

Successful Treatment of Avulsion Wound in Leopard (*Panthera pardus*) using Pulsed Lavage – A Case Report

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Abstract

A leopard was referred to the Wildlife Research and Training Centre, Gorewada, Nagpur with a history of extensive wounds on the right and left shoulder. The wound was located on the shoulder bone on both the right and left shoulder, and the spine and caudal angle of the left scapula was exposed. Pulsed lavage along with other supportive therapy was used to manage the case. A 50 ml syringe fitted with an 18 gauge needle to direct the jet. The jet was intermittently pulsed cranio-caudal for 10 minutes five times a day. Pulsed lavage with 1% povidone-iodine in normal saline ensured the efficient removal of dead and necrosed tissue by utilising the pressure and at the same time removing the bacteria by cleansing and dilution. The leopard showed uneventful recovery in 18 days. The need to use antibiotics was by passed with minimal need to restrain the animal.

Introduction

The survival of the wild in their natural habitat is governed by the 'survival of the fittest' rule. The wild carnivores that are injured in their natural habitat are compromised of their

ability to find food, mate and defend their territory. In many cases, human intervention to nurse the wild to normal is required. There are enormous challenges in the treatment of wild carnivores as captivity induces colossal stress and interferes with healing. This case report highlights the use of non-conventional pulsed lavage for wound healing in leopards by passing the need to use antibiotics and the practice of frequently restraining it in treatment cages.

A leopard was referred to the Wildlife Research and Training Centre, Gorewada, Nagpur with a history of extensive wounds on the right and left shoulder. The sub-adult, female, was tranquillised at Navegaon- Bandh Dist. Gondia, Maharashtra and captured, it was shifted to the centre for rehabilitation and care. The leopard was examined and found to be dehydrated, with a temperature of 99.8°F, dull and inactive. The wound was located on the shoulder bone on both the right and left shoulder, and the spine and caudal angle of the left scapula was exposed. The animal was limping and cautiously using the forelimbs owing to the pain. The wound was fresh but contaminated with mud and other contaminants.

Treatment

The wound was cleaned with warm (37°C) 1% povidone-iodine in normal saline using a 50 ml syringe fitted with an 18 gauge needle to direct the jet. The jet was intermittently pulsed cranio-caudal for 10 minutes five times a day. Normal Saline 250 ml and Ringers Lactate 250 ml was infused intravenously to correct the dehydration. The animal was allowed ad-lib water at all times and to negotiate the heat-controlled environment was provided with good ventilation. The animal was offered 1.5 kg uncooked chicken in 24 hours. The animal was provided with Vitamin B and C laced in the meat on alternate days. The treatment continued for 18 days during which the progress of the wound healing, appetite and behaviour were monitored by closed-circuit television (Figure 1). The animal was left undisturbed and isolated during the entire tenure of veterinary care.



Figures 1: Gradual healing of the wound, Day 0-9 phase of inflammation, Day 9-15 phase of epithelisation and Day 15-18 Phase of complete resolution.

Result and Discussion

The wound was found to be red in the inflammatory stage and moist pink throughout the resolution phase, the wound edges exhibited gradual closure and epithelisation from day seven until uneventful healing on both the left and right shoulder by day 18 following which the regime was discontinued (Figures 1). The gait and posture were found to be normal. The animal was found to be climbing and pacing without any discomfort. The greatest challenge in the treatment of wild carnivores is the quantum of captivity stress that the treatment regimens levy on them. Captivity stresses greatly compromise wound healing and thus extend the captivity interval of the animal as in a vicious cycle. A treatment regime that can minimise the captive stress and at the same time provide efficient nursing of the wounds is critical in the effective wound management of the wild. Pulsed lavage is an ancient practice and has wide implications in the management of wounds in wild animals. The method is cheap and can be applied at the field level as there is no distinct requirement for infrastructure and facilities [1]. In the current case, normal saline [2] and 1 % Povidone-iodine was used as an intermittently pulsed jet to wash and debride the wound. The use of disposable 50 ml syringes and 18 gauge needles produces an effective pressure of 10 psi which ensures effective irrigation, debridement and assistance in healing [3]. It is a well-documented fact that the use of a normal saline jet is effective in flushing pathogens, debridement of dead and necrosed tissue and preventing clinical infection [2,4,5]. Luedtke-Hoffmann and Schafer have elucidated the efficiency of various wound cleaning methods and have advocated the use of a 35 ml syringe with a 19 gauge needle for effective wound cleansing. The intermittently pulsed lavaging ensures cleansing and maintenance of optimum moisture levels for efficient healing. Junker JP, et al. 2013 [6] described that during the weaning inflammatory phase, exudates is produced which carries many components like tissue proteases that interfere in the healing, pulsed lavage ensures the removal of such interfering factors by dilution and paves the way for the healing factors to localise in the

tissue. Infection is another impediment to wound healing, necrosed and devitalised tissue encourages the growth of infection and as a result, wound healing is compromised [4,7]. Many scores of bacteria have been identified among which streptococcus; staphylococcus and *E. Coli* is the most common [8]. Pulsed lavage ensures the efficient removal of dead and necrosed tissue by utilising the pressure used for the lavage and at the same time removing the bacteria by cleansing and dilution [9]. Antibiotics and painkillers are often used in wound management; however, felids are sensitive to many Non-Steroidal Anti-Inflammatory (NSAIDs) drugs. Also, a long-standing antibiotic regime takes a toll on vital organ functions causing more collateral damage. In this regime, though the wound was extensive, intensive pulsed lavage and judicious vitamin supplementation ensured an uneventful recovery and the use of antibiotics was averted. Vitamin C has been identified as an essential factor in collagen synthesis, angiogenesis and free radical restoration [10]. This case study highlights the enduring supervision of wound cases in wild carnivores by implementing pulsed lavage augmented with suitable nutrition and management. The case study also underlines the need for judicious use of antibiotics and painkillers in the management of wounds. Pulsed lavage can prove a boon to the wound management of wild animals owing to the ease of application, reduced captive time, reduced stress and abridged use of antibiotics and supplemental pain management therapy.

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