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Therapeutic treatment of electrocuted wild rhesus macaque of Kullu District

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Abstract

A female monkey weighing 4 kg was rescued from Bahang, Manali, Kullu district and presented to veterinary clinic of Manali Strays in soporose condition with a history of fallen in apple orchids in cold weather near the electric pole having burn injuries, bleeding in critical condition. Clinical observation found hypothermia, pale to light pinkish mucous membrane and gums other sign were tachypnoea and absence of reflexes monkey was diagnosed electrocution by high voltage electrical extension wire line of treatment of monkey started with extensive fluid therapy, management of hypothermia, pain & wound management other emergency lifesaving medicines dexamethasone, mannitol, nikethamide adrenaline and supportive medicines antibiotics, multivitamins, the treatment continued for 7 days. Rhesus monkey successfully recovered in 18 days.

Keywords: Rhesus macaque, treatment, electrocution

Introduction

The sand colored *Macaca mulatta*, or rhesus monkey, is a primate that is normally found in forest but is also found living among people in northern India. Except for its hairy 20–30 cm tail, the rhesus monkey is the most well-known species of macaque. Its length ranges from 47–64 cm (19–25 inches). On average males' weight 11 kg and females 8.5 kg (19 pounds). The legs and rump are orange in both sexes (Pirta *et al.*, 1995) [8]. Because they like to jump, play, and look for food, they frequently encounter exposed sections of many kinds of electric power supply, High electric voltage cause small to deep necrotic lesions on the cutaneous or oral mucosa are the hallmarks of major amputations and tissue loss caused by the intensity, type, duration, and frequency of electric current flow sources that cause severe systemic disruption and massive local destruction. (Sengar *et al.*, 2014; Tufani *et al.*, 2015; Ishikawa, 1986) [10, 12, 3]. Exposure to high-frequency electromagnetic fields (EMFs) poses a significant risk to human and animal health nowadays (Aliyari *et al.* 2018) [11]. Numerous symptoms, including tinnitus, blurred vision, weakness, and weariness, as well as the appearance of unexplained illnesses, changed blood composition, impaired musculoskeletal system, and immune system malfunction in animals, are linked to electromagnetic fields. (Kazemi *et al.* 2018; Tekieh *et al.* 2017; McGaugh *et al.* 2002) [4, 11, 5]. An electric current running across the body can create electric shock, a distressing bodily condition. It usually happens as a consequence of accidental contact with exposed electrical circuits in household power supplies and appliances, but it can also happen as a result of lightning or contact with high-voltage lines. The strength, kind, length, and frequency of the electric current flow source all affect the amount of damage that results (Price and Cooper, 2002) [9]. Monkeys are particularly prone to electrocution by electric lines due to their propensity for jumping, playing, and moving around in human homes for food. (Sengar *et al.*, 2014) [10]. Critical and emergency treatment are necessary for animals to survive. To assist stabilize critical functions, treatment may include procedures including cardiac resuscitation, defibrillation, and intravenous electrolyte injection.

Materials and Methods

The diagnosis of high-voltage electrocution was made based on the patient's medical history and physical examination. A female monkey, 4 kg in weight, was brought to the Veterinary

Clinic of Manali Strays Trust in a comatose state. The monkey had fallen approximately 20-25 feet electric pole and being electrocuted by a high-voltage electric extension line. Monkey was lying in apple orchards in cold weather. Burning injuries to the left side of chest and both hind limbs had multiple open wounds, shock, closed eyelids, hypothermic, insensitivity to external stimuli, soporose, extreme weakness, dehydration were all discovered during a monkey body examination. Following a physical and clinical evaluation, the symptomatic therapy was initiated right away. Extensive fluid therapy was the first line of treatment to make stable body hot water bottle kept warming the body fluid therapy with 20% mannitol 2 ml/kg BW intravenously once a day, Isolyte M 200 ml intravenously once a day, Ringer's lactate 150 ml intravenously, wound cleaned with normal saline and povidone iodine 5% solution, aloe vera gel ointment on the affected skin injuries along with supportive therapy including antibiotics amoxicillin 11 mg/kg body weight IV intravenously twice a day, Injection meloxicam 0.2 mg/kg IV. Injection adrenalin 1ml slow intravenously once a day and injection Nikethamide (25% w/v) 1ml intravenously once, Injection dexamethasone 1mg/kg BW IM OD, injection. Pheniramine maleate 0.5ml Iv, inj. Tribivet (Vitamin B1+ B6+ B12) 1 ml IV once a day, omeprazole 1 mg/kg BW IV OD from second day of treatment tab amoxicillin 11 mg/kg PO twice a day and ascorbic acid 30 mg/kg BW PO BID, tab melonex 0.1 mg/kg PO OD.

Results and Discussion

Treatment continued for 7 days, and the burns were dressed regularly with antiseptic solutions. The slight improvement occurred in the monkey two hours after treatment, and complete recovery was seen after the 18th day of the treatment. Based on history, the case was diagnosed as a high-voltage electrocution. Electrocution is an emergency and critical condition that can be managed successfully with treatment as soon as possible (Tufani *et al.*, 2015; Sengar *et al.*, 2014)^[12, 10]. Treatment for pulmonary and cerebral edema with an intravenous infusion of Mannitol solution was investigated in this study. Adrenaline, dexamethasone, and fluid treatment are crucial for treating shock and boosting cardiac output and blood pressure. Along with other supportive medicines, broad-spectrum antibiotics can help avoid subsequent bacterial septicemia, Povidone Iodine ointment was used locally to treat the electrocuted wounds in the thorax, head, neck, and hands. People who experience high-voltage incidents with extended (seconds) of contact may experience internal organ and muscle damage and develop clinical symptoms such as shortness of breath, chest discomfort, or stomach pains (Tufani *et al.*, 2015)^[12]. Broad-spectrum antibiotics are used to check for secondary bacterial infections in stressed and dexamethasone-treated patients. B-complex vitamins help carry electrical signals efficiently. (Patel *et al.*, 2018b; Ungureanu, 2014)^[6, 13]. The monkey suffered electrocution injuries due to electrical current as well as falling to the ground from a height. The symptomatic treatment was started without delay after a clinical and physical examination. Electrocuted monkeys were successfully managed with sufficient fluid therapy and corticosteroids, physiotherapy performed to enhance blood supply, and antiseptic dressing and antibiotic therapy. Electrocution deaths are usually due to the heart or respiratory paralysis associated with cardio-respiratory arrest, ventricular fibrillation, and autonomic injury within the brainstem. Respiratory muscle paralysis is due to the current pathway

being from head to limbs; tetanic contraction of respiratory muscles causes asphyxia. Dexamethasone reduces spinal pain and has anti-inflammatory action as well (Gilroy and Perretti, 2005)^[2]. Omeprazole is a proton pump inhibitor that inhibits the H⁺-K⁺ ATPase pump leads to diminished hydrochloric acid production from gastric parietal cells and enhanced gastrophilic gene regulations that further provide anti-inflammatory effect and maintain gastric homeostasis.

Conclusion

The most frequent case of electrocution shock, which is an emergency, occurs in free-range primates. Fluid therapy, life-saving medications including adrenaline, nikethamide, and dexamethasone, supportive care such as mannitol, antibiotics, antioxidants, and appropriate nursing and supervision, can all be used to successfully manage it.

Conflict of interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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