

Platelet Rich Plasma (PRP) Treatment in a Dog with Heavily Injured Tail due to Tail Chasing Behavior

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Received Date: 21.02.2017

Accepted Date: 12.04.2017

Abstract: This case report presents the clinical healing success of PRP application in a 2 years old male Kangal dog with tail chasing syndrome which chewed and snapped part of its tail and resulted with a devitalized, necrotized and inflamed severe complex wound. PRP is an easily applied, autologous, relatively cheap and efficient regenerative method. This report aims to point out the benefits of this rapid and efficient method in wide, non-healing wounds due to localization or other reasons.

Keywords: Platelet rich plasma (PRP), Dog, Tail, Wound.

Bir Köpekte Kuyruk Yakalama Davranışına Bağlı Olarak Oluşan Kuyruk Yaralanmasında

Trombositçe Zengin Plazma (TZP) Uygulaması

Özet: Bu raporda kuyruk yakalama davranışsal bozukluğuna bağlı olarak, kendi kuyruğunu parçalayarak, bir kısmının kopmasına neden olmuş, kalan kısmında da devitalize, nekrotik, yangılı ve kompleks bir yara oluşan 2 yaşındaki erkek bir Kangal köpekte PRP uygulamasıyla erişilen başarılı klinik iyileşme süreci sunulmaktadır. PRP kolay uygulanan, otolog, nispeten ucuz ve etkin bir rejeneratif tedavi yöntemidir. Bu olgu, geniş alanlı, iyileşmede lokalizasyon ve diğer nedenlere bağlı güçlük yaşanan yaralarda hızlı ve başarılı sonuçlar veren bu yönteme dikkat çekmek amacıyla sunulmuştur.

Anahtar Kelimeler: Trombositçe zengin plazma (TZP), Köpek, Kuyruk, Yara.

Introduction

Tail chasing is a behavioral problem observed in dogs, usually having a compulsive etiology. However, displacement behavior, epileptic episodic behavior, neuropathologic disorders, psychotic or hallucinatory disorders or acrodermatitis all may be underlying disorders and must certainly be concerned (Landsberg et al., 2003). Conditions triggering the action are boredom, past injury or trauma, attention seeking, genetic (Bull Terriers and German Shepherds), confinement, physical abuse and separation (Hartigan, 2000). Management of the problem includes behavioral modification regarding identification of the etiology, elimination of predisposing factors and breaking the habit, desensitization or counterconditioning and pharmaceutical intervention with naltrexone, risperidone, clomipramine or fluoxetine (Landsberg et al., 2003; Yalcin, 2010). In some cases, tail chasing results with violent injuries of the tail, usually with complicated ulcerations, necrosis and suppuration. In this situation, wound has the major priority. Conventional wound management is the first step, but rapid regeneration is desired considering the complexity of the situation and vulnerable location of the wound.

Platelet rich plasma (PRP), is described as a high concentrated plasma solution obtained from

the patient's own blood. There are three types of granules in platelets which include platelet-derived growth factors (PDGF), transform growth factor beta (TGFβ 1 and 2), epithelial growth factor (EGF), vascular endothelial growth factor (VEGF), 300 different proteins (Textor, 2014) and bioactive factors (Foster et al., 2009). These factors modulate cell proliferation, differentiation, angiogenesis and chemotaxis. PRP is included within regenerative medicine area in the last 10 years (Sanches-Gonzales et al., 2012). In this case, a therapeutic approach with PRP in a tail injury is reported.

Case History

A 2 years old intact male Kangal dog with tail chasing behavioral problem was referred to our clinics in June 2016. Drug therapy together with behavioral modification techniques and conventional therapy for the dermatitis of the tail were prescribed in detail. 8 months later, the dog was re-emerged with a terrible clinical presentation. The owners denoted that following the previous referral, they applied the prescriptions for a month and got favorable results, but then they decided to leave the dog to one of their relatives in

the village aiming to provide more freedom to the dog. However they learned that the new owner tied the dog most of the day and the dog ate his own tail, lost a considerable amount of weight and presented substantial aggression.

The clinical situation required urgent attention to the tail (Figure 1). The patient was presented with multiple infected wounds on its tail inflicted due to constant gnawing. Tissue loss was extensive close to tip of the tail, exposing the last 2 coccygeal vertebrae. Another, 3x2cm wound was present at the dorsum of the tail. All wounds were class 4 (dirty- contaminated) avulsions (Pavletic, 2010). The patient was in considerable pain, so clipping of the tail hair and initial treatment was performed under general anaesthesia (Propofol, 6mg/kg, I.V., bolus administration as required for 30 minutes), in addition intravenous regional anaesthesia (Lidocain, 2%, 1ml to the median coccygeal vein while a garrote was applied to the tail base) and meloxicam (0.2mg/kg, I.V.) for pain management. The devitalized skin tissue at the tail tip and last two coccygeal vertebrae were removed and remaining wounds were debrided aggressively with wet gauze. Following the procedure, freshly prepared PRP was administered to the margins of the wound.

PRP preparation was achieved by PRP kit (3E PRP Pervice Kit) with 1.5 ACD-A anticoagulant and 8.5 ml venous blood according to the manufacturer's instructions. Following centrifugation at 3000 rpm/5 min, PRP at the top of the solution was removed with an insulin syringe. Obtained 0.5 ml product was examined at the microscope with haemocytometric method and an effective number of 1250000 platelet/ μ L was counted (Textor, 2014). Then application was performed (Figure 2). Risperidone (Risperdal oral solution 1mg/1ml, 100 ml - Eczacıbaşı) was used SID based on 1 mg/m² dose for the behavioral disorder resulting with gradual clinical progress in a month. Amoxycillin trihydrate (Largopen 1 tablet, BİLİM ilaç, 30 mg/kg/SID, 7 days) was prescribed for bacterial interference, with nitrofurazone (Furacin pomad-Zentiva) and St. John's Wort oil topically for wound care. Also Elisabethan collar was advised to preserve the wounded area. A week later, wound presented a favorable regeneration (Figure 3) with significant improvement in behavior and the dog gained 4 kg within a week due to the normalization of the appetite. PRP created a satisfactory and rapid regeneration in the present case.

Discussion

PRP is widely used in clinical practice due to its autologous structure restraining immune reactions, availability, easy and fast application procedure,

relatively less expense and high efficiency. Though it is newly considered in veterinary practice, satisfactory results are reported in dogs and horses for osteoarthritis (Bosch et al., 2010; Franklin and Cook, 2013), dental implants (Streckbein et al., 2013), bone defects (Jeong et al., 2013) and wound healing (Karayannopoulou et al., 2015).



Figure1 (A,B). Clinical presentation of the tail at referral.



Figure2 (A,B). PRP application.



Figure3 (A,B). Regeneration one week later.

Cutaneous wound healing is a matter of balance between matrix elements and growth factors and is dependent on multiple variables, including blood supply, defect size, tension, and mobility that affect the rates of healing and residual scarring (Diegelmann and Evans, 2004). Platelet rich plasma (PRP) not only enhances wound healing but also helps regenerate skin tissue (Carter et al., 2003). Sardari et al. (2011) concluded that PRP is an important source of growth factors for wound healing. In addition there are a few studies illustrating the effectiveness of autologous PRP in

treatment of chronic wounds on the tail of a dog (Kim et al., 2009; Mehrjerdi et al., 2008) and surprisingly the favorable results of allogeneic PRP (because of dehydration, concurrent systemic disorder and the very small dimensions of the dog) on the hip and tail wound lesions in a miniature pincher (Chung et al., 2015). Similarly, clinical output of PRP in the present case was satisfactory with rapid healing. This demonstrates the efficiency of PRP in critical wounds, especially in inconvenient parts of body or concordant systemic or behavioral disorders.

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