



## CLINICAL IMAGES

### Animal attacks – a red herring of child abuse?

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Injuries sustained as a result of attacks by domestic animals, particularly canines, are occasionally encountered at the Red Cross Children's Hospital Trauma Unit in Cape Town. Less than 1% of admissions are directly attributable to animal attacks. Animal attacks causing lethal injuries are very rare and should be assessed carefully. We recently dealt with two fatalities attributed to animal attacks.

#### Case 1

A 2-year-old child was seen at a peripheral hospital after an alleged attack by a pregnant goat in a township. According to the history of the caregiver the child became drowsy shortly afterwards and was given paracetamol. However, he deteriorated rapidly and was taken to the local clinic where he collapsed. Following initial resuscitation, the patient was referred to Red Cross Hospital. He arrived with a Glasgow Coma Scale of 3 and was profoundly shocked, with a blood pressure of 34/19 mmHg and no pupillary response. Further examination revealed evidence of head injury with a large frontal haematoma and multiple abrasions of the body. Resuscitation was unsuccessful and the child died half an hour later. The postmortem findings confirmed evidence of head injury, with a subscalpular haematoma but no fractures. However, intracranial pathology was present and a subdural smear was identified over the left cerebral hemisphere and also within the interhemispheric fissure. There was generalised brain oedema. Of interest and slightly out of keeping with the mode of injury were well-demarcated rectangular skin imprints resembling a belt buckle on the lateral surface of the right thigh and on the posterior right shoulder (Figs 1 and 2). Additionally, tramline contusions were noted over both thighs anteriorly. No fractures were identified on full-body radiographs.

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Fig. 1. Rectangular skin imprints on the right thigh, resembling a belt buckle.



Fig. 2. Extensive bruising of the left thigh.

#### Case 2

A 4-year-old institutionalised child with cerebral palsy was found by staff during their routine rounds to have extensive facial soft-tissue injury. The child was rushed to our trauma unit, where besides the facial injuries, severe airway obstruction and hypovolaemic shock were identified. The child was resuscitated and prepared for theatre but died 3 hours later. Postmortem findings showed extensive facial injuries involving predominantly the right side of the face, the entire nose and part of the upper lip. The right eye was spared. Associated with this were numerous linear wounds on the face and both hands (Figs 3 and 4). The linear wounds, measuring 2 - 4 mm, were compatible with incisor bite marks. There were no canine bite marks present. Since rats do not possess canines, but 2 incisors in the upper and lower jaw separated from the molars by a diastema (space),<sup>1</sup> the bite marks were deemed to have been caused by rats. Staff from the institution where the child was cared for revealed that it was indeed rat infested, confirming our suspicions. Additionally the child was found to have extensive bilateral bronchopneumonia, which together with hypovolaemia, caused death.



Fig. 3. Multiple rat bite marks on the dorsum of the right hand.



Fig. 4. Multiple rat bite marks with laceration on the palm of the right hand.

## Discussion

Approximately 157 deaths occur in the USA yearly as result of venomous and non-venomous animal injury. A study<sup>2</sup> conducted between 1992 and 1997 analysed occupational fatalities resulting from animal-related events. Of the 37 875 total work-related deaths, 350 were attributable to animals as a source of trauma and 56 cases involved unusual animal-related incidents such as sheep ramming, giraffe kicking and bear mauling. Five per cent of fatalities involved 0 - 19-year-olds, some of whom may have sought employment in rural districts during the spring and summer holidays.

Although in developed countries dogs are the most common culprit, few studies have been done on domestic animal attacks in Africa. A retrospective study of major injuries from domestic animals in Nigeria conducted by Ameh *et al.*<sup>3</sup> included 16 cases of children under 12 years of age. The animals involved included big-horned cows ( $N = 11$ ), donkeys ( $N = 4$ ) and a ram ( $N = 1$ ). Children under 10 were injured by provoked animals, mostly as bystanders, while older children were handlers.

Rat bites occur particularly in children under the age of five, usually with involvement of the face and hands. Aside from the

usual infective complications that may follow, hypovolaemia is quite rare. Donoso *et al.*<sup>4</sup> described this unusual complication in an 8-month-old girl who had sustained rat bites to the face and hands. A similar case reported by Yanai *et al.*<sup>5</sup> involved a 3-month-old girl who died from haemorrhagic shock following multiple rat bites. The common denominators in all these cases were poor social circumstances, poverty and neglect.

Attacks by goats are extremely rare and in our case the postmortem findings indicated a physical assault rather than an animal attack. All wounds allegedly caused by animals need to be evaluated carefully so as to establish whether or not they corroborate with the account of the incident.

Bite marks specifically may be of legal importance as they may be required as evidence at an inquest. Therefore, as well as being recognised, bite marks should be recorded and even photographed. An attempt should be made to determine whether or not the bite marks are of human or animal origin, and if the bite is alleged to have been caused by an animal the morphology of the bite should be correlated with the teeth of the animal in question. Incisor bites give rise to rectangular or linear lesions, as opposed to canine bites, where triangular lesions are more likely.<sup>6</sup>

## Conclusion

Institutions where children are cared for should be appropriately registered and inspected regularly by health authorities so as to ensure that necessary health standards are maintained.

Allowing for the fact that children may fall victim to animal aggression because of their curiosity and inexperience, in many cases a certain degree of negligence on the part of the caretaker or animal owner comes to light, particularly following a fatal or severe attack. Childhood deaths attributed to animal attacks should be carefully evaluated and thoroughly investigated in view of a potential non-accidental cause. Most animal-related injuries are preventable and with education and supervision of child-animal interaction, the profound physical and emotional trauma of an animal attack can be averted.

## References

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