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A Rare Case of Hippopotamus Bite with Multiple Injuries

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ABSTRACT
Animal bites are a significant public health problem, these may present as punctures, abrasions, tears, or avulsions. The force and relative bluntness of the teeth also increases the possibility of a crush injury with devitalized tissue. the clinical presentation and appropriate treatment of infected bite wounds vary according to the animal and causative organisms. These wounds have always been considered complex injuries contaminated with a unique polymicrobial inoculum.

INTRODUCTION

Hippopotamuses are large, semiaquatic mammals native to sub-Saharan Africa. Although their name comes from the Greek for "river horse" because of the time they spend in the water. These huge herbivores are known for their enormous teeth, aggressive nature. Most of the domestic animal bites are very common but wild animal bites are very rare with few case reports. They are capable of opening their impressive jaws 150-180 degrees and generating 1,800 PSI of biting force which is strong enough to snap a crocodile into half.

Case Report: We conducted a retrospective patient-file analysis of data. This study was conducted in SRM Medical College and Hospital, Chengalpattu, Tamil Nadu. We encountered a 58 year old male who is working as a zoo keeper in nearby zoo of Chengalpattu district presented to our Emergency Department with hippopotamus animal encounter with multiple injuries over the face, chest, abdomen and gluteus region. This patient was initially received in Emergency room, after airway, breathing and circulation stabilization, cleaning of the wound, tetanus and rabies vaccine with immunoglobulin was given and then shifted to ICU for further management .Patient was started on IV fluids and Broad spectrum prophylactic antibiotics, wound debridement and excision of the wound in gluteal region, leaving the resulting wound open then, delayed closure was carried out as there was no wound infection. The patient had left ramus of mandible fracture extending from sigmoid notch to lower border of mandible with subcutaneous emphysema, with severe restricted mouth opening and deranged occlusion for which ORIF was done, left chest multiple rib fractures with underlying lung contusion with hemothorax left ICD was done for the same, multiple abrasions over the chest was left open with adequate cleaning and dressing done.

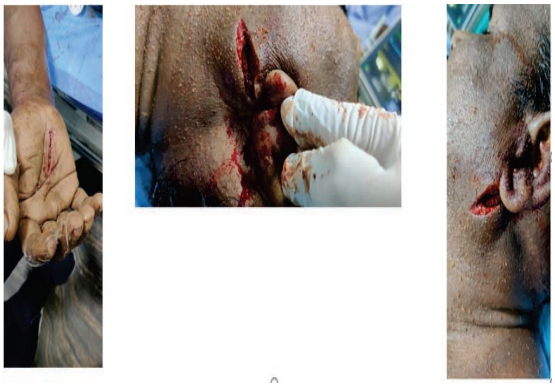

Fig. 1: Pre Operative Photos

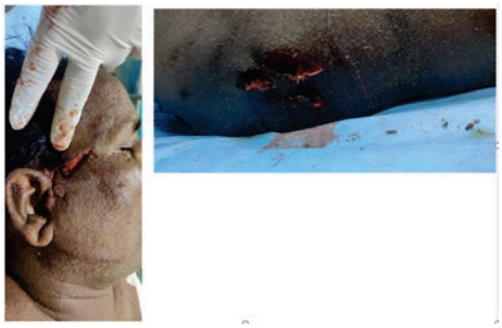

Fig. 2: Pre Operative Photos

Fig. 3: Chest X-Rays

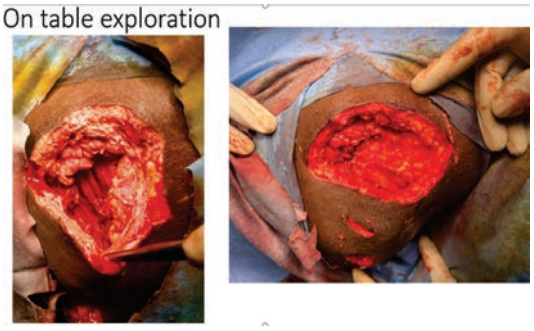

Fig. 4: Gluteal Wound Explored

Fig. 5: Post Closure

Fig. 6: Wound at the Time of Discharge

RESULTS AND DISCUSSIONS

Hippo are animals that are native to Africa. Though they may appear docile, they are aggressive in nature and can attack without any provocation. In Africa, human fatalities may not be as high as elephants but at least deaths due to hippo attacks are reported 500 each year[3,4]. Moreover, very little is known about human-hippo conflict (HHC) and experimental fieldwork on mitigation methods has hardly been conducted. Hippopotamus are responsible for about 500 human deaths per year in Africa, making them the continent's deadliest land animal. Hippo attacks are most common in areas where hippos and humans share waterways, such as the Nile River in Egypt and the Zambezi River in Zambia. However, in India Hippopotamuses have been reported to attack humans in India on several occasions. A study published in Wildlife Biology in 2016 found that hippopotamus attacks in India were on the rise and that the attacks were often fatal. The study's authors attributed the increase in attacks to a number of factors, including habitat loss, deforestation and increased human encroachment on hippopotamus territory-" Hippopotamus Attacks on the Rise in India", Wildlife Biology, 2016[17]. To our knowledge, this is the first case report in India on hippopotamus bite and its clinical presentation, surgical care and outcome of a patient. So far only 4 case reports/studies have been published in our medical literature about the hippopotamus attacks on humans[1,5,6,9,10] and among which only 3 reports are about the surgical care provided for the patients[1,5,6]. During 2017-2018, animal bites represented 0.6% of the overall emergency department visits, of which 8% was caused by hippo[1,2] whereas in India though the annual incidence of animal bites were high (1.7%), most of them were dog bites (91.5%) and hippopotamus bites incidence report were not available. Considering all Animal bite wound infections are reported to be between 2 and 64% in a literature in USA[12] and whereas in a case series in Africa which included only hippopotamus bites were 36.4%[1] and in our country we couldn't derive to a incidence rate as the data were not available but we were curiously awaiting for the culture reports as the animal involved was a wild and rare one whose saliva can contain oral bacterial flora which plays a strong role in wound infection. The mammals are known to have powerful salivary digestive enzymes (lysozyme and peroxidase) that can chemically damage human flesh. Which could be particularly virulent in human tissues[11]. In this case report our patient had deep punctured/lacerated wounds in the left gluteal region as well as crush wound over the left chest resulting in hemothorax and segmental lung collapse for which ICD has been placed with supplemental oxygen. Initial wound site was sampled and sent for culture revealed E. coli growth which may be an oral flora or from contamination and tissue culture collected on day 3 showed polymicrobial organism and wound pus swab collected on day 10 culture report showed klebsiella pneumonia which maybe a hospital acquired pathogen. There was not a higher wound infection rate in our case may be attributed to the fact that patient was immediately referred to our hospital, a higher Centre with all primary wound assessment and care and a broad spectrum antibiotics, vaccines and immunoglobulin's were initiated and also mainly we don't have a strong medical literature evidence for us to compare with and thirdly the previous case studies reported were with more severe deep wounds, avulsions and punctures and open wounds exposing the long bones when compared to our patient. Crushing can devitalize tissues far beyond clinical identification during surgical debridement of wounds. Hippopotamus saliva could also play strong role in wound infection[11]. Open reduction and internal fixation was done for left ramus mandible on day 3 and luckily the patient don't have any open bone fractures and there was no need for amputations due to any post trauma ischemia or post op/delayed infective complications as compared to the other case reports where the deep wounds were so severe and there was extensive crush injury resulting in amputation of limbs and open long bone fixations[1,5,6,10]. And this may be attributed to the fact that since it was a new and challenging case for us to handle, sincere collaboration of emergency team and surgeons and intensivists and microbiologist/infective diseases teams and visionariness and their opinions were meticulously given equal importance in patient management which helped not ending in any severe infection/sepsis resulting in any amputations[6-8]. We couldn't find any fatality rates for hippopotamus attacks on humans from any recognized medical publications. There are few non-medical paper publications which reports about the death rates For instance, the Australian Broadcasting Corporation reported the death of 13 people while on a boat trip due to a single hippopotamus attack and thus the mortality rate seems 73%[13-18]. One more study by Treves[2] analyzing the data of wildlife-caused casualties in Africa found that hippopotamus attacks produced the highest percentage of fatalities (86.7%) compared to lion and leopard attacks (75.0% and 32.5%, respectively). Few points to be noted were. A meticulous collaboration of emergency and surgery and postoperative care of such patient becomes essential because:

- The high incidence of hippopotamus bite wound infection should raise a red flag to all treating surgeons to be more aggressive in the wound debridement and this has a significant impact on patient outcomes where patients are at risk of chronic osteomyelitis and permanent disability.
- A clear treatment strategy and protocol has to be designed for all animal bites and if it happens to be a rare case of wild animal bite then a deep and

thorough literature check and studies will be helpful in better management of such patients and a close observation and monitoring and meticulous assessment of patient should be done. And always refer to a tertiary center where such facilities will be accessible.

- Since animal attacks are at in our country are on the rise educating the public about hazards and immediate wound care, erecting warning signs in animal habitats and control of stray animals, patrolling these areas and especially relocating wild animals like hippos to areas where human interaction is less.

CONCLUSIONS

The government is collaborating with local communities to develop hippopotamus attack response plans, which include the establishment of early warning systems, protocols for managing attacks and training for villagers on safe hippopotamus interaction. To our knowledge, this is the first case reporting as a medical literature on the clinical presentation and outcome of our patient who was attacked by a baby and mother hippopotamus in vandalur zoo. In future, we should conduct an exhaustive review of the primary and grey literature outlining how the conflict between people and hippos arises, the impacts of conflict on both human communities and hippo populations and all known intervention measures to be taken.

REFERENCES

1. Rafferty, J.P. and D. Mammals., 9 of the World's Deadliest Mammals.
2. Treves, A. and L. Naughton-Treves, 1999. Risk and opportunity for humans coexisting with large carnivores. J. Hum. Evol., 36: 275-282.
3. Dunham, K.M., A. Ghiurghi, R. Cumbi and F. Urbano, 2010. Human-wildlife conflict in Mozambique: A national perspective, with emphasis on wildlife attacks on humans. Oryx, 44: 185-193.
4. Durrheim, D.N. and P.A. Leggat, 1999. Risk to Tourists Posed by Wild Mammals in South Africa. J. Travel Med., 6: 172-179.
5. Lin, H.H. and R.E. Hulsey, 1993. Case Report. J. Orthop. Trauma, 7: 384-387.
6. Drake, F.T., E. Quiroga, H.W. Kariuki, K.A. Shisanya and M.P. Hotchkiss et al., 2014. Traumatic near amputation secondary to hippopotamus attack: Lessons for surgeons. J. Surg. Res., 188:58-63.
7. Giannou, C. and M. Baldan., 2010. War Surgery: Working with Limited Resources in Armed Conflict and Other Situations of Violence. Geneva, Switzerland: International Committee of the Red Cross., Vol. 1.
8. Herard, P., 2019. Guidelines Good Orthopaedic Practices in MSF OCP Missions. Surgeon/Good Practices in Orthopedic surgery., Vol.
9. Pickles, G., 1987. Injuries by Wild Animals in the African Bush. J. Royal Army Med. Corps, 133: 159-160.
10. Samaranayake, L. and V.H. Matsubara, 2017. Normal Oral Flora and the Oral Ecosystem. Dent. Clin. North Am., 61: 199-215.
11. Ricci, J.A., C.R. Vargas, D. Singhal and B.T. Lee, 2016. Shark attack-related injuries: Epidemiology and implications for plastic surgeons. J. Plast., Reconstr. & Aesthetic Surg., 69: 108-114.
12. Støen, O.G., A. Ordiz, V. Sahlén, J.M. Arnemo and S. Sæbø et al., 2018. Brown bear (Ursus arctos) attacks resulting in human casualties in Scandinavia 1977-2016., management implications and recommendations. PLOS ONE, Vol. 13 .10.1371/journal.pone.0196876 1977-2016.
13. Gruen, R.L., 2009. Crocodile Attacks in Australia: Challenges for Injury Prevention and Trauma Care. World J. Surg., 33: 1554-1561.