Second degree thermal burn in a Lakhimi calf and its successful management: A case report

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Abstract

This present communication shares the successful management of a second degree thermal burn in a Lakhimi breed calf. Besides the proper wound care procedures, the calf was also treated for shock, hypovolemia and prevention of secondary bacterial infection. The animal recovered uneventfully following post-operative care with the application of herbal formulation, clean housing and good nutritional supplement.

Key words: Aloevera-turmeric paste, Lakhimi calf, Thermal burn

Localized thermal injuries in animals may be caused by exposure to fire and radiant heat, contact with hot items including hot liquids or steam, inhalation of hot air and exposure to cold temperature (Wohlsein *et al.*, 2016). The degree of a burn injury depends on the temperature of the object and its duration of contact with the body (Venugopalan, 2004). The burn injury can be classified into first degree, second degree, third degree burns depending on the extent of destruction to the tissue (Sagar *et al.*, 2010). In first degree burn, only epidermis is affected whereas in second degree burn, the whole thickness of the skin is involved more or less completely but not the subcutaneous fat and muscle as in third degree burn. In second degree burn, healing is rapid and complete by the regeneration of epithelium unless there is involvement of secondary infection (Nandi *et al.*, 2014). Local pain, redness, swelling, peeling of the skin and blistering were noticed in second degree burn. Along with the local symptoms, bacterial infection, fluid loss,

breathing problems were also associated with the burn. This paper reports a second degree thermal burn in a bovine calf and its successful therapeutic management.

A 2 months old Calf of Lakhimi breed weighing 35 kg was presented to the Veterinary Clinical Complex (VCC) of Lakhimpur College of Veterinary Science with a history of burn injury on the right side of the body. According to the owner, the injury was caused by an accidental splatter of boiled animal feed. On examination, the rectal temperature, respiration rate and heart rate were 101.5° F, 38 breaths per minute and 70 beats per minute respectively, which were within the normal physiological limit. An extensive burnt area was observed on the right side of the abdomen, the outer side of the right hind limb and the tail. The affected portion was swollen and red with peeling of skin covering the full thickness of skin layers.

After proper examination of the animal, the burnt area was thoroughly lavaged with cold water. In order to re-establish the ionic balance,

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the calf was injected with inj. Haemaccel (450 mL). Further, to prevent hypovolaemic shock, Ringer's lactate was infused @ 30 mL/kg body weight. The animal was also administered with inj. Melonex @ 0.2 mg/kg b.wt IM for 3 days and ceftriaxone @ 10 mg/kg b.wt IM for 7 days respectively to reduce pain and to control secondary bacterial infection respectively. The burnt lesions were dressed with povidone iodine 5% liquid, and the owner was advised to apply homemade preparation aloe vera-turmeric paste topically over the affected area for one month. The calf was administered with inj. Tribivet 3 mL (total dose) IM for five days and inj. phenaramine maleate 2.5 mL (total dose) IM for five days as a supportive therapy. Topicure spray was also used to prevent fly infestation. The owner was advised to provide clean and soft bedding to the calf and optimum nutritional care.

The burnt skin started peeling off from the 5th day onwards exposing the underlying tissue (Fig. 2). Development of melanin pigment was also noticed on the 30th day (Fig. 3), which showed the tendency to change to dark colour. Partial healing of the burnt area was noted on the 60th day (Fig. 4) following treatment followed by complete recovery with scar tissue which was thin, shining and hairless after a period of 90 days.

Thermal burns are relatively uncommon in veterinary patients. The pathophysiology of thermal burns in large animals is akin to humans. Most severe burns will produce a local and a systemic response, both of which must be appropriately treated to increase the patient's chances of survival (Geiser and Walker, 1984). A multi-dimensional treatment protocol should be followed to treat the bovine calf (Sagar *et al.*, 2010). The burnt area should be thoroughly lavaged with cold water to limit the further extension of tissue destruction (Mahesh *et al.*, 2016). A better result can be achieved

with correction of body fluid balance by restoration of ionic balance, reduction of hypovolaemia, and prevention of secondary bacterial infections (Sudheerbabu *et al.*, 2018) as applied in the case. The goals of severe burn therapy are to save the animal's life, relieve pain, early wound closure and minimize deformities. In the present case, since the burn injury covered an extensive area, the animal was provided with both crystalloid and colloidal solution to prevent hypovolaemia. Along with the fluid therapy, secondary bacterial control and other supportive therapies were also offered to the animals. The burnt area was dressed with povidone-iodine as it keeps the wound clean and promotes healing, as suggested by Halbach and De Young (1979). For topical application, the aloe vera-turmeric paste was used because a compound called curcumin which is present in turmeric, possesses anti-inflammatory and antimicrobial properties; it could be used in wound healing (Akbik *et al.*, 2014). Whereas aloe vera could exhibit the actions of both anti-inflammatory and wound healing promotion when applied on a second degree burn wound (Somboonwong *et al.*, 2000).

In conclusion, second degree thermal burn in a bovine calf could successfully be treated by following a protocol of Haemaccel, Ringer's lactate, antibiotic therapy, povidone-iodine dressing along with topical application of aloe vera-turmeric paste which is readily available and cost-effective.

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Fig. 1. Photograph showing burn injury on 1st day

Fig. 2. Photograph showing burn injury on 5th day

Fig. 3. Photograph showing healing on 30th day

Fig. 4. Photograph showing healing on 60th day

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