Injuries by Wild Animals in the African Bush

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SUMMARY: The author's personal experience of the management of wild animal injuries in the southern African bush over a period of 4 years is presented. Injuries were sustained from attacks by hippopotamus in 4 cases, buffalo in 2 cases and a lion in one case. The types of injuries and their management are presented. Causative factors, prevention and possible complications are reviewed. Twenty-one cases of snakebite are also discussed.

Introduction

The author spent 4 years as a doctor working in southern African regions where wild animals were not infrequently encountered. Hippopotamus was frequently observed because there is a significant resident population of these animals in the rivers. Buffalo were occasionally seen if they had migrated from National Parks during the dry season. Lions were not usually seen but were often heard at night. Other potentially dangerous animals present in these areas included crocodiles, hyenas, leopards and elephants, but no injuries caused by these animals were recorded during this period. These rural areas abound with snakes and 9 of the 14 dangerously poisonous species of snakes found in southern Africa¹ have been recorded in the regions in question.

Hippopotamus injuries

Four cases were treated for multiple injuries. All sustained multiple lacerations of the soft tissues of the extremities inflicted by the large blunt teeth. One patient had multiple rib fractures and 2 patients sustained compound fractures of the radius and ulna. All 4 attacks took place at night between 100 metres and 2 kilometres from the river bank. One patient only presented 12 hours after he had been attacked while the other 3 all received treatment within 3 hours of injury. Lacerations and compound fractures were all debrided and irrigated with a 2% povidone iodine in saline solution. Lacerations involving the hand were sutured primarily while the other wounds were dressed with povidone iodine cream and allowed to heal by secondary intention. The fractured ribs were not associated with flail segments or pneumothorax and were treated with indomethacin. Triple antibiotic cover with penicillin, gentamicin and metronidazole was administered for 5 days and all patients received tetanus toxoid. Recovery was uneventful and complete in all cases.

Buffalo injuries

Two patients were treated for multiple blunt injuries after being charged by a buffalo. In one case the attack was unprovoked while in the other case the animal had been shot and wounded by the victim. Both patients received medical attention within one hour of injury. Both patients sustained rib fractures; one had a small flail segment, and both had a unilateral pneumothorax.

One patient presented with an acute abdomen and laparotomy revealed a ruptured spleen and lacerated colon with minimal faecal contamination of the peritoneal cavity. Both patients sustained compound fractures of femur with extensive soft tissue injuries. Both cases were shocked on admission but responded well to intravenous crystalloid, colloid and 3 units of fresh whole blood each. Underwater thoracostomy drainage tubes, splinting of femoral fractures and intravenous morphine sulphate were also included in resuscitation measures. Triple antibiotic cover with penicillin, gentamicin and metronidazole was initiated on admission and continued for 5 days. Both patients received tetanus toxoid. Definitive treatment included extensive soft tissue and fracture debridement followed by copious irrigation with a 2% povidone iodine in saline solution. The fractured femurs were stabilized in balanced skeletal traction. The patient with the acute abdomen who underwent laparotomy had splenectomy and a primary repair of the lacerated colon with a proximal defunctioning loop colostomy. The flail segment required no definitive treatment or postoperative ventilation. The post operative course in both patients was uneventful and apart from some lower limb shortening in one patient, recovery was complete. The colostomy was electively closed some 3 months later without any complications and the patient who underwent splenectomy received a post operative course of polyvalent pneumococcal vaccine.

Lion Injury

One individual was attacked by a lion while he was asleep under a tree at night. It is not clear whether the injury was caused by the lion's tooth or by its claw. The patient sustained a 1 cm diameter puncture wound of the lateral chest wall. X-ray examination excluded a pneumothorax and the wound was debrided under local anaesthetic and treated topically with povidone iodine ointment. Antibiotic cover was not given but tetanus toxoid was administered. Recovery was complete.

Snakebite

Twenty-one patients were treated for snakebite during the period. Positive identification of the snake species concerned was not confirmed in any of the cases, but the clinical picture suggested that the Puff Adder (*Bitis arietans arietans*) was the most common offender

(16 cases) followed by the Rinkhals (*Hamachatus haemachatus*) (3 cases). In 2 cases the clinical picture was not typical of any known species. In 19 cases the site of the bite was below the knee and in the other 2 it was located on the hand. In all cases there was only a single bite. All the patients were treated symptomatically for pain with pethidine and all received parenteral or oral penicillin for at least 5 days. Fasciotomy of the leg was performed in 3 cases and transfusion of fresh whole blood was required by 5 patients while all patients were given tetanus toxoid. Antiserum was not administered to any patient and all survived without the loss of limb or digits. Split skin grafts were required by 3 patients after extensive sloughing of skin and subcutaneous tissues.

Discussion

It is clear that unprovoked attacks by wild animals do occur but they are rare, and a normal respect for the integrity of these animals is all that is required to prevent a significant problem in this respect. On the other hand specific precautions must be taken to avoid snakebite which usually takes place at night when the poorly shod victim stands on the unseen snake. The wearing of stout boots by all campers in these areas is usually an effective measure. Other precautions which are advisable include the checking of sleeping bags, kit, boots, etc., before use. Visitors should never attempt to capture or otherwise interfere with any snake or, for that matter, any wild animal.

The oral flora of wild animals, especially the larger species is not well documented, but the average domestic dog harbours more than 60 different species of bacteria (including known human pathogens)² in the oral cavity. The bacteria most commonly isolated from infected animal bites are *Pasteurella* species, *Staphylococcus aureus*, Streptococci and mixed anaerobic bacteria (mainly *Bacteroides*)³. Leptospirosis⁴, brucellosis⁵, and tularaemia⁶ have occasionally been attributed to animal bites. *Pasteurella multocida* is particularly associated with cats⁷ and could therefore be a possibly pathogen in the oral flora of the lion. When injuries caused by wild animals do occur, debridement, irrigation and cleaning are important and if undertaken soon after injury, it is probably acceptable to suture wounds primarily except possibly for wounds involving the hand⁸. A careful inspection for foreign matter should always be undertaken prior to suture. The value of prophylactic antibiotics is uncertain^{9,10} but early administration of antibiotics has been recommended¹¹.

In this series, sepsis did not constitute a significant problem in any of the cases, and this suggests that cover by penicillin, gentamicin and metronidazole would seem to be effective prophylaxis.

The fact that very few of the animals were provoked to attack must raise the question of the possibility of the animals being rabid. Rabies is encountered in the local

domestic dog population but the extent to which rabies affects the non-canine wild animals is not known. It is usually not possible to capture or destroy the offending animal and the possibility of rabies cannot therefore be confirmed or excluded. In this series of cases none of the patients were treated specifically with rabies prophylaxis. If the offending animal, however, is suspected of being rabid, both rabies vaccine and rabies antiserum should be administered. The preferred vaccine is human diploid cell vaccine (HDCV). HDCV gives better antibody responses and substantially fewer serious adverse reactions than duck embryo vaccine and fewer doses are required¹². The preferred antiserum is human rabies immunoglobulin which has a longer half-life and produces fewer adverse reactions than equine antirabies serum¹³.

Tetanus prophylaxis was used in all patients because of the distinct possibility that the wounds were contaminated by spores despite surgical debridement and irrigation of all wounds.

In conclusion, it is the author's experience that sensible precautions can often prevent injury by wild animals. If injury does occur, however, the prompt application of basic surgical principles will probably lead to a favourable outcome.

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