

Case Study

**MANAGEMENT OF SUB-ACUTE RUMINAL ACIDOSIS IN CROSS
BRED HF CATTLE**

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Abstract: Sub-acute ruminal acidosis (SARA) is a common disease in well-managed, high milk yielding dairy herds. It is characterised by repeated bouts of depressed rumen pH between 5.2 and 5.6. SARA in dairy cattle is a disorder of ruminal fermentation caused by the ingestion of large amounts of concentrates and inadequate amounts of fibre administered in order to increase the milk production in early lactation. Five crossbred Holstein Friesian cows in early lactation in a dairy herd were presented to Area Veterinary Hospital, Cheepurupalli with a history of lameness, mild diarrhoea, altered appetite and decrease in milk yield. The animals were prior treated with NSAIDS and liver tonics. Complete anamnesis was taken regarding the nutritional, breeding and management practices. Thorough physical examination revealed slight dehydration with decreased ruminal contractions. Faecal and blood examination revealed no parasitic involvement. Rumen fluid was collected from all the animals and analysed which revealed decrease in pH, motility and number of protozoa. The condition was diagnosed as Sub-acute ruminal acidosis (SARA) and the details will be discussed.

Keywords: SARA, Cellulolytic bacteria, Volatile fatty acids.

INTRODUCTION

Rumen pH fluctuates diurnally between nearly neutral before morning feeding and acidic after feeding. When cows are fed by high forage diets, rumen pH can be maintained between 6 and 7, which is considered to be the optimum for cellulolytic bacteria (Mould *et al.*, 1983). During early lactation, dairy cows experience the most challenging time both nutritionally and physiologically especially when the diet of these cows is switched from a dry cow diet containing high forage, to a lactating diet rich in grains. The feed intake of dairy cows increases gradually but cannot keep up with the increase of nutrition requirements for milk production. Furthermore, the capacity of absorption of ruminal VFAs is limited as the rumen papilla takes time to develop fully (Li S *et al.*, 2013). In practice, high energy density diets are formulated for early lactation cows in order achieve their milk production potential,

which puts the cows at a great risk of SARA. Generally, SARA occurs when ruminal pH stays in the range of 5.2 and 6 for a prolonged period. The present paper reports about the management of Sub-acute ruminal acidosis in five Holstein Friesian crossbred cows in a dairy herd.

OBSERVATIONS AND CLINICAL FINDINGS

Five Holstein Friesian crossbred cows in a dairy herd were presented to Area Veterinary Hospital, Cheepurupalli with the history of lameness, mild diarrhoea, altered appetite and decrease in milk yield from 8 days. Complete anamnesis revealed that animals were in early lactation and were being fed with a ration containing high concentrate with low fibre. Thorough physical examination revealed slight dehydration, decreased rumen motility and soiled perineum with other vital parameters in normalcy. Faecal examination was performed to rule out the gastrointestinal parasitic ova which were found to be negative except for watery acidic smell with undigested grain particles. Blood smear examination was carried which showed no evident pathological changes. Then rumen liquor was collected from all the cows by rumencentesis at the left paralumbar fossa and analysed for pH, protozoal number and protozoal motility. The rumen pH fell in a range of 4.9-5.4 and microscopic examination of rumen fluid showed absence of ruminal protozoa. Based on the anamnesis, clinical findings and rumen fluid examination, the condition was diagnosed as sub-acute ruminal acidosis.

TREATMENT AND DISCUSSION

The animals were treated symptomatically with Inj. Megludyne[®] (Flunixin meglumine) @ 1.1mg/kg body weight IM and Inj Avil[®] @ 10ml/day IM for 3 days to treat laminitis which can be attributed to the release of vasoactive substances like histamine, LPS endotoxins causing injury to the microvasculature of the corium. Inj. Rumeric[®] (containing cyanocobalamin, nicotinamide, choline bitartrate, D Panthenol₆, inositol, biotin, glycine, L-lysine and DL- methionine) @ 10ml/day IM was given for 3 days to support the treatment of rumen and liver dysfunction. The short chain fatty acids accumulated in the rumen during phases of acidosis in large amounts leads to rumenitis. Impairment of ruminal mucosa causes translocation of rumen bacteria to liver via portal blood flow resulting in liver abscess (Prasanth and Ajith kumar, 2016). Fat plus[®] (containing sodium acetate, sodium bentonite, *Asparagus racemosus*, *Saccharomyces cerivisiae*, *Zingiber officianale* and KCl) @ 100g/day PO was administered for one week to control rumen acidosis and maintain rumen microflora. Massive outflow of fermentable carbohydrates from the rumen causes post-ruminal

fermentation in intestine which subsequently alters the consistency of faeces (Prasanth and Ajith kumar, 2016). KCl in fat plus[®] absorbs the water in the faeces resulting binding of the faeces.

Two cows showed marked improvement in feed intake, with milk yield in 18 hours, third cow by 32 hours and fourth and fifth cow by 48 hours after onset of treatment. All the five cows were subjected for complete clinical and rumen fluid examination after 1 week of treatment which revealed absolutely normal cows with near normalcy in ruminal parameters. The owner was advised to increase the dietary fibre which improves saliva production for ruminal buffering and decrease the concentrates in the total mixed ration.

CONCLUSION

Sub-acute ruminal acidosis (SARA) is one of the most important metabolic diseases in modern dairy industry that impairs cow performance and health even well managed and high yielding dairy cows. Furthermore, it has concern of animal welfare reasons due to lameness and laminitis impact significantly on cow comfort and general well-being. Cows in the early lactation, primiparous cows, as well as cows grazing or fed with rapidly fermentable low fibre grass are in particular risk to develop SARA. The SARA has diverse and complex consequences, which include feed intake depression, fluctuations in feed intake, reduced diet digestibility, reduced milk yield, reduced milk fat percent, gastrointestinal damage, liver abscesses, and lameness. The preferred approach to prevent SARA is formulating adequate fibre in the diets, preparing diets with adequate particle size distribution and moisture content to reducing sorting. Feeding supplements such as yeast and exogenous buffer can be considered to stabilize rumen pH.

REFERENCES

- [1] Abdela, N., 2016. Sub-acute Ruminant Acidosis (SARA) and its Consequence in Dairy Cattle: A Review of Past and Recent Research at Global Prospective. *Achievements in the Life Sciences* 10(2), 187-196.
- [2] Fubini, S and Divers, T.J., Non infectious diseases of the Gastro intestinal tract 2008 In: *Rebhun's diseases of dairy cattle* 2nd Ed. Elsevier Health sciences Philadelphia: 134-136.
- [3] Li, S., Danscher, A.M., Plaizier, J.C., 2013 Subacute ruminal acidosis (SARA) in dairy cattle: new developments in diagnostic aspects and feeding management. *Canadian Journal of Animal Sciences* 94 (1) 353–364.
- [4] Mould F.L., Orskov, E.R and Mann, S.O., 1983 Associative effects of mixed feeds. 1. Effects of type and level of supplementation and the influence of rumen pH on cellulolysis in

vivo and dry matter digestion of various roughages. *Animal Feed Science Technology* 10(1):15-30.

[5] Prasanth, C.R. and Ajithkumar, S. Effect of sub-acute ruminal acidosis (sara) on milk quality and production performances in commercial dairy farms-a review, *International Journal of Science, Environment ISSN 2278-3687 (O) and Technology*, Vol. 5, No 6, 2016, 3731 – 3741.

[6] Radostits OM, Gay, CC, Hinchcliff, KW and Constable PD 2006 *Veterinary Medicine: A textbook of the diseases of cattle, horses, sheep, pigs and goats* 10th Ed. Elsevier Health Sciences: 314-324.