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A STUDY OF INJURIES BY WILD ANIMALS ADMITTED UNDER PLASTIC SURGERY DEPARTMENT IN A TERTIARY MEDICAL HOSPITAL IN CENTRAL INDIA.

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ABSTRACT

Background: Due to strict protection of wild animals and encroachment on their habitat, the number of injuries and deaths caused by wild animals is increasing in central India. The purpose of this study was to report the injuries caused by wild animal attacks and discuss the management methods and its consequences. Methods A retrospective study was conducted from January 2021 to June 2023 in a plastic surgery department of a tertiary care hospital in central India. A total of 508 cases (372 males and 136 females) with a history of wild animal attacks were recorded in a period of time. From research. Results 80% of the victims were attacked in the fields and 20% in the forest while collecting firewood or keeping cattle. Tears in the head and neck, fractures in the upper limbs and the face and skull were significant observations. In most patients, the long-term consequences were permanent facial disfigurement, hearing loss, loss of fingers, residual neurological deficits, and persistent psychiatric complications. Conclusion Wildlife injuries are a neglected part of trauma. A high index of suspicion is required when treating these injuries, as underlying bone and soft tissue injuries may be overlooked. The management of these injuries includes all trauma subspecialties to achieve the best functional outcome.

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Keywords: wildlife, facial injury, plastic surgery, outcome.

INTRODUCTION

An alarming increase in the incidence of injuries caused by wild animals in central India has led to many deaths and serious illnesses. The ever-increasing human population in the forested areas and the decline in the staple food of wild animals have forced these dangerous predators into human-occupied areas. Animal bites are frequently encountered in trauma centers and the resulting injuries range from innocuous to fatal. [1] These injuries differ from other injuries caused by humans, such as lacerations, cuts, penetration and crushing, and blunt trauma caused by falls and the forces of large animals. [2] These injuries are complex and their management involves a multidisciplinary approach. Many animal attacks occur in remote areas and there is considerable delay before notification, rescue and presentation for definitive care. [2] Several factors must be considered when evaluating these injuries, including the type of animal involved, the exact nature and location of the wound, the circumstances of the attack, and the interval between injury and treatment. Direct tissue destruction and risk of infection are major concerns. [1] There should be a high index of suspicion when treating these injuries, as severe bone or soft-tissue damage may be overlooked. Knowing the actual incidence of these injuries is not only difficult but also impossible, as most casualties never seek medical attention. Dog bites are reported to account for about 50%–90% of all animal-caused injuries, [1–4] but most victims of tiger, bear, and leopard attacks in these parts of central India require medical treatment. [5] Victims of such wild animal attacks suffer from complex fractures of the limbs and disfiguring facial injuries, but fortunately few people die from these attacks. No report in the literature has presented a large range of injuries caused by wild animal attacks in central

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India. The aim of this paper was to report a large series of injuries sustained in wild animal attacks and to discuss their management and complications.

MATERIALS AND METHODS

A retrospective study was conducted in the Department of Plastic surgery in a tertiary hospital in Central India. This centre is one of the prestigious tertiary care trauma and research centers of India, catering to a population of a major part of Central India easily over 50 lacs. The case histories of all the patients who presented to this institution from January 2021 to June 2023 with history of injury from wild animal attacks were reviewed. The records of these victims were also reviewed in the Wildlife Protection Department of Maharashtra. The results were formulated after combining the information collected from these two different sources.

RESULTS

A total of 508 cases were recorded during the 36 months. There were 372 (71.7%) men and 136 (28.3%) women, including 32 children (Table 1). About 80% of victims are attacked in agricultural land and about 20% in dense forest. Deep lesions to the head, face, and trunk were the most common findings, affecting 326 (64%) patients. Fractures of upper limb (24%) and face (19%) and skull (18%) were interesting observations. Hearing loss, intracranial haemorrhage, and rib fractures occurred in 12%, 6%, and 4.7% of patients, respectively. Avulsion of wrist and hand tendons and nerves occurred in 28% of patients. Injuries to the eye and external ear are less frequent (Table 2). Long-term sequelae in most patients are permanent facial disfigurement (10.6%), digit loss (4.3%), hearing loss (12.5%), and joint stiffness (21.5%). Some patients developed residual neurologic deficits (1.9%) and persistent

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psychological morbidity (Table 3). 4 people died. 3 occurred due to intracranial hemorrhage and delay in definitive care; in one case, tetanus prophylaxis and medical care was not received and died after tetanus. Survivors were admitted and treated under Advanced Life Trauma Support with a median follow-up of 24.5 months (range, 5–36 months). In most cases, irrigation and debridement are performed immediately. A combination of parenteral antibiotics (cephalosporin, amino glycoside, and fluoroquinolone) was started and adjusted according to culture sensitivity. Tetanus prophylaxis is given to non-immunized patients and all patients are vaccinated against rabies. Some wounds are clean and closed. Primary closure is delayed or skin and soft tissue reconstruction is performed after infection. Most patients require repeated debridement over 2-4 weeks. Compound fractures are initially stabilized with external fixation until signs of infection resolve when osteosynthesis is performed. Craniotomy for intracranial hemorrhage was performed in 32 patients; Neurological deficits of varying degrees remain in 10 patients. Ophthalmology was performed in 4 patients with complete corneal perforation. In patients with metacarpal fractures and tendon injuries, arm stiffness persists after treatment. Tables 1, 2, and 3 show the distribution of gender, injury pattern, and sequence among survivors.

DISCUSSION

Among human injuries, traffic accidents, falls from heights, gunshot injuries, and mass disasters have dominated the news. Injuries to wild animals are rare and receive little attention. Strict wildlife protection has upset the balance between humans and wildlife while increasing conflict between the two. Wild animal injuries occupy a special place in the management of trauma and require the attention of

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every specialty of traumatology. These are the areas of injury that require special attention to develop established protocols for the management of rare but severe injuries. Wild animal injuries include cuts, punctures, and crushing injuries, and significant contamination of claws and teeth. A large animal falling on the body can cause blunt and penetrating injuries as well as impingement of the end. To further complicate matters, it occurs in remote locations, which often involve significant delays in notification, rescue, and specialized care. [2] In this situation, the risk of infection, death, and mutation is everywhere. [1-12] Life-threatening injuries caused by wild animal bites are treated first. [13] If the tick bite breaks the skin, aggressive management is indicated to prevent infection and achieve good cosmetic and functional results. Bites caused by wild animals can cause local infection and wounds can be contaminated with various pathogens. In addition, animals can transmit systemic diseases, many of which cause significant morbidity and mortality. [14] Recently, there has been an alarming increase in wild animal attacks in Central India. Leopards, bears, wolves and tigers are among the animals that often attack. Women who enter the dense forest just to collect firewood are attacked and sometimes killed. There is a significant delay (6-18 hours) in arriving at the combined trauma center, complicating the problem and causing more damage. The management of this wound should begin at the scene of the collision, including bleeding from the wound, drainage of fluid and blood, and immediate transport to the appropriate trauma center. A complete physical examination is always necessary in these patients. The management of these injuries requires a team approach involving orthopedic surgeons, plastic surgeons, otolaryngologists, ophthalmologists, maxillofacial surgeons, emergency medicine specialists, microbiologists, and psychiatrists. Patients should undergo routine radiographs of the head, cervical

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spine, chest, and upper extremities. A computed tomography scan of the head and maxillofacial region is often required. These wounds involve a significant struggle by the victim on the ground, which forces mud, fire, and other contaminating materials into the wound. Vigorous irrigation and removal of all foreign material is essential. Suturing the wound should be postponed until the risk of infection has passed. Administration of tetanus prophylaxis and rabies vaccination should be standard protocol for unimmunized patients. Antibiotics should be given regularly. Plastic surgery has become important in tissue damage repair, reconstruction, and scar reduction.

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Tables and figures:

1. Sociodemographic profile of the patients

Characteristic	Number (N=508)	Percentage
Gender		
Male	372	71.7%
Female	136	28.3%
Wild animal		
Tiger	82	16.1%
Bear	210	41.3%
Leopard	72	14.2%
Wolf	42	8.3%
Others like wild boar	102	20.1%
Site of attack		
Fields	406	80%
Dense forest	102	20%

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2. Showing Injury pattern in the patients

Total number of patients	508
Deep lacerations to the scalp, face and trunk	326 (64%)
Upper limb fractures	122 (24%)
Lower limb fractures	16 (6%)
Rib fractures	24 (9.4%)
Skull fractures	92 (18%)
Facial bone fractures	98 (19%)
Intracranial hemorrhage	32 (6%)
External ear injuries	10 (2%)
Internal ear injuries	64 (12.5%)
Eye evisceration	4 (0.8%)
Femoral vessel injury	2 (0.4%)
Tendon and nerve avulsions	142 (28%)

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3. Showing Sequalae of injuries

Number of patients	262/508
Disfigurement of face	54 (10.6%)
Residual neurodeficit	10 (1.9%)
Hearing loss	32 (12.5%)
Stiffness of joints	54 (21.5%)
Loss of eye	2 (0.8%)
Partial amputations of limbs	11 (4.3%)

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4. Pictures of patients before and after surgical repair.

i. Wolf bite

ii. Bear maul

iii. Tiger bite