

TREATMENT OF CONJUNCTIVITIS IN PUMA CUBS IN LAHORE ZOO, PAKISTAN

S. Shahzad^{1*}, M. B. Saleem¹, A. K. Mahmood², S.Y. Shelly³, S. S. Ahmad⁴, Z. Tariq⁵ and Z. Qadir⁵

¹Lahore Zoo Lahore, Pakistan,

²Pet Center, University of Veterinary and Animal Sciences Lahore Pakistan.

³Department of Zoology, Lahore College for Women University, Lahore, Pakistan.

⁴Department of Clinical Medicine and Surgery, University of Veterinary and Animal Sciences, Lahore, Pakistan

⁵University of Veterinary and Animal Sciences Lahore Pakistan

*Corresponding Author's Email: samuel.vet78@yahoo.com

ABSTRACT

Conjunctivitis is an inflammation of the conjunctiva, often called pink eye and is common in young felids wild, captive or domestic. Two, 2½ months old puma cubs were reported with conjunctivitis at Lahore Zoo. They appeared dull and sluggish with protruded third eyelids along with ocular discharge and slight corneal opacity in both eyes. The cubs were treated with antibiotics and supplemented with vitamin A. Cubs responded the treatment within three days and recovered completely in four weeks.

Keywords: conjunctivitis, *puma* cub, felids, Lahore zoo.

INTRODUCTION

Conjunctiva is the thin transparent membrane that lines the inner surface of eye lid and outer surface of eye ball, having important roles in tear dynamics, immunologic protection, ocular movement, and corneal healing. Conjunctivitis is an inflammation of conjunctiva. It is also known as pink eye which is common in cats and is most often the result of an infection. Signs of conjunctivitis include inflammation of conjunctiva, pink to red eyes, serous or purulent discharge and pawing at the eyes to relieve itching. The causes of conjunctivitis can be Feline Herpes virus 1 (FHV-1), *Chlamydia felis* (Rampazzo *et al.* 2003), *Picornavirus* (Sabine *et al.* 1970). The knowledge of microbial flora of a feline eye in normal and pathologic states is an important aspect of the clinician's assessment of external ocular diseases. The gram-positive bacteria predominate in normal and diseased eyes (Gerding *et al.* 1990).

Feline herpesvirus-1 (FHV-1) infection is ubiquitous in the domestic cat population worldwide. The most common clinical ocular manifestations of infection with FHV-1 are conjunctivitis and keratitis (Andrew, 2001). The common viral cause is FHV-1, while the common bacterial cause is *Chlamydia felis* (formerly known as *Chlamydia psittaci*). For diagnostic tests: Nested PCR, Fluorescent Antibody Testing (FAT), immunofluorescent test (IFAT) and Virus Isolation (VI) (Stiles, 1997). Medical treatment for FHV-1 includes: topical antiviral medications including idoxuridine, vidarabine, and trifluridine, antibiotics; atropine, and corticosteroid and oral administration of human alpha-interferon in conjunction with topical administration of antiviral agents (Stiles, 1995) famciclovir (Thomas *et*

al. 2011) topical ophthalmic application of cidofovir (Fontenelle *et al.* 2008) oral supplementation with L-lysine (Maggs *et al.* 2003). Apart from antiviral and antibiotics agents supplementation with fat soluble vitamin can also be effective (Bechart *et al.* 2002, Katz *et al.* 1993). Vaccination against feline herpesvirus, feline calicivirus and feline panleukopenia virus can also be much effective. (Dawson *et al.* 2001).

MATERIALS AND METHODS

History: Puma pair came to Lahore Zoo in 2008 in exchange program and there was no history of vaccination. The two puma cubs were born in Lahore Zoo in 2014 and the affected cubs was third litter of puma pair. As there was an issue of rickets in previous two litters of puma pair hence these cubs were given calcium supplementation on daily basis to avoid rickets. These cubs were also vaccinated with fal-o-vax exclusive dual-strain calicivirus (FCV) and proven feline leukemia (FeLV) protection.

Clinical Symptoms: The cubs were anorexic, dull and sluggish in behavior. Physical examination revealed that they had protruded third eyelids along with ocular discharge and conjunctiva being slightly hyperemic. Slight bilateral corneal opacity was also seen (Figures. 1, 2 & 3).

Collection of Sample: Corneal sampling was done using a sterile cotton swab from the inner side of the conjunctiva very carefully without damaging the eye of the puma cubs. Apart from corneal sampling the fecal sampling was also performed.



Fig 1: Ocular discharge



Fig 2: Protruded third eye lid



Fig 3: Slight corneal opacity

Preparation of the Smear: Two smears were prepared, one from corneal swab and the other from fecal sample. Giemsa staining was done on both the swabs. The methanol fixed smear was observed under the microscope. Clear basophilic inclusion bodies characteristic of *Chlamydomphila* were observed under the microscope. The inclusion bodies and the elementary bodies were round and oval, characteristic of the Chlamydia family, heavily stained with the giemsa staining.

The smears made from the corneal swab were not clear, but the fecal smears showed positive results for *Chlamydomphila felis*.

Treatment: Both the cubs were physically restrained through net. The line of treatment included Cephadrine (Velocef) from cephalosporin group of antibiotics was given systemically to both cubs to prevent the development of secondary bacterial infections. Local application of Betamethasone (Betnesol eye drops) and eye ointment (Polyfax) containing Polymyxin-B and Bacitracin on eyes was also applied (Figures. 4 & 5). Along with this vitamin A (seven seas capsules) given orally as the use of vitamin A helps in the regeneration of damaged epithelial cells.



Fig 4: Local application of Eye ointment



Fig 5: Oral supplementation (Vitamin A)

DISCUSSION AND RESULTS

Cubs showed marked improvement after three days of continuous treatment. The same treatment was continued for further four days. Cubs recovered completely from conjunctivitis. Vitamin A helps in the photoreceptor recovery aiding in the rhodopsin level and visual sensitivity (Katz *et al.* 1993, Kemp *et al.* 1989). The local application of betamethasone, a steroid, worked as a glucocorticoid receptor agonist against the conjunctivitis. Glucocorticoids exert their actions via the glucocorticoid receptors through two intracellular mechanisms: trans-repression and trans-activation. It has been hypothesized that trans-repression is the basis of their anti-inflammatory effects; whereas trans-activation has been assumed to cause side effects (Kato *et al.* 2011).

Hence antibiotics, local application of steroid along with supplementation with vitamin A was helpful in diminishing the problem in big cats.

Acknowledgements: Authors are thankful to faculty members of Department of Parasitology University of Veterinary and animal Sciences Lahore Pakistan for their expertise in the diagnosis of etiology of conjunctivitis in puma cubs.

REFERENCES

- Andrew, S. E. (2001). Ocular manifestations of feline herpesvirus. *J. Feline. Med. Surg.* 3(1):9-16.
- Bechert, U. J. Mortenson, E. S. Dierenfeld, P. Cheeke, M. Keller, M. Holick, T. C. Chen and Q. Rogers (2002). Diet composition and blood values of captive cheetahs (*Acinonyx jubatus*) fed either supplemented meat or commercial food preparations. *J. Zoo. Wildl. Med.* 33(1):16-28.
- Dawson, S. Willoughby, K. Gaskell, R. M. Wood and G. Chalmers (2001). A field trial to assess the effect of vaccination against feline herpesvirus, feline calici virus and feline panleucopenia virus in 6-week-old kittens. *J. Feline. Med. Surg.* 3(1):17-22.
- Fontenelle, J. P., C. C. Powell, J. K. Veir, S. V. Radecki, and M. R. Lappin (2008). Effect of topical ophthalmic application of cidofovir on experimentally induced primary ocular feline herpesvirus-1 infection in cats. *Am. J. Vet. Res.* 69(2):289-93.
- Gerding, P.A. and Jr. Kakoma (1990). Microbiology of the Canine and Feline Eye. *Vet. Clin. North. Am. Small. Anim. Pract.* 20(3):615-25.
- Kato, M., Y. Hagiwara, T. Oda, M. Imamura-Takai, H. Aono and M. Nakamura (2011). Beneficial pharmacological effects of selective glucocorticoid receptor agonist in external eye diseases. *J. Ocul. Pharmacol. Ther.* 27(4):353-60.
- Katz, M. L., D.M. Chen, H.J. Stientjes and W.W. Stark (1993). Photoreceptor recovery in retinoid-deprived rats after vitamin A replenishment. *Exp. Eye. Res.* 56(6):671-82.
- Kemp, C. M., S. G. Jacobson, F. X. Borruat and M.H. Chaitin (1989). Rhodopsin levels and retinal function in cats during recovery from vitamin A deficiency. *Exp. Eye. Res.* 49(1):49-65.
- Maggs, D.J., M.P. Nasisse and P.H. Kass (2003). Efficacy of oral supplementation with L-lysine in cats latently infected with feline herpesvirus. *Am. J. Vet. Res.* 64(1):37-42.
- Rampazzo, A., S. Appino, P. Pregel, A. Tarducci, E. Zini and B. Biolatti (2003). Prevalence of *Chlamydia felis* and feline herpes virus 1 in cats with conjunctivitis in northern Italy. *J. Vet. Intern. Med.* 17(6):799-807.
- Sabine, M. and R. H. J. Hyne (1970). Isolation of a feline picorna virus from cheetahs with conjunctivitis and glossitis. *Vet. Rec.* 87(26):794-6.
- Stiles, J., M. McDermott, M. Willis, W. Roberts and C. Greene (1997). Comparison of nested polymerase chain reaction, virus isolation and fluorescent antibody testing for identifying feline herpesvirus in cats with conjunctivitis. *Am. J. Vet. Res.* 58(8):804-807.
- Stiles, J. (1995). Treatment of cats with ocular disease attributable to herpesvirus infection: 17 cases (1983-1993). *J. Am. Vet. Med. Assoc.* 1;207(5):599-603.
- Thomasy, S.M., C.C. Lim, C.M. Reilly, P.H. Kass, M.R. Lappin and D.J. Maggs (2011). Evaluation of orally administered famciclovir in cats experimentally infected with feline herpesvirus type-1. *Am. J. Vet. Res.* 72(1):85-95.