

THERAPEUTIC MANAGEMENT OF CHRONIC BULBAR CONJUNCTIVITIS IN CATTLE USING AUTOLOGOUS PLATELET RICH PLASMA

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SUMMARY

A case of chronic bulbar conjunctivitis in 4-year-old cattle is described. Animal was treated with local application of autologous platelets rich plasma (PRP) in subconjunctival region. The animal recovered fully within 7 days without using any antibiotic and analgesics.

Keywords: Cattle, Chronic bulbar conjunctivitis, Platelets rich plasma

Conjunctivitis is a common condition and can affect all domestic animals. Besides the microbes *viz.* bacteria, virus, fungi, and mycoplasma, some parasites infect the conjunctiva resulting in primary infectious conjunctivitis in the domestic animal species (Wilcox, 1970). The most common therapy of this is topical application of antibiotics and non-steroidal anti-inflammatory drugs (Bielory *et al.*, 2012; Sheikh *et al.*, 2012). There is side effect of antibiotics (Doona and Walsh, 1995), chance of re-occurrence and risk of antibiotic resistance (Block *et al.*, 2000). To avoid this, there is a need of alternative therapy measure for conjunctivitis. Platelet rich plasma (PRP) provides good option for alternative therapy. It has been used for the treatment of wounds since last 20 years (Mehta and Watson, 2008). PRP contain high concentration of platelets and also good source of growth and clotting factor. PRP may suppress cytokine release and limit the amount of inflammation, interacting with macrophages to improve tissue healing and regeneration, promote new capillary growth and accelerate epithelialization. Moreover, the activated platelets apparently have potential antibacterial effects and may thereby support wound healing (Shrivastava *et al.*, 2016).

A 4 years old cattle of 400 kg body weight presented to Teaching Veterinary Clinical Complex, Bihar Veterinary College, Patna, with complaint of bulging of eye since last three months. The animal was showing severe redness of eye with swelling in conjunctiva. The animal was treated with antibiotic amoxicillin sulbactam, chlorpheniramine maleate, eye drop tobramycin and eye drop carboxymethyl cellulose sodium for 10 days, in first month. This treatment showed mild relief to animal but again after 10 days same symptoms noticed. Again the animal was treated by veterinarian by using Benzathine benzyl penicillin, flunixin meglumine and eye drop ciprofloxacin for 7 days.

After this treatment, animal showed full recovery and this recovery remained for 15 days. But after one month, the animal showed same signs of inflammation of conjunctiva and bulging of eye (Fig.1). Feeding, defaecation, urination and rectal temperature were normal.

On physical examination, no discharge was noticed and vision was intact. Slight deviation of eye ball was noticed. Ultra-sonographic finding was normal and no anterior and posterior chamber abnormality was noticed. Haematological examination revealed total erythrocyte count, total leukocyte count and haemoglobin within normal range. Serum biochemistry revealed bilirubin (0.35 mg/dl), ALT (28.45 IU/L), AST (85.76 IU/L), BUN (23.20 mg/dl) and creatinine (1.24 mg/dl) within normal range.

Caloric reflex test was performed to check nystagmus (Gonçalves *et al.*, 2008). Briefly, external auditory canal was irrigated with lukewarm water (44 °C) using a syringe. Animal head turned to the ipsilateral side, turning of both eyes is noticed toward the contralateral ear and horizontal nystagmus to the ipsilateral ear which suggested no weakening of vestibular apparatus of the horizontal semicircular canal of the side being stimulated. So, this case was diagnosed as chronic bulbar conjunctivitis.

To avoid chance of re-occurrence and risk of antibiotic resistance, animal was treated with subconjunctival application of autologous platelets rich plasma (PRP). PRP was separated by double centrifugation method. Ten ml blood was collected in vial containing sodium citrate anticoagulant, 0.5 ml was kept for platelets count and immediately centrifuged at 3000 rpm for 15 min. Plasma along with buffy coat, platelets and superficial erythrocyte was transferred to another tube and again centrifuged at 3000 rpm for 15 min. Plasma containing buffy coat and platelets i.e. PRP was isolated in another tube. PRP was

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Fig. 1. Swelling of eye ball due to bulbar conjunctivitis before application of PRP

activated by adding 1 M calcium chloride. Before activation, platelets were also counted in PRP. The autologous platelet rich plasma was applied subconjunctival immediately after isolation. The animal recovered fully within 7 days without using any antibiotic and analgesics (Fig. 2). The case was followed up for one month. No reoccurrence was observed.

Use of antibiotic and anti-inflammatory eye drop for chronic eye condition is not very much effective, however, blood derived products remained to be known very effective and could be safer options for chronic conjunctivitis and corneal erosions. This type of study is adequately convincing that use of platelet rich plasma is an efficacious medical treatment modality for chronic conjunctivitis. Similarly, serum derived eye drops have been shown to be safe and efficacious for various ocular surface disease therapy, such as severe dry syndrome, persistent epithelial defects and neurotropic keratitis (Lee *et al.*, 2016). Alio *et al.* (2007) concluded that the healing of dormant corneal ulcers was promoted with autologous PRP and was complimented with the relief in pain and inflammation. Hartwig *et al.* (2004) proclaimed a greater effect of growth factors for ocular surface defects and concluded that platelet released factors could be a novel treatment option. The platelet concentration is much higher in PRP than whole blood, and a significantly higher concentrations of Epidermal growth factor (EGF) and transforming growth factor beta (TGF- β) were found in PRP (Lee *et al.*, 2016). The chronic bulbar conjunctivitis in the presented case, which was unresponsive of conventional treatment, effectively treated with PRP therapy as it contains the high

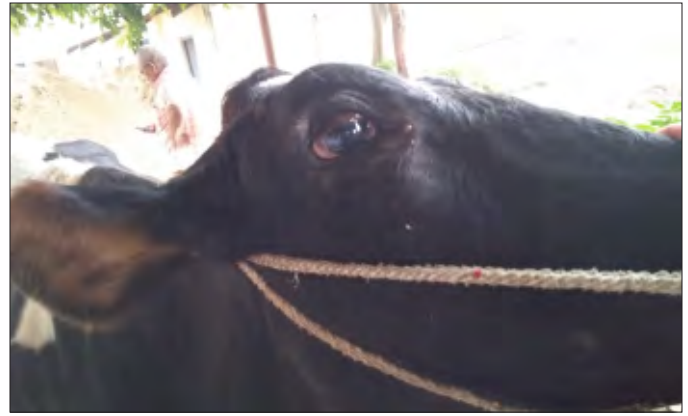


Fig. 2. Conjunctiva after 7 days of PRP application

concentration of platelet related growth factors.

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