Acute Bilateral Exophthalmos in Crossbred Calves Affected with Bovine Tropical Theileriosis

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Abstract
Exophthalmos is bulging of eyeball anteriorly out of the orbit. Acute bilateral exophthalmos is a condition observed mostly in the calves affected with bovine tropical theileriosis. Total 45 cases of tropical theileriosis in crossbred cattle were studied in present investigation. Ocular manifestations including sub-conjunctival haemorrhages, exophthalmos and chemosis were observed in 32 (71.1 per cent), 5 (11.1 per cent) and 1 (2.2 per cent) cases, respectively. The condition of exophthalmos was observed in calves below four months of age.

Key words: Bovine Tropical Theileriosis, Exophthalmos, Calves

Exophthalmos is bulging of eyeball anteriorly out of orbit. Since orbit is closed off posteriorly, medially and laterally, any enlargement of structures will cause anterior displacement of eye. Acute bilateral exophthalmos is a condition in calves, affected with bovine tropical theileriosis which is a tick-borne disease, caused by Theileria annulata. It affects lymphoid tissues and red blood cells leading to enlargement of peripheral lymph nodes and progressive anaemia (Radostits et al., 2007). This disease caused economic losses to dairy farmers (Minjauw and McLeod, 2003). The present paper reports ocular manifestations in tropical theileriosis in cattle.

Materials and Methods
Out of total 676 cases, 45 clinical cases were diagnosed as bovine tropical theileriosis on the basis of clinical signs and presence of organism in the red blood cells during examination of peripheral blood smears. The clinical signs of the disease were recorded and data were analyzed. Ophthalmic examinations of the eyes in respect of symmetry, confirmation were carried out with least restraint head with the help of ophthalmoscope.

Results and Discussion
Out of total 676 cases, 45 cases were diagnosed as tropical theileriosis in crossbred cattle in present investigation. Ocular manifestations including sub-conjunctival haemorrhages, exophthalmos and chemosis were observed in 32 (71.1 per cent), 5 (11.1 per cent) and 1 (2.2 per cent) cases, respectively. Petechial haemorrhages were observed on various parts of the conjunctiva, including the mucosa of eyelids, sclera and nictitating membrane. Exophthalmoses were mild to severe. In severe exophthalmos, there was complete protrusion of eyeball leading to ulceration of the ocular tissues and blindness. Exophthalmoses were bilateral and symmetrical. The conjunctiva was hyperemic with sub-conjunctival petechial haemorrhages. Sub-conjunctival oedema of the eyelids and around the orbits with muco purulent discharge was also evident. Bilateral chemosis was observed in conjunctiva, eyelids or sclera only in one case. Analysis of the data showed that the condition of exophthalmos was observed in crossbred calves below four months of age. These findings are in agreement with that o-ani and Mohri (2002) and Sudan et al. (2012).

The other most common clinical signs observed in these cases included fever (103 - 106 °F) (100 per cent cases), unilateral or bilateral swelling of pre-scapular, parotid and pre-femoral lymph nodes (89 percent), lacryma-
tion (71.1 per cent), anaemia (42.2 per cent), diarrhoea (42.2 percent), dyspnoea (20 per cent), depression (66.6 per cent), inappetance (100 per cent), haemoglobinuria (4.44 per cent), convulsions and torticollis (2.22 per cent each). Similar findings have also been reported by Muhammad et al. (1999).

Out of the 5 cases showing exophthalmos, 3 were treated successfully with inj. Buparvaquone @ 2.5 mg/kg b. wt. i.m. once, inj. Oxytetracycline @ 15 mg/kg b. wt. i.m., O.D. for 3 days, inj. Meloxicam + paracetamol @ 1 ml/10 kg b. wt. i.m., b.i.d. for 3 days, inj. vitamin B complex 2-3 ml i.m., O.D. for 5 days, inj. Mannitol 20% @ 40 gm/50 kg b. wt. i.v. and inj. Ivermectin 0.2 mg/kg b.wt. s.c. once. Ophthalmic preparation containing potassium iodide, calcium chloride and sodium chloride, moxifloxacin + dexamethasone and carboxymethyl cellulose eye drops were used topically. Other cases without exophthalmos also responded (91.1 percent) to above treatment except inj Mannitol and ophthalmic preparations. Almost similar findings have also been reported by Muhammad et al. (loc cit.).

In congenital *T. annulata* infection, the organism may enter into brain through foetal circulation and increase vascular permeability resulting in an increased intra-orbital pressure and protrusion of eye ball in neonatal calves. It was believed that the endothelial cells of the fine ocular blood vessels of the orbit were the probable site of multiplication of the pathogen congenitally acquired from the dam (Sudan et al., loc cit.) Petechial haemorrhages were the most common ocular manifestation in affected animals and this could be attributed to the rich vascularity of the conjunctiva (Aslani and Mohri, loc cit.). In the course of the disease, periorbital tissues are affected because of accumulation of the lymphoblastoid cells in ocular muscles and retrobulbar fat. It leads to enlargement and protrusion of eyeball. Exophthalmos are also considered to be induced by lymphoid cell infiltration.

Etiology of exophthalmos is multifactorial. Apart from *T. annulata* infection, exophthalmos may be due to slow developing ophthalmic neoplasm (lymphosarcoma), retrobulbar abscess, post orbital cyst/ granuloma or sweet clover poisoning (Aiello and Mays, 1998; Malatestinic, 2003 and Nagy, 2014). In these conditions, the exophthalmos is usually unilateral, develop slowly and later in the life. Fernandes et al. (2000) reported unilateral prolapse of the ocular globe with palpebral paralysis and corneal opacity or hemorrhagic and ulcerative “traumatic keratitis and conjunctivitis in young calves with pituitary abscess associated with the use of a controlled suckling device. Dexamethasone (@30 ug/kg s.c. twice daily) administration appeared to increase deposition of retrobulbar adipose tissue resulting in a progressive exophthalmos in holstein calves (Towsend et al., 2003). Exophthalmos is also caused by disorders of thyroid gland and orbital tumor in man and animals.

**Summary**

Total 45 cases of tropical theileriosis were studied in crossbred cattle in present investigation and data were analysed. Ocular manifestations including sub-conjunctival haemorrhages, exophthalmos and chemosis were observed in 71.1 per cent, 11.1 per cent and 2.2 per cent cases, respectively. The condition of exophthalmos was observed in calves below four months of age.

**References**


