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LESSONS FROM THE MUSEUM

A fatal lion attack

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We herein report an historical case of a fatal lion attack that took place in the Zoological Garden of Brno City, Czech Republic in 1973.

Case outline

The wounded body of a 20-year-old male junior zoo worker was found lifeless in a lion enclosure in the Zoological Garden during the morning hours. The circumstances indicated that a 300 kg male lion named "Omar" had escaped from his enclosure, unexpectedly attacked his zookeeper in the outdoor compartment of the cave, and moved the zookeeper's collapsed body into the enclosure.

Investigation of the site of the fatality showed that the zookeeper had not complied with basic safety rules; he had left the door to the lion enclosure unlocked while cleaning the outdoor cage. Furthermore, coworkers confirmed that the zookeeper had expressed a desire to practice some training tricks and address the overall obedience of the lion while working alone. A medicolegal autopsy was required by the police because of the nature of the fatality and unclear circumstances.

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Autopsy findings

External examination revealed a well-nourished male body of medium build (height 186 cm; weight 75 kg). Multiple scattered scratches and tiny lacerations were present on the man's face. Linear lacerations up to 4 cm long were present on the left forehead and left cheek. Additionally, an extensive laceration of the soft pericranial tissue was found in the right frontotemporal region with a 4 cm long groove on the exposed bone. The man's neck and trunk were wounded with multiple disseminated scratches, superficial lacerations, and puncture wounds (Figs. 1, 2, 3). His upper and lower limbs were covered in numerous abrasions and scratches from the lion claws. The right lower limb contained a large soft tissue defect on the inner region of the thigh (Fig. 4). The left lower limb contained lacerations in the left groin area and inner region of the thigh. The penis was partially amputated (Fig. 4). Postmortem spots were almost absent.

Internal examination revealed a fracture line of the right greater wing of the sphenoid bone. Dissection of the neck showed extensive hemorrhagic infiltration within the soft tissues of the right part of the neck with transection of the right common carotid artery. A threefold compound fracture of the cervical spine (between C5–C6, C6–C7, and C7–Th1) with dislocations of bone fragments into the spinal canal was also present. Multiple contusions of the cervical spine and foci of hemorrhage into the spinal subdural and subarachnoid spaces were found. The left sixth to ninth ribs were serially fractured along the midclavicular line with hemorrhage into the adjacent intercostal muscles. The right eighth rib was fractured along the parasternal line. The result of the gas embolism test was negative. There were no signs of underlying organic disease.

Histologic examination of the main organs confirmed the autopsy findings. The blood and urine were negative for

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Fig. 1 Frontal view of the wounded body. Note the number of abrasions and scratches

Fig. 2 Dorsal view of the whole body revealing multiple scratches caused by the lion claws

alcohol. The cause of death was attributed to external blood loss. Based on the results of all investigations, the case was classified as an accident.

Fig. 3 Severe devastation of the soft tissues of the right thigh

Fig. 4 Scratches and lacerations along with fatal bites of the neck

Discussion

In the prehistoric era, lions were common predators not only in Africa and Asia, but also in Europe. The majority of the lion population is now held in captivity; only scattered regions of Africa and Asia contain wild populations. Thus, one may now encounter lions and other dangerous animals in zoological gardens, circuses, and private breeders' grounds [1–3].

The lion is the second largest wild cat after the tiger. Lions are considered to be less aggressive than tigers or leopards. They hunt together at night and less frequently during the day. It was long believed that only female lions are skilled enough to hunt effectively, especially in groups. However, new observations suggest that male lions are, in

fact, very successful hunters. According to recent findings, lions use three main hunting strategies that vary based on the type of prey: the ambush, the blitz, and the siege [4].

Killing methods of big cats differ slightly among species. The most skilled killers in the big cat family are leopards. They usually grasp the nape of a prey animal between their jaws and crush the cervical spine [5, 6]. Lions and tigers prefer to bite the throat of the prey animal; they use their heavily muscled forelimbs to hold onto the prey, bringing it to the ground [7, 8]. Lions bite the nape of smaller prey as do leopards, often breaking the spinal cord, piercing the windpipe, or severing the jugular veins or carotid arteries. Some lions reportedly kill their prey by sweeping their paws. Jaguars aim their attacks at the skull of a prey animal and pierce their canine teeth directly through the temporal bones into the brain. Finally, cheetahs tend to kill their prey with a bite to the frontal area of the neck, mainly injuring the cervical vessels and air passages [5].

The characteristics and localization of the injuries of the zookeeper in our historical case indicate that the lion first thrust the man to the ground, likely using its whole body weight (rib fractures) and an intensive smack of the forelimbs (fracture of the sphenoid bone). In the second phase of the attack, the lion forcefully bit the man's neck, disrupting the cervical spine and transecting the right carotid artery. The multiple scratches and lacerations on the zookeeper's body indicated repeated and forceful manipulations by the lion claws. Additionally, the lion devastated the soft tissues of the right thigh and penis as an example of postmortem scavenging.

Deadly big cat attacks against humans are uncommon; higher numbers of lion attacks occur in captivity than in the wild. Probably the most well-known series of fatal attacks was reported in Kenya in 1898, when a pair of lions (the Tsavo Man-Eaters) killed a number of construction workers on the Kenya-Uganda Railway [9].

The majority of big cat attacks occur due to human error. Disrespectful or hostile behavior toward animals and breaking basic safety rules are the most common triggers of such attacks [10]. Big cats may attack humans unexpectedly as an instinctive action to protect their territory, food, or other group members. Furthermore, cats may be more aggressive due to hunger, illness, or injury. Finally, atypical behavior of humans conditioned by alcohol, drugs, injury, or disease may also induce sudden attacks [5, 6].

In conclusion, we have herein presented a historical case of a fatal lion attack against a zookeeper. The attack was triggered by the zookeeper's disrespectful behavior toward the animal and by breaking basic safety rules. This case represents various types of injuries that may be sustained in a fatal big cat attack.

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