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Case Report

Multiple animal bite injuries in a child: a case report

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ABSTRACT

Animal bites are a leading cause of injury among children, of which dog bites contribute significantly to the burden of Rabies in the world. This was a case report of a 7-year-old migrant girl child who was admitted to the casualty as a victim of multiple stray dog bite injuries. The child presented with multiple and extensive lesions all over the body. Trauma related to animal bites cause not just physical pain and suffering but also emotional stress and carries the risk of Rabies which is a highly fatal disease. Prompt management of the case with post exposure prophylaxis against Rabies needs to be done immediately, along with wound management to ensure good treatment results and patient outcome. This report presents the case of a child who sustained multiple stray dog bite injuries all over the body. Patient was followed up for one month, showed good wound healing and recovery.

Keywords: Animal bites, Injury, Rabies, Prophylaxis

INTRODUCTION

Globally, injuries form a major cause of morbidity especially in children and animal bite injuries contribute to a significant proportion of the healthcare burden of injuries. Animal bite injuries especially in children are a major concern due to the dangerous location of the wounds, the associated risk of rabies virus exposure and the high treatment cost of wound management.[1] The health impacts of animal bites are dependent on the type and health of the animal species, the size and health of the bitten person, and accessibility to appropriate health care. Numerous animal species have the potential to bite humans; however the most important are the injuries arising from dogs, cats, snakes and monkeys.[2] There are no accurate global estimates of dog bite incidence, however studies suggest that dog bites account for tens of millions of injuries annually worldwide. In high income countries, nearly 4.5 million people are bitten by dogs every year of which majority seek medical care, do reconstructive procedures and fatalities are rare. Low- and middle-income countries with incomplete reporting system reveal that dogs account for 76-94% of animal bite injuries and dog bite fatality rates are higher than in high-income countries as rabies is a serious problem in many of these countries and because of insufficient access to health care.[3] Children make up the largest percentage of people bitten by dogs, with the highest incidence in mid-to-late childhood. The risk of injury to the head and neck is greater in children than in adults, adding to increased severity and necessity for medical treatment. In view of the increase in dog population, communities should be aware of the risk of dog bites and the treatment facilities available for vaccination and wound care.

Rabies is a neglected disease which is often misdiagnosed and under reported in the absence of a robust surveillance system leading to underestimation of the disease burden. According to global estimates, rabies contributes to 59.6% of deaths worldwide and dog mediated rabies accounts for loss of approximately 2.2 million DALYs per year in Asia alone. It is estimated that India accounts for the maximum number of human rabies deaths in Asia (59.9%) and accounts for around 35% of human rabies deaths globally.[4] Data from National Rabies Control Programme, DHS Kerala recorded around 25 rabies deaths in Kerala in the year 2022, of which 19 were unvaccinated.[5] IDSP data from Alappuzha suggests 3 confirmed rabies deaths in the year 2022 and 8 probable deaths in 2023 reported from this tertiary care centre. These estimates do overweigh the importance of post exposure prophylaxis in animal bite injuries. Health-care providers should be educated on the appropriate management of animal bites and ensure that the patients complete the course of treatment without delay. Health authorities and policy-makers should ensure rabies control within dog populations, ensure appropriate supplies of rabies vaccines for potential rabies exposure in people, and develop data collection systems to further document the burden of this problem. Animal attacks and bite injuries are common occurrences as the natural habitat of animals is diminishing due to human encroachment. Individuals injured in animal attacks present with different types of injuries and the injuries in children are usually on the most dangerous areas of head face and neck which pose challenges in antirabies management and wound healing. It is important to document such incidents of severe animal bite injuries and to create awareness regarding the urgent and effective management of these injuries which would have a significant effect on the final outcome.

CASE REPORT

A 7-year-old migrant girl child was admitted to the casualty with alleged history of dog bite by a pack of 6 stray dogs on 22 May 2023 by around 3 pm. She was referred from Government Taluk Headquarters hospital, Kayamkulam for expert management after starting Intradermal Rabies Vaccination (IDRV). The injury was categorised as Category III multiple stray dog bite which was unprovoked. On examination, she had multiple lacerated and punctured wounds all over her body. The wounds were as follows: Multiple lacerated wound over scalp; the deepest one being a lacerated wound of around 7x6x2 cm over left parietal region and 8x7x3 cm over left side of occipital region, a skin avulsion wound of 3x2x1.5 cm over occiput and a deep lacerated wound of 4x2x2 cm over vertex and 3x2x1.5 cm over occiput (Figure 3). Lacerated wound of 2x1.5x1.5cm over forehead and lacerated wound extending from angle of mandible to chin. Lacerated full thickness wound involving lid margin of left upper eyelid and lacerated wound of left lower lid margin medial to lower punctum. Lacerated wound of 2x1x0.5cm over helix of right ear with exposed cartilage and lacerated wound of 4x3x1 cm of right ear behind the tragus (Figure 1). Lacerated wounds over right arm pit, lateral aspect of right arm and right shoulder (Figure 2). Multiple lacerated wounds over right side of abdomen, right and left thigh, right buttock and back.

Figure 1: Lacerated wounds over face,tragus and right shoulder.

Figure 2: Lacerated wounds over right arm pit and arm.

After local wound management and pressure bandaging, she was given Inj TT, Tetglobin 250 IU, started on iv antibiotics (Inj Cefotaxime, Piperacillin and Tazobactam, Amikacin and Metronidazole) and analgesics. After stabilising and obtaining consent, she was shifted to Emergency OT for infiltration of AntiRabies serum and management of wounds. Child was put under GA and all wounds were thoroughly washed with soap and water, saline and betadine and Anti Rabies serum (Rmab-Rabies monoclonal antibody was infiltrated over the wounds, the dose calculated as per weight and diluted to infiltrate all the wounds. Deep and lacerated wounds were debrided, sutured with 3-0 vicryl for face injuries,6-0 vicryl and 5-0 silk for upper eyelid margin and lower canaliculus,

stapled and managed accordingly by Paediatrics, Pediatric Surgery, ENT and Ophthalmology departments.

Figure 3: Multiple lacerated wounds over scalp.

Figure 4: 30 days follow-up; healed wounds on scalp and right shoulder.

Figure 5: Healed wound over right arm pit.

She was admitted under Pediatric surgery department and was regularly followed up by the respective departments and IDRV was continued as per schedule. Hospital stay was uneventful and was discharged after 10 days of antibiotics. Child was reviewed in Pediatric Surgery, ENT and Ophthalmology OPDs. Sutures were removed after 7-10 days. Wounds were apposed and in healthy healing stage. Child was followed for 1 month and full dose of IDRV completion was ensured (Figure 4-5).

DISCUSSION

Animal bites are a major public health concern across the globe. Out of which dog bites constitute the vast majority of cases. Dog bites are associated with deleterious impacts on humans that can even lead to death. According to WHO, India is endemic for Rabies accounting for 36% global deaths with 18000 to 20000 a year. About 30-60% of dog bite cases and deaths occur in children under 5 years.[7] A recent estimate shows that number of dog bite cases in Kerala has increased from 62,280 in 2013 to 2.21 lakh in 2021.[8] Trauma related to dog bite can be physical and emotional. Physical trauma includes superficial or deep lacerated wounds, avulsions, tissue loss, neuro vascular injury, facial bone fractures, secondary bacterial infections associated with the wound and related complications; sepsis, abscess, osteomyelitis, tenosynovitis.[9] Emotional trauma includes psychological derangements like Post traumatic stress disorder (PTSD), panic attacks, cynophobia and depression. Economic impact following treatment and complications of animal bite are also to be considered.

Rising number of dog bite cases especially among children may be attributed to short stature, increased propensity to play on the ground, exploratory behaviour, lack of awareness about the danger thereby getting very close to animals and putting themselves in vulnerable positions which will increase the injuries in head and neck region 76% of cases in facial involving cheek, lips and nose and also due to lack of parental supervision on children. Importance of educational interventions need to be stressed and it should be the area of future research.[1] Educational intervention regarding expected behavior of children in presence of animals and adequate supervision by parents/caregivers should be emphasized.[6]

Rabies being a vaccine preventable zoonotic disease, immunization plays a crucial role in its prevention. Management of an animal bite case and successful prevention of Rabies can be achieved by the following measures: timely and proper wound care; washing all the wounds with soap and running water for 15 minutes, verification of the immunization status of the child and ensure Tetanus vaccine and full dose Rabies vaccination (IDRV/IMRV). A non-immunized child has to be administered Anti Rabies serum (ARS) in case of a Category 3 wound. Usually, dog bite wounds are left for healing by secondary intention, but in this case, wounds were managed by primary intention-suturing and stapling in order to achieve hemostasis. Management also includes intravenous/ oral/ local antibiotic application depending on the nature of the wounds.

Animal bite cases among children can be reduced to some extent by increasing parental supervision. However, administration of Rabies pre-exposure prophylaxis in children and those dwelling in identified rabies hotspots might be considered as a safer and better option reassuring the initial chaos in an aggressive bite. Importance of introducing Rabies vaccine in the National Immunization Schedule need to be advocated and can be considered in future policy making. Uninterrupted rabies vaccine supply should be ensured in all health facilities. Reconsidering and revising the ARS dosing and dilution protocol is the need of the hour, in view of nature and severity of the wounds with increasing aggressive nature of dog bites. Hence proper notification of all cases along with compilation as case reports should be encouraged, as this would help to estimate the gravity of animal bite cases in our locality. The concept of responsible ownership of pets should be reinforced which includes selecting pets with assured breed quality, licensing and vaccinating them. Pet induced injury/nuisance to the general public needs to be fined and strictly dealt with. Castration of rabid and street dogs should be ensured with strict enforcement of animal control laws. Existing awareness about rabies, and other complications of animal bites (surgical complications and psychological impact) among the community should be evaluated so that gaps can be identified and possible interventional research may be carried out.

CONCLUSION

Reporting cases of importance provide an opportunity to recognize the threats posed by animal bites and the importance of vaccination and immunoglobulin. In addition to the physical impact of the injuries, dog bites often carry psychological costs to the victim and their parents which is understudied and not understood.[9] Management of such injuries should involve multidisciplinary team which can provide immediate surgical intervention, post exposure prophylaxis against rabies and proper wound care which can improve the outcome in animal bite injuries. Compiling and sharing these reports supports public health efforts to raise awareness regarding the gravity of the problem and to enhance the measures to protect the public from animal bite injuries.

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