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Therapeutic management of bottle jaw syndrome in cattle associated with bovine fasciolosis

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Abstract

Two sick cattle, 2.5-6 years old were examined and the anamnesis revealed gradually increasing swelling under the jaw, inappetance and infrequent diarrhea. The coprological examination revealed the presence of eggs of *Fasciola* spp. The haematological studies revealed lower values of haemoglobin (Hb), total erythrocyte count (TEC) and packed cell volume (PCV), and the biochemical studies revealed hypoproteinemia, hypoalbuminemia, and increased values of alanine transaminase (ALT), aspartate transaminase (AST), and total bilirubin. The cows were treated with clorsulon in combination with ivermectin along with hematinics and hepato-protective drug as supportive therapy, and revealed complete resolutions of clinical signs within 3 weeks of treatment.

Keywords: therapeutic management, bottle jaw syndrome, cattle associated, bovine fasciolosis

Introduction

“Bottle jaw”, a non-inflammatory fluid accumulation in the inter-mandibular space, noticed in cattle of all age groups. It is not a specific disease, but it is usually a syndrome of another disease resulted from hypoproteinemia, and mainly caused by malnutrition and gastro-intestinal helminthes parasites especially with liver fluke and stomach worm diseases (Hossain *et al.*, 2005) [12]. Among these gastro-intestinal helminthes, Bovine fasciolosis a pathogenic digenean parasitic disease, commonly known as liver fluke, is caused by two species of trematode: *Fasciola gigantica* and *Fasciola hepatica*. Both species are transmitted by the snails of the family Lymnaeidae, (Yadav *et al.*, 2015) [20] which act as intermediate host of Fasciolosis. The ingestion of metacercariae (infective stage) contaminated vegetations, results in entry of infection (Bista *et al.*, 2018) [3]; further, the hepatic migration of juvenile and immature flukes, which mature as adult flukes in the bile ducts (Elliott *et al.*, 2015) [8], causes hemorrhage and liver damage (Tsega *et al.*, 2015) [19], resulting into significant hemato-biochemical changes.

The disease may occurs in acute, sub-acute and chronic forms but chronic form of disease is more common in cattle (Alemneh *et al.*, 2019) [2] with clinical manifestation of weight loss, anemia, diarrhea and development of sub-mandibular edema due to hypoproteinemia (Chakraborty and Pradhan, 2015) [4] or hypo-albuminaemia (Abebe *et al.*, 2010) [11], causing huge economic loss in terms of reduced milk yield and fertility in dairy cattle (Schweizer *et al.*, 2005) [17]. Thus, keeping in view the severity of the disease and economic losses, the present communication reports successful therapeutic management of bottle jaw syndrome in cattle associated with bovine fasciolosis.

Case history and Observation

Two sick cattle 2.5-6 years old, were examined on request of owner by Block Animal Husbandry Officer, Parsa, Saran district (Bihar). Anamnesis revealed gradually increasing swelling under the jaw, inappetance and infrequent diarrhea. Furthermore, the animals were on stall fed, but regularly offered harvested grasses from water lodging area. On clinical examination, the temperature, pulse and respiration were in normal range, but the mucous membranes of eyes were pale and edematous swelling under the jaw (bottle jaw) was observed (Figure-1). Based on history and clinical examination the case was tentatively diagnosed as Bovine Fasciolosis. Further, confirmation was done by coprological and hemato-biochemical evaluation. Direct smear method was used for fecal examination (Yadav *et al.*, 2015) [20], which revealed the presence of eggs of *Fasciola* spp. (Figure-2). The haemoglobin (Hb), packed cell

volume (PCV) and total erythrocyte count (TEC) were 7.6 g/dl, 22% and $3.12 \times 10^6 /\mu\text{L}$ respectively, which were indicative of anemia (Radostits *et al.*, 2006) [16]. Hypoproteinemia and hypoalbuminemia was evidenced by lower total protein and albumin values (4.26 and 1.2 gm/dl respectively). Moreover, increased ALT, AST and Total bilirubin (48, 152 IU/L and 1.8 mg/dl respectively) values was suggestive of compromised hepatic function.

Treatment and Discussion

The cows were treated with a single dose of Ivermectin + Clorsulon Injection (Hitek™ F) @1 ml per 50 kg body weight by S/C route and haemetinics (Sharkoferol, 30 g orally) along with liver tonic (Broton Vet, 50 ml orally) daily for 21 days. After 3 weeks of treatment, the owner reported complete recovery of the clinical signs.

The clinical signs in the present study were in accordance with El-Aziem Hashem and Mohamed, (2017) [6]. The evaluation of haemato-biochemical parameters can help to predict the effect of disease on the blood components. Like present case, compromised hemato-biochemical findings were reported by many workers (Hossain *et al.*, 2006; Egbu *et al.*, 2013; El-Aziem Hashem and Mohamed, 2017; Okoye *et al.*, 2013; Matanovic *et al.*, 2007 and Thomas, 1982) [11, 5, 6, 15, 13, 18].

A typically developed “bottle jaw” syndrome could be as a result of massive *Fasciola* infection causing liver destruction leading to cessation of protein synthesis (El-Aziem Hashem and Mohamed, 2017) [6]. The values of ALT, AST and total bilirubin were higher and could be related to the hepatic dysfunction (Elshahawy *et al.*, 2021) [9] and hepatic cell damage caused by migration of liver flukes through the hepatic parenchyma toward the bile duct (Nasreldin and Zaki, 2020) [14]. Currently, a wide range of fascioliscides such as albendazole, triclabendazole, rafoxanide, oxclozanide and clorsulon are available with varying efficacy in treating liver fluke in ruminants. In the present study, clorsulon in combination with ivermectin along with hematitics and hepato-protective drug as supportive therapy revealed complete resolutions of clinical signs within 3 weeks of treatment. Clorsulon is found to be highly effective (> 90%) with a high margin of safety in cattle against adult flukes when given as a subcutaneous injection at a dose rate of 2 mg/kg body weight (Fairweather and Boray, 1999; Elitok *et al.*, 2006) [10, 7] through unique action of disrupt glycolysis. Hossain *et al.*, (2005) [12] also observed complete recovery within 4 weeks of treatment by using anthelmintics followed by hematitics in parasitic bottle jaw cases in calves. It is concluded that, two clinical case of bottle jaw syndrome associated with fasciolosis in cattle was presented and successfully treated with anthelmintics (Ivermectin + Clorsulon Injection) and supportive therapy.



Fig 1: Showing bottle jaw syndrome (Red Arrow mark)



Fig 2: Egg of *Fasciolasp.*



Fig 3: Resolution of bottle jaw syndrome (3 week post treatment)

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