Therapeutic management of anemia due to trypanosomosis in dogs

Abstract

Trypanosomosis is one of the fatal diseases in canines. Inappropriate usage of the trypanosomacidal drugs leads to development of the resistance organisms. Present communication report the successful treatment of the clinical trypanosomosis with two doses of injection diminazene aceturate at the rate of 3.5mg/kg body weight intramuscularly. Two dogs with clinical trypanosomosis were noticed with the signs of fever; tachycardia and tachypnea congested mucus membranes, corneal opacity and enlarged lymph nodes. Dogs revealed lowered the red blood cell count, hemoglobin, packed cell volume, serum total protein; albumin and glucose levels. Trypanosoma evansi organisms were noticed in the blood smears. The clinical and biochemical improvement was recorded in both the dogs and dogs were free from anemia after one month of therapy.

Keywords: anaemia, trypanosoma evansi, dog, diminazene aceturate

Introduction

Trypanosomosis is a haemoprotezoan disease of domestic and wild animals, spread by tabanid flies bites. The disease generally causes fever, anemia, myocarditis, corneal opacity and it is a fatal disease in canines.1 Now a day’s many numbers of trypanosomacidal drugs are available including suramin, quinapyramine and diminazene. But, a single dose of the drug is not effective for horses, mules and dogs since diminazene aceturate neither crosses the blood-brain barrier nor insufficient doses were unable to control the T. evansi infection.2,3 Present communication; put a record on the therapeutic efficacy of two doses of diminazene aceturate injections to treat dogs with T. evansi infection.

Materials and methods

Two adult dogs were presented to the Hospital with a history of inappetence, dullness, progressive emaciation, corneal opacity, congested mucus membranes, and persistent fever. Both the dogs were treated with antibiotics and antipyretics at local hospitals with partial relief of symptoms. Clinical examination of the dogs revealed elevated rectal temperature, pulse rate, respiratory rate; pale and congested mucous membranes, corneal opacity, bilateral lacrimation and generalized debility (Figures 1 & Figure 2). Peripheral blood was collected and examined under light microscopy for haemoprotozonas which revealed the presence of motile trypanosomes. Microscopic examination of Giemsa stained blood smear revealed the presence of Trypanosoma evansi organisms in between the red blood cells (Figure 3). Further blood was collected for haematological and biochemical analysis.4 Dogs were treated with two doses of injection diminazene aceturate @3.5mg/kg body weight intra muscularly at 96hours interval, inj. meloxicam @0.3mg/kg body weight subcutaneous for first three days, five doses of inj. dextran (imferon) 10mg/kg body weight intramuscularly at 48hours interval and oral supplementation of iron containing syrup (Dexorange) @10gram per day daily. Post-treatment, the parasitemia was estimated by direct microscopic examination of blood and stained smears.

Figure 1 Dog suffering with trypanosomosis-congested bulbar conjunctiva

Figure 2 Dog suffering with trypanosomosis-corneal opacity.
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2. Results and discussion

Microscopic examination of stained blood smears.

The severity of canine trypanosomosis ranges from acute, sub-acute to chronic forms. In dogs an acute and fatal type is commonly seen and death possibly occurs in 2-4 weeks after infection. During the course of pathogenesis, organisms enter host cells after infection, multiplies sub-clinically, escapes the immune system and parasitemia develops within a few days and peaks 2 to 3 weeks post-infection. During the chronic infection, progressive weakness, anorexia, anaemia, intermittent fever, conjunctivitis, swelling of limbs, enlarged superficial lymph nodes and bilateral corneal opacity are noticed. Haematobiochemical findings observed in the present study were in accordance with the previous studies and the anaemic changes are attributable to extra vascular destruction of red blood cell which may be through the process of erythropagocytosis or metabolic product and toxins liberated from the parasites. Hypoglycaemia was noticed in these dogs and it is due to utilization of blood glucose by parasites in circulation. Observed reduced serum albumin levels were due to decreased liver biosynthesis and progressive loss of albumin in urine. Due to tissue damage and kidney dysfunction, uremia and elevated creatinine levels were noticed in the present study. Diminazene aceturate is the commonly used drug to control trypanosomosis in animals in Africa which has been in use for over 40 years. Mechanism of action of this drug involved the disruption of DNA synthesis, inhibition of adenosylmethionine decarboxylase or related processes. Recently, diminazene aceturate resistant Trypanosoma evansi organisms isolated from a buffalo. Two doses of diminazene aceturate were given intra muscularly at a dosage of 3.5mg/kg body weight were effective for T. evansi infections in dogs.

Table 1 Haematological and biochemical assessment during the treatment

<table>
<thead>
<tr>
<th>Parameters</th>
<th>0th Day</th>
<th>7th-9th Day</th>
<th>14th-17th Day</th>
<th>21st Day-22nd Day</th>
<th>28th Day-33rd Day</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dog-1</td>
<td>Dog-2</td>
<td>Dog-1</td>
<td>Dog-2</td>
<td>Dog-1</td>
</tr>
<tr>
<td>Hb(gm%)</td>
<td>6</td>
<td>5.4</td>
<td>7.1</td>
<td>6.6</td>
<td>8.4</td>
</tr>
<tr>
<td>PCV(%)</td>
<td>18</td>
<td>17.4</td>
<td>23</td>
<td>19</td>
<td>26</td>
</tr>
<tr>
<td>Albumin(g/dL)</td>
<td>1.79</td>
<td>1.62</td>
<td>2.1</td>
<td>1.68</td>
<td>2.7</td>
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<tr>
<td>Total protein(g/dL)</td>
<td>5.43</td>
<td>5.66</td>
<td>7.21</td>
<td>7.22</td>
<td>7.8</td>
</tr>
<tr>
<td>Glucose(mg/dL)</td>
<td>53</td>
<td>68</td>
<td>70</td>
<td>54</td>
<td>110</td>
</tr>
</tbody>
</table>

Conclusion

Uneventful recovery was noticed in dogs suffering from anemia caused by trypanosomosis by using two doses of diminazene aceturate along with the iron supplements.

Acknowledgements

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Conflicts of interest

The author declares there are no conflicts of interest.

References


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