

CASE REPORT

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Old female case who died as a result of bear attack

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Abstract

Human encounters with wild animals are of great concern to humans. In nature, humans are usually defenseless against wild animals, however humans do not always take precautions from possible encounters. Wild animals tend to attack mostly sensitive areas of the body, and elderly individuals often fail to defend themselves compared to young people. All of these factors contribute to the increase in the mortality rate associated with these encounters. In forensic practice, deaths due to bear attacks are very rarely seen. In these cases, well-known bear attack pattern and bear-specific tooth and paw marks are observed, facilitating the work of physician who performed the autopsy. In this study, we aimed to discuss a case of a 77-year-old woman who died as a result of bear attack in the light of the existing literature.

Keywords: Animal attack, bear attack, anatomy of bears, autopsy.

Introduction

Recently, humans have increasingly encroached and destroyed the habitats of wild animals. In addition to this decrease in wildlife habitats, adverse changes in global climate ensures that wild animals cannot get sufficient food to sustain their lives; therefore they enter the habitats of humans. On the other hand, people can succumb to their curiosity and approach wild animals in a careless manner. Because of all these unfavorable conditions attacks of wild animals occur [1,2].

Animal attacks are most frequent in cities situated near forest areas because there are places where habitat overlap is seen, such as Kashmir (located between India, Pakistan and China), tropical areas of Africa and America's National Park areas [3,4].

There are eight major bear species in the world today: brown (Grizzly) bear, American black bear, Asian black bear, polar bear, Malayan bear, sloth bear, big panda, and spectacled bear [5]. In Turkey, brown bear species (*Ursus Arctos* L.) is widespread.

It is known that the adult brown bears are 110-250 cm in length, and the female and male brown bears weigh 80-150 kg, and 100-230 kg, respectively [6]. In human beings exposed to bear attacks, injuries ranging from soft tissue lesions to lethal vascular and internal organ damage can be seen [3,7]. The aim of our study is to discuss a case of a 77-year-old woman who died as a result of a bear attack in the light of the existing literature.

Case Report

According to the daughter of the deceased woman, she had left her 77-year-old mother alone at home at 10:00 am to tend to the animals on the day the event occurred. When she had returned home around 13:00, her mother was not home; she thought that the mother had gone to the forest to collect mushrooms, as she usually did. When she came back home again around 18:00, her mother was still not home. This got her and her neighbors worried

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and they began to look for the old woman. They found her mother lying lifeless on her face near the haystack of mukhtar. There were two large incisions on her abdomen, and her head was covered in blood. The daughter said that she suspected that her mother was killed by a bear. The shepherds tending to a herd of cattle that day stated that they had heard a thick animal sound like that of a bear.

The victim was 161 cm tall and weighed 52 kg. External autopsy examination revealed multiple tears on the scalp, right temporal-right zygomatic-occipital regions with ecchymotic edges exposing the underlying bone, and the muscle tissue of the victim compatible with a bear's claw were observed [Figure 1]. In addition, tears with bleeding contours that exposed the underlying muscle, and bone tissue and caused fracture and defect in the bone tissue compatible with large canine teeth of the bear were observed behind the right

ear, on the right posterior region of the neck and on the temporal region above the right ear [Figure-2]. There were superficial, claw-compatible abrasive ecchymoses on the dorsal, right scapular region. The epigastric region and the lower abdominal quadrant presented wide and deep tears, revealing the underlying muscle tissue, consistent with the four large canine teeth of the bear. Flap-like elevation of the skin measuring 18×6 cm situated between these wide and deep skin tears were observed [Figure 3]. Puncture injuries consistent with the four large canine teeth of the bear were observed in the right hip, thigh and left cruris [Figures 4 and 5].

The internal examination revealed fractures of the right temporal bone, contusion of the brain tissue and tissue destruction. The lesions detected in autopsy were found to be compatible with the anatomy of the bears' jaw, dentition, and claw.



Figure 1. Multiple number of claw wounds exposing underlying bone and muscle tissues in the fronto-parieto-occipital region.



Figure 2. Bite marks at 6 cm -intervals with bleeding contours compatible with the large canine teeth of the bear behind the right ear, on the right posterior side of the neck, and on the temporal region over the right ear that exposed the underlying muscle and bone tissue, causing fracture and defect in the bone tissue.



Figure 3. Wide and deeply penetrating bite wounds 6 cm apart, compatible with the four large canine teeth of the bear and flap-like elevated skin lesion measuring 18×6 cm between in the epigastric region and the right lower quadrant of the abdomen, exposing the underlying muscle tissue.



Figure 4. Bite marks on the anterior aspect of the right thigh, hip and abdomen at 6-cm intervals compatible with the bear's four large canine teeth.



Figure 5. On the left cruris, bite marks at 6 cm intervals compatible with four large canine teeth of the bear.

Discussion

Sudden bear-human encounters as a result of bears trespassing into human territory to find food or people entering the bear habitat, can cause serious injuries and deaths. Because brown bears live outdoors, they usually take an aggressive attitude instead of running away when they suspect danger. In the event of any encounter, at first in order to be deterrent, the bears do not make a growling sound and do stretching and head shaking movements in contrast to what is known previously [4].

In Kashmir, it was reported that 80% of the 417 cases injured due to bear attacks were male and most of them (96.8%) were young-middle-aged people [3]. Herrero and Higgins reported that 60% of the female and 25% of the male bear attack victims had died [1]. Although the age of the population in the region where the event occurred and the frequency of individuals living in the forestland may vary; it is seen that the bear attacks cases involving elderly and women cases more likely to result into death. Because elderly and female victims are physically weaker and can not run away from attacking bear, they may be exposed to more severe injuries, which can be supposed even in our case.

In general, it has been reported that the upper extremity injuries in bear attacks are defensive wounds and injuries on the dorsum of the victim occur when the victim tries to escape [2]. Rasool et al. reported that among 417 attacks cases, 80.57% and 54.67% of the victims had wounds on their faces, and heads, respectively [3]. Oshima et al. demonstrated that all seven victims who died as a result of bear attacks in Japan had wounds on their faces and heads and also severe bleeding lacerations were found on their heads, faces and upper extremities [2]. Patil et al. reported that the face, scalp, or both regions were injured in 46 victims out of 48 bear attack cases [8]. The intensification of attacks by bears on the face, head, and upper extremities shows a pattern different from the deadly bites on the neck region, by large felines like lions and large dogs. This characteristic feature may help to distinguish bear attacks from the attacks by these animal species [2]. In our case, wounds were detected on the head, posterior part of the neck, dorsal region, abdomen, right hip, thigh and left cruris of the victim. Skull fractures and brain tissue injuries due to bear attacks are very rare [9]. Rasool et al. reported that only 5.75% of the 417 bear attack victims had fractures in the skull bone. The frontal bone is the most commonly fractured bone [3]. In our case, the lacerations causing the major bleeding were on the head, and there were temporal bone fractures and brain tissue damage which we think were due to the bear's bite. Although it is reported in the literature that skull fractures are caused by claw stroke in the bear attack victims, in our case, skull fracture and brain tissue destruction were caused by bear bite.

Mother brown bears are more aggressive than other species and often interact physically with the victim. Most (70–80%) of the attacks are by female bears with cubs [10]. Most attacks last several minutes and do not result in death. Bears are intelligent animals and leave the scene when they are sure that they have weakened the creature they have attacked [3]. Bears tend to feed through the digestive system of the cadaver and are known to feed on the abdomen and inguinal region frequently [2]. Although brown bears, very rarely, attempt predatory attacks, our case had a large number of bite marks on the abdomen and the lower extremities, and severe bite marks on the head. In addition, the attack occurred in the vicinity of a village. Therefore, it was presumed that the bear trespassed in the human territory and attacked the victim with a predatory aim.

Conclusion

Bear attacks resulting in death are very rarely seen in forensic medicine practice. In such cases, it is important to determine that the death occurred as a result of an animal attack. It should be noted that bears are the largest carnivores that can cause postmortem injury [11]. As in our case, ecchymoses around the claw, tooth marks especially in the body, and bleeding in the underlying muscles and soft tissues are essential for indicating that these injuries occurred in the antemortem period. Intensification of claw and tooth marks on the head, chest, and upper extremities; the fact that the lethal blow was made to the areas other than the neck, and the onset of feeding by removing the intestines from the abdomen and inguinal region are features that strengthen the likelihood of a bear attack. It is important that a forensic medicine specialist recognizes these wound patterns that are different from those by other animals. In such cases, based on the witness statements,

detailed crime scene investigation data, and the autopsy findings in which claw and tooth marks were examined in detail, occurrence of a bear attack can be conclude.

Because of higher risk of mortality related to bear attacks involving the elderly, especially older women, it is important to raise awareness among the people living in the areas close to the forests so precautions are taken in this regard.

Conflict of interests

The authors declare that they have no competing interests.

Financial Disclosure

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Patient informed consent

Consent form was obtained from the patients before the article.

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