Ocular manifestations in cattle due to tropical theileriosis

M.R. Aslani and M. Mohri
Department of Clinical Studies,
School of Veterinary Medicine,
Ferdowsi University of Mashhad, P.O.Box 91775-1793, Mashhad, Iran

Abstract
A total of 140 cases of tropical theileriosis were diagnosed in different breeds of cattle from 1996-1999 in Mashhad, Iran. Ocular manifestations including subconjunctival haemorrhages, exophthalmos and chemosis were observed in 49, 9 and 5 cases, respectively. The incidence of exophthalmos was higher in cattle under 6 months of age than other age groups.

Keywords: Theileria annulata, Exophthalmos, Subconjunctival haemorrhage, Cattle.

Introduction
Infection affects principally the lymphoid tissues and the red blood cells causing enlargement of peripheral lymph nodes and progressive anaemia. Other clinical signs include fever, anorexia, icterus, weakness, dyspnoea and some digestive disturbances (Robinson, 1982). Unusual forms of the disease such as cutaneous lesions and exophthalmos have also been described (Ahourai et al., 1988). The present communication describes ocular manifestations in tropical theileriosis in cattle.

Materials and Methods
During the period of 1996-1999, 140 cases of bovine tropical theileriosis were diagnosed in the Clinic of Large Animal Internal Medicine of the University of Mashhad on the basis of clinical signs and presence of pioplastic forms of the parasite in peripheral blood smears and schizonts in biopsyed smears of enlarged lymph nodes. Ocular manifestations of the disease were recorded in these animals and the data were analysed using Chi-square test.

Results and Discussion
Petechial and/or ecchymotic haemorrhages were observed on various parts of the conjunctiva including the mucosa of eyelids, sclera and nictating membrane (Fig. 1). Exophthalmos were mild to severe (Fig. 2). In two cases with severe exophthalmos there were complete protrusion of eyeball leading to necrosis and ulceration of ocular tissues and complete blindness (Fig. 3). Exophthalmos were bilateral and symmetrical with an exception in a 3 month old Holstein calf, which showed involvement of both eyes but unilateral severe exophthalmos (Fig. 4). In a few cases, bilateral chemosis was observed in conjunctival folds of eyelids of exophthalmos was significantly higher in age groups below 6 months (P<0.05) (Table 1). There was no significant difference between breeds in relation to ocular lesions (Table 2).

In T. annulata infection, the lymph nodes of the affected cattle undergo a dramatic increase in total cellularity. The cellular response to the parasitised cells also causes the development of a large number of uninfected blast cells (Irvin and Morrison, 1987). Due to this process non-lymphoid tissues such as skin, liver, kidneys and abomasum become the sites for accumulation of parasitised cells (Uilenberg, 1981; Irvin and Morrison, 1987). In the course of the disease periorbital tissues are affected due to accumulation of lymphoblastoid cells in ocular muscle and retrobulbar fats (Baharsefat et al., 1977). This process resulted in enlargement and protrusion of the eyeballs. Exophthalmos,

Table 1: Ocular manifestations in different age groups of cattle due to tropical theileriosis

<table>
<thead>
<tr>
<th>Age</th>
<th>Cattle</th>
<th>Subconjunctival haemorrhage</th>
<th>Exophthalmos</th>
<th>Chemosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;6 month</td>
<td>48</td>
<td>13 (27.6)</td>
<td>8 (16.6)*</td>
<td>2 (4.1)</td>
</tr>
<tr>
<td>6 months to</td>
<td>81</td>
<td>30 (37.0)</td>
<td>5 (6.2)</td>
<td>3 (3.7)</td>
</tr>
<tr>
<td>2 year</td>
<td>58</td>
<td>21 (36.2)</td>
<td>5 (8.9)</td>
<td>None</td>
</tr>
<tr>
<td>2 year &lt;</td>
<td>11</td>
<td>9 (81.8)</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Total</td>
<td>161</td>
<td>90 (55.8)</td>
<td>18 (11.2)</td>
<td>5 (3.1)</td>
</tr>
</tbody>
</table>

Figures in parenthesis represent per cent
*Significant difference (P<0.05)
Subconjunctival hemorrhage in a 3 year old Holstein cow

A 2.5 month-old Holstein calf showing bilateral moderate exophthalmoses

Bilateral severe exophthalmoses in a 2 month-old Holstein calf with extensive damage

Unilateral severe exophthalmoses in a 3 month-old Holstein calf

Fig. 1

Fig. 2

Fig. 3

Fig. 4

Scleral oedema (chemosis) in a 18 month-old Holstein-native cross-bred heifer

Table 2: Ocular manifestations in different breeds of cattle due to tropical theileriosis

<table>
<thead>
<tr>
<th>Breed</th>
<th>Cattle</th>
<th>Subconjunctival haemorrhage</th>
<th>Exophthalmos</th>
<th>Chemosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Holstein</td>
<td>58</td>
<td>17 (29.3)</td>
<td>4 (6.8)</td>
<td>2 (3.4)</td>
</tr>
<tr>
<td>Cross-bred</td>
<td>76</td>
<td>28 (36.6)</td>
<td>5 (6.5)</td>
<td>3 (3.9)</td>
</tr>
<tr>
<td>(Holstein-native)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Native</td>
<td>6</td>
<td>4 (66.6)</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Total</td>
<td>140</td>
<td>49 (35.0)</td>
<td>9 (6.4)</td>
<td>5 (3.5)</td>
</tr>
</tbody>
</table>

Figures in parentheses represent percent.

is in agreement with previous reports (Baharsefat et al., 1977; Ahourai et al., 1988). Haemorrhage was the most common ocular manifestation in affected animals and this could be attributed to the rich vascularity of the conjunctival mucous membrane.

References


