

Impacted leopard tooth in thyroid gland of victim in a case of leopard attack – A case report

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ABSTRACT

Attacks by wild animals on humans are not rare in India. Most of the cases are seen in rural areas and areas adjoining forest lands. The nature of the attack may be predatory or defensive. The main culprit for this is deforestation and encroachment of humans into the natural habitats of wild animals. Wild animal attacks can cause very severe injuries, including lacerations, fractures, and vascular injuries, and are often associated with high rates of mortality. Treatment depends on the type and nature of the injury. Those who survive the initial attack often succumb to infection and septicemia during the early hospital stay. Psychiatric complications are also common in survivors. We present the case of a 70-year-old man, who was attacked by a leopard. He sustained a few lacerated bite injuries to the neck and was treated at North Bengal Medical College and Hospital. A computed tomography scan of the neck revealed a tooth of the animal impacted in the thyroid gland of the patient. The patient is currently receiving treatment for deranged thyroid function, and awaiting normalization of the same, to get anesthetic fitness for surgical removal of the tooth. Treating surgeons must be well aware of the patterns of injuries and their treatment in cases of animal attack injuries. In-depth clinical and radiological investigations are of utmost importance to find out occult injuries that may become life-threatening. A standardized treatment protocol needs to be developed for the treatment of wild animal attack victims. There is a need to extend health care into the remote areas of the nation, for early treatment of such cases.

Key words: Bite, Leopard attack, Thyroid, Tooth

Leopards are commonly seen in the Asian and African continents. Leopard attacks have been mainly reported from rural India and Nepal. These attacks are often lethal and cause significant morbidity in survivors, both physically and psychologically. The recent rise in reports of wild animal attacks can be attributed to extensive deforestation. Animal attacks can cause various types of injuries, both lethal and non-lethal. Injuries include lacerations, fractures, vascular injuries, and facial disfigurement [1]. After the initial injuries, there is often development of infections and septicemia [2]. These can cause severe morbidity and sometimes mortality in patients. Another aspect is the post-traumatic psychiatric complication, that is seen in a large proportion of patients who survive a wild animal attack. Rarely, foreign bodies may get impacted in the bodies of the victims. These foreign bodies may remain silent for years or they may migrate. Complications of retained foreign bodies include abscesses, fistula formation, granuloma formation, etc. These injuries need to be treated quickly to reduce the chances of complications. Local wound management along with prophylaxis for rabies is of utmost importance. Other injuries are treated by specialists in respective fields involving a multidisciplinary approach. These attacks occur mostly in rural areas, where there

is a paucity of adequate, affordable healthcare and a long time elapses before the patient gets access to proper health care, which in turn increases both morbidity and mortality. There are very few cases documented in the world medical literature with an in-depth discussion of injuries sustained during a leopard attack. However, there is no case report in world medical literature where there has been a case of a leopard attack with a tooth of the animal broken off and impacted into the thyroid gland of the victim, who managed to survive the attack. Hence, the importance and uniqueness of this case report. Also, this case report emphasizes the need to develop healthcare infrastructure and extend it to rural areas, so that victims of animal attacks get quick access to quality health care services.

CASE REPORT

A 70-year-old man residing in a tea garden in North Bengal was attacked by a leopard while he was returning home from work in the evening. He was a tea garden worker and was returning home through a forest along with 3 other men around 6 pm when the incident took place. A leopard attacked him from behind and held him down to the ground. His fellow workers rescued him

by throwing stones at the animal which fled. He had sustained some bite injuries on the right side of his neck and complained of something sticking into his neck. He was first taken to the tea garden health center, where he received first aid and then brought to the Emergency of North Bengal Medical College and Hospital. The patient was immediately admitted to the Otorhinolaryngology department.

The patient was alert, conscious, and cooperatively oriented to time, place, and people during the examination. All higher functions were normal. Sensory and motor systems were within normal limits. The general survey was unremarkable. Blood pressure was 130/74 mm Hg, with a pulse rate of 89/min. There was no evidence of volume loss or shock in the patient. Local examination of the neck revealed 3 lacerated wounds in the right side of the neck, which were muscle deep (Fig. 1). The wounds were contaminated with dirt and soil.

The wounds were cleaned with normal saline and betadine. Intravenous (IV) antibiotics, namely Ceftriaxone, Metronidazole, and Amoxicillin/clavulanic acid, and analgesics were started. Rabies immunoglobulin was infiltrated at and near the wound, and the rabies vaccine was administered intramuscularly in 0.5 ml doses on Days 0, 3, 7, 14, and 28. One dose of tetanus toxoid was administered and the wounds were left unsutured. Local antibiotic ointment was applied with a sterile gauge. The patient underwent a chest X-ray, which revealed a comma-shaped radiopaque shadow in the right paratracheal region near the 1st rib (Fig. 2). He was taken for a non-contrast computed tomography brain and cervical spine to look for any injury. The results of the CT brain scan were unremarkable. CT scan of the cervical spine revealed a fractured spinous process of the atlas (Fig. 3). There was a 15 mm × 8 mm hyperdense structure inside the parenchyma of the right lobe of the thyroid near the right internal carotid artery having bone attenuation (Hounsfield Unit +1932) and showing beam hardening artifact (Fig. 4). The object resembled the shape of a canine tooth. After a review of the CT plate by the radiologist, an ultrasonography (USG) was suggested. A USG of the neck was done to look for the foreign object, its distance from the nearest vessel, and to assess if the thyroid gland was viable or

devascularised. The findings of CT were corroborated with USG. The foreign body was placed inside the parenchyma of the right lobe of the thyroid gland at a depth of 13 mm below the skin and approximately 5mm away from the right internal carotid artery (Fig. 5). Vascularity of the thyroid gland was preserved on the doppler study. Correlating the history and radiological findings, a diagnosis of an impacted leopard tooth in the right lobe of the thyroid was made. The thyroid profile of the patient was sent and the reports were deranged with a TSH above 100 mIU/L. Considering the proximity of the tooth to the vessel, the remote location, deranged thyroid profile which predisposes to hazards during use of general anesthesia, ongoing anti-rabies vaccination, absence of any vascular injury, and a remote chance of dislodgement of foreign body on attempted manipulation, it was decided to defer the surgery and extraction. In the meantime, the patient was to undergo regular screening by USG neck to look for any developing complications like abscess or fistula formation or migration of the tooth, with the option of emergency extraction, if any such complication develops. This was decided after taking informed consent from both the patient and his relatives. He was started on l-Thyroxine 100mcg once daily. A hard cervical collar was put on to stabilize the cervical spine. On the 28th day, the rabies post-exposure prophylaxis was complete. Considering the remote location of the foreign body, proximity of the foreign body to the internal carotid artery, deranged thyroid profile, and absence of new symptoms or complications, the surgeons decided to wait for the thyroid profile to normalize and the cervical spine fracture to heal before planning any elective surgical intervention, and to get a pre-anesthetic checkup clearance to avoid any intraoperative anesthetic hazard. He was discharged with the instructions to have regular check-ups until the reports turned normal, or to report to the hospital emergency department if any complications arose. The plan was an extraction of the tooth, under C-ARM guidance with an option for hemithyroidectomy, if necessary.

Follow up of the patient returned after 2 months exhibited a deranged thyroid profile and the foreign body did not show any change in position on the USG neck or any new complication or collection.



Figure 1: Lacerated bite wounds in the right side of neck of the victim



Figure 2: Chest X-ray PA view showing a comma shaped radiopaque structure in the right paratracheal region near 1st rib



Figure 3: CT scan cervical spine axial view showing fracture of spinous process of atlas

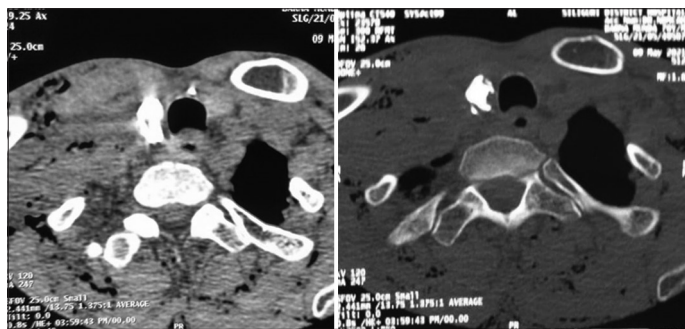


Figure 4: CT scan cervical spine axial view showing a radio dense structure right of trachea in the parenchyma of right lobe of thyroid gland



Figure 5: A hyperechoic structure seen in the parenchyma of right lobe of thyroid gland representing the tooth of the animal and its approximate distance from skin and adjacent internal carotid artery

DISCUSSION

Leopards belong to one of the species of the genus Panthera. These are wild cats that are found predominantly in Africa and Asia. Leopards are territorial animals, generally seen to be solitary.

They are carnivores and prey on smaller animals. Leopards are found in abundance in the forests of North Bengal.

Most cases of leopard attacks are reported in India and Nepal. In recent years, there has been an increase in the incidence of leopard attacks on humans, mainly due to the encroachment of human settlements and industrial sectors into the forestlands, driving the wild animals away from their natural habitat. Attacks generally happen in the evenings and secluded areas in the vicinity of forest lands and tea gardens like in our case. Health care is sparse in these remote areas and patients have to travel far to get advanced medical care. Most attacks are from the back and directed towards the face and neck of the victim. Bite wounds to the neck can cause massive hemorrhage and be fatal due to injury to the carotid arteries, Jugular veins, laceration of the trachea, and cervical spine injury [1]. Facial disfigurement of the victim is one complication that is seen to cause serious psychosocial symptoms in the patients later. Other serious complications may include infections, cellulitis, fractures, and compartment syndrome [2]. Survivors of animal attacks are often seen to suffer from post-traumatic stress disorder.

Management of animal bites is a difficult and long-drawn process, particularly because there is no definite set of guidelines available for the treatment of animal bites. Wound management is the most important initial process. Wound management may include exploration, irrigation, cleansing, debridement, drainage, and suturing [3,4]. The wound is to be cleaned and irrigated first with soap water, then with betadine or chlorhexidine solution to remove all dirt and contamination. A 1% povidone-iodine solution has been suggested for irrigation, as it provides the best therapeutic balance between bactericidal capacity and tissue toxicity. This also helps in reducing the local viral load. Exploration and debridement may be done if there is devitalized tissue, and if the surgeon thinks it is necessary [5]. Suturing of the wound is a controversial topic, especially when there are high aesthetic concerns like wounds in the face [6]. The consensus is to keep the wound unsutured if possible. This is primarily related to concerns about rabies and its association with wild animal bites. If the wound is too large, suturing may be done as loosely as possible, after thorough cleaning, and infiltration of rabies immunoglobulin into the depths of the wound. The next important step is the administration of rabies human immunoglobulin. It is administered at a dose of 20 IU/Kg body weight, and a maximum dose of 1500IU. A maximum of it is infiltrated locally around each wound [7]. The rabies vaccine was administered in tandem [8].

Antibiotic prophylaxis is given to all bite wound patients. The drug of choice is Amoxycillin and Clavulanate, given for 5 days to 2 weeks, depending on the severity of infection [9]. Our patient was given the coverage of 3 different classes of antimicrobials.

Tetanus toxoid is generally administered in all cases where the bite wound is grossly contaminated. A 0.5 ml dose is given intramuscularly. Also, tetanus antitoxin is considered in individuals who have previously not taken tetanus toxoid to provide immediate protective antibodies [10]. Vascular injuries require urgent management as they are often fatal if left untreated. When there are multiple injuries, it is prudent to be managed by a

team of physicians and surgeons from various clinical disciplines, in a multidisciplinary approach [11]. In cases of severe head and neck injuries, a radiological examination is crucial to rule out occult injuries which might later prove fatal. Generally, a CT scan of the head and face, along with the cervical spine with 3D reconstruction, suffices. CT angiography may be needed in cases of suspected vascular injury. Rarely, foreign bodies may get impacted in the bodies of the victims. These foreign bodies may remain silent for years or they may migrate. Complications of retained foreign bodies include abscesses, fistula formation, granuloma formation, etc. Whether to remove the foreign body on first contact or to wait is generally decided by the treating surgeon after reviewing factors such as location, depth, proximity to major neurovascular bundles, and the chance of migration of the foreign body on immediate deep exploration. Cosmetic concerns and developing complications also play a major role in the decision for surgery. However, the risk-benefit ratio has to be weighed out in each case and the decision has to be made on a case-to-case basis. In our case, the elective operation was deferred until the patient was fully vaccinated for rabies and fit for general anesthesia, with the option of emergency extraction at any time, if any complication arises in the meantime during follow-up. This was well accepted by the patient, and he consented to the same.

After the initial period, survivors often suffer from acute stress disorder with anxiety, sleep deprivation, and depression [12]. This often leads to post-traumatic stress disorder. A study found 60% of patients have nightmares and auditory hallucinations of hearing an animal growl. Psychiatric counselling and pharmacotherapy become very necessary in such cases [12,13].

CONCLUSION

Attacks from wild animals are quite common in India. The injuries from such attacks range from simple scratches to extensive soft tissue, vascular, and bony injuries. The treating surgeons must be aware of the various patterns of injury and the treatment plan. A standardized protocol needs to be developed for the treatment of wild animal injuries, including wound treatment, rabies post-exposure prophylaxis, tetanus prophylaxis, antibiotic regimen, and indications for surgery. Treatment must be a multidisciplinary approach.

There is a need to extend affordable and advanced health care to remote and rural areas of the nation so that animal bite victims can receive early treatment, reducing mortality and morbidity.

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