite the primary cause of bloat being multifactorial, it is clear that the esophageal groove is not functional in those animals and it regresses when they start solid feeds (Braun and Brammertz, 2015) as observed in the presented calf. As the calf responded to medical management rumenostomy was not attempted.



Fig .1. Radiograph of distended calf abdomen showing frothy bloat



Fig .2. Calf after passing stomach tube relieved of bloat



Fig.3. Tip of the stomach tube with milk clots



Fig.4. Milk clots on the glass slide

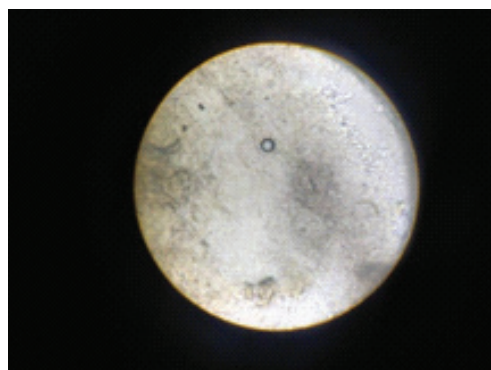


Fig.5. Rumen content with no active microflora on microscopical examination at 10X

CONCLUSION

The calves presented with recurrent bloat should be suspected for oesophageal groove dysfunction and are confirmed by presence of milk clot and fermented fluid in the rumen. Such calves are called ruminal drinkers and are to be encouraged to consume starter feed earlier than usual recommended age of 3 weeks of age to hasten rumen function and hence weaned is advised at earlier age. Surgical rumenostomy may be the only option to save the life of the calf when these management fails.

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