

مخبره انوار در مشهد

Ocular manifestations in cattle due to tropical theileriosis

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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, exophthalmoses and chemosis were observed in 49, 9 and 5 cases, respectively. The incidence of exophthalmoses 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 exophthalmoses 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 piroplasmic forms of the parasite in peripheral blood smears and schizonts in biopsied 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 echymotic haemorrhages were observed on various parts of the conjunctivae including the mucosa of eyelids, sclera and nictating membrane (Fig. 1). Exophthalmoses were mild to severe (Fig. 2). In two cases with severe exophthalmoses there were complete protrusion of eyeball leading to necrosis and ulceration of ocular tissues and complete blindness (Fig. 3). Exophthalmoses were bilateral and symmetrical with an exception in a 3 month-old Holstein calf, which showed involvement of both eyes but unilateral severe exophthalmoses (Fig. 4). In a few cases,

bilateral chemosis was observed in conjunctivae of eyelids of sclera (Fig. 5). Statistical analysis showed that age group of exophthalmoses was significantly higher than age group 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 Morisson, 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. Exophthalmoses,

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

| Age | Cattle | Subconjunctival haemorrhage | Exophthalmos | Chemosis |
|--------------------|--------|-----------------------------|--------------|----------|
| <6 month | 48 | 13 (27.6) | 8 (16.6)* | 2 (4.1) |
| 6 months to 2 year | 34 | 12 (35.2) | 1 (2.9) | 3 (8.8) |
| 2 year < | 58 | 24 (41.3) | None | None |
| Total | 140 | 49 (35.0) | 9 (6.4) | 5 (3.5) |

Figures in paranthesis represent per cent

*Significant difference ($P < 0.05$)

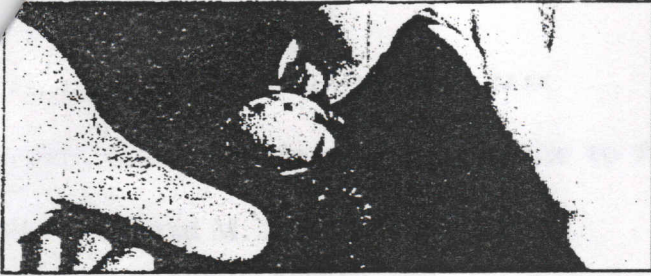


Fig. 1 Subconjunctival echymotic haemorrhage in a 3 year old Holstein cow



Fig. 2 A 2.5 month-old Holstein calf showing bilateral moderate exophthalmoses



Fig. 3 Bilateral severe exophthalmoses in a 2 month-old Holstein calf with extensive damage

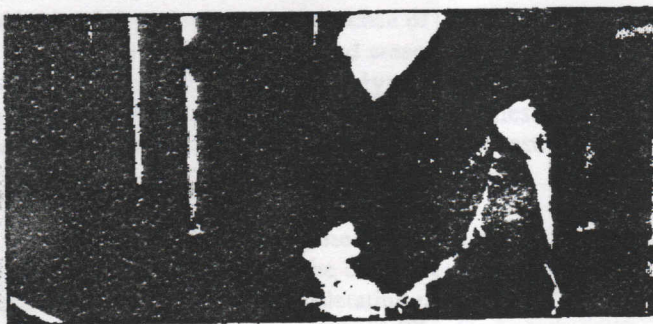


Fig. 4 Unilateral severe exophthalmoses in a 3 month-old Holstein calf

as recorded in the present study, had also been considered to be induced by lymphoid cell infiltration (Ahourai *et al.*, 1988). Exophthalmos was more frequent in affected calves below 6 months than in other age groups and this finding

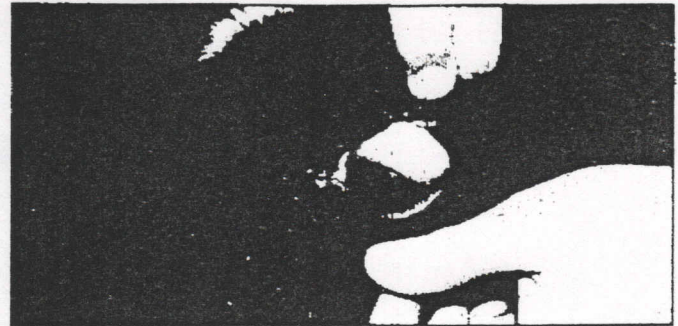


Fig. 5 Scleral oedema (chemosis) in a 18 month-old Holstein-native cross-bred heifer

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

| Breed | Cattle | Subconjunctival haemorrhage | Exophthalmos | Chemosis |
|------------------------------|--------|-----------------------------|--------------|----------|
| Holstein | 58 | 17 (29.3) | 4 (6.8) | 2 (3.4) |
| Cross-bred (Holstein-native) | 76 | 28 (36.6) | 5 (6.5) | 3 (3.9) |
| Native | 6 | 4 (66.6) | None | None |
| Total | 140 | 49 (35.0) | 9 (6.4) | 5 (3.5) |

Figures in paranthesis represent per cent

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

- Ahourai, P., Hooshmand-Rad, P., Ezzi, A., Gholami, M.R., Moghadam, H.A. and Hashemi-Fesharaki, R., 1988. Clinical and patho-anatomical studies on cases of theileriosis in calves histopathologically confusable with juvenile leucosis. *Archive Inst. Razi*, 38/39: 11-17.
- Baharsefat, M., Amjadi, A.R., Hashemi-Fesharaki, R., Ahourai, P. and Arabi, I., 1977. Unusual cases of *Theileria annulata* infection in calves. *Archive Inst. Razi*, 29: 47-52.
- Irvin, D. and Morrison, W.I., 1987. Immunopathology, immunology and immunoprophylaxis of *Theileria* infections. In: E.J.L. Soulsby (Ed) *Immune response in parasitic infections: Immunology, immunopathology and immunoprophylaxis*. Vol. III, Protozoa, London, CRC Press. pp. 224-259.
- Robinson, P.M., 1982. *Theileria annulata* and its transmission - A review. *Trop. Anim. Hlth. Prod.*, 14: 3-12.
- Uilenberg, G., 1981. *Theileria* infection other than East Coast Fever. In: Ristic, M. and McIntye, I. (Ed) *Diseases of Cattle in Tropics*, London, Martinus Nijhoff Publishers, pp. 411-427.