

Clinico-therapeutic management of ketosis in cow- a field case

Abstract

This paper deals with a clinical case in a HF cow with signs of ketosis, along with owner history, clinical symptoms and laboratory findings. Milk, urine and blood sample were collected for proper diagnosis of disease. Detection of ketone bodies in urine with Rothera's test was carried out. Therapeutic regimen was administered as per varied physiological conditions. Such medications as dextrose, steroids, vitamin B complex parenterally (all injected), along with oral gluconeogenic precursors and jaggery were administered. The case was treated successfully, with an excellent recovery.

Keywords: cow, ketosis, rothera's test, therapeutic management

Volume 8 Issue 5 - 2019

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Received: October 25, 2016 | **Published:** September 23, 2019

Introduction

Ketosis (Acetonemia, Ketonemia) is a common disease of dairy cows in early lactation caused by a negative energy balance that results in high concentrations of circulating nonesterified fatty acids (NEFAs), such as acetone, acetoacetate, and hydroxybutyrate (BHB). This disease is usually associated with fatty liver. Ketosis is a multifactorial disease also resulting in downer cow syndrome in adult cattle worldwide.¹ Ketosis causes substantial economic losses and in subclinical form is responsible for decline in milk production.² Ketosis develops as a metabolic disorder in dairy animals, caused by impaired metabolism of carbohydrates and volatile fatty acids leading to excessive production of ketone bodies, e.g. acetoacetic acid, beta-hydroxybutyric acid and their decarboxylation products, such as acetone and isopropanol.³ This clinical paper discusses one case of ketosis found in a cow, diagnosis of the case and treatment which was successful.

Case history

A HF cow of five and half year old, in the 3rd lactation, 250kg body weight, recently calved (10 days ago). According to its owner history, the cow had undergone dystocia and foetus was removed manually causing severe internal trauma to cow. Owner reported that the cow was a high milk yielder. Milk production had reduced dramatically in the three to four days before the examination. Body weight also reduced after parturition. Gradually signs of anorexia had been observed for four to five days, as well as refusal to eat good quality feed, but instead picking poor quality hay or straw bedding. The cow lost weight rapidly and had a typical sweetish smell to its breath, urine and milk after parturition. The cow also started showing circling movement, mania and seizures, such as tetanus, noticed since the night before the examination.

Clinical and laboratory findings

The animal was weak, dehydrated and walked slowly. Rectal temperature was 102°F, pulse rate 60/min was found in which

temperature and pulse rate was within normal range that is 100-102.5°F, 42-60 per minute respectively but respiration rate found 45/minute that was more than normal range is (16- 22/min) according to Chakrabarti⁴ Ruminant movements were 2-3/min. The cow had a typical acetone smell to its breath, urine and milk. On per rectal examination, faeces were found dry and covered with mucus. Milk and urine samples clearly showed positive reaction with Rothera's reagent. Blood sample was examined for blood glucose level that was 30mg/dl which was less than normal level i.e. 40mg/100 ml- blood.⁴ Also, this cow with ketosis might have had hypocalcaemia, because the animal had not been standing since the previous night, but after laboratory tests its serum calcium level was found to be within the normal range.

Diagnosis

Diagnosis was based on presenting owner's history, clinical signs and laboratory tests, such as detection test for ketone bodies in urine and milk. Blood test for the detection of blood glucose level and serum test for calcium and phosphorus level was also conducted.

Treatment and discussion

Treatment was started immediately. The cow was treated with 500ml of 50% dextrose solution, intravenously, for 3 days, to provide an immediate energy source. Vetalog (Triamcinolone), 5ml intramuscular, was injected. Glucocorticoids reduce ketone body formation by utilization of Acetyl-CoA and raising blood glucose level by making greater availability of glucose precursor in the liver.⁴ Injection of liver extract with B-complex Tribivet 10ml intramuscular, once a day for 5 days, was given as supportive therapy. Feeding with jaggery, 100 g, was also recommended for five days as an instant source of energy. Himalya Bithsa Powder 50 g orally, twice a day for 5 days, and two Bolus Rumentas, twice a day for 5 days, were also advised to the owner for improving appetite and feed intake by the animal. The cow showed health improvement signs on the second day of treatment, and recovered successfully after three days treatment. Cases of ketosis may occur in high milk yielding, good health

condition buffaloes and crossbred cows in their 3rd and 4th lactation. Similar findings were reported by Teli⁵ and Tufani.⁶

Acknowledgments

None.

Conflicts of interest

The author declares that there are no conflicts of interest.

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