A hunting arrow traumatism to the head: a case report from Niger

Assoumane Issa Ibrahim[1], Roméo MURHEGA[1], and Sanoussi Samuila[1]

[1]Université Abdou Moumouni de Niamey Faculté des Sciences de la Santé

April 25, 2023

A hunting arrow traumatism to the head: a case report from Niger Assoumane Issa Ibrahim[1,2], Roméo Bujiriri Murhega[1,2,3] , Sanoussi Samuila[1,2] *1. Department of Neurosurgery, National Hospital of Niamey, Niamey, Niger 2. Faculty of Health Sciences of the Abdou Moumouni University of Niamey, Niger 3. Faculty of medicine, catholic university of Bukavu, Democratic Republic of Congo* **Corresponding author :** Roméo Bujiriri Murhega, quartier Harobanda, ville de Niamey, Niger, +22782078866,*romeobujiriri1@gmail.com*, ORCID: 0000-0002- 0022-6355**Key clinical message** ***Arrow injuries have not disappeared in our environment despite the advances in the development of warfare tools in the world. All regions of the body can be the target of these arrows and in particular the cephalic region whose gravity will depend on the structures reached.*** **Abstract** With the development of modern weapons of war, arrow wounds have become rare in developed countries, but they are still common in developing countries, including Niger. These injuries are often serious and life-threatening when they are in the head and neck region, due to the presence of major vessels and vital organs in these areas of the body. Extraction of these arrows is usually difficult due to the proximity of major vital structures. Unskilled extraction can aggravate the injury or result in unintentional damage to vital structures with imminent risk of death. We present the case of a patient with a homemade arrow to the head in the left periorbital region that we successfully extracted at the National Hospital in Niamey. Our objective is to highlight the experience with this patient and review some reports in the literature.**Keywords:** Arrow wounds, head wounds, Niamey**Introduction** Since ancient times, since prehistoric times, arrows have been used as weapons of war in many civilizations, including African civilizations.[1] With advances in technology, arrows as weapons of war are now almost abandoned in developed countries. Nevertheless, in developing countries, arrow injuries are still a reality.[1,2]In developing countries, for example, penetrating head injuries occur most often after fights and conflicts between farmers, and these situations are much more frequent in practice than the rarity of reported cases would suggest.[2,3]Arrow injuries are very rare.[4,5] All areas of the body can be targets, including the cephalic region, and the severity of which depends on several factors. Among these factors, we cite, the distance at which the arrow was shot, the degree of penetration of the arrow and the application or not of poison on the arrowhead, which is a common practice.[1] These injuries can affect any part of the human body, including the head and neck and can be fatal.[6] These head and neck injuries are often life-threatening due to the presence of major vessels and vital organs. Management of these injuries is not always easy due to the proximity of major vital structures. We report on a patient who received a left periorbital arrow and was successfully treated.**Case Report** A 42-year-old patient from a region far from Niamey (the Diffa region), located 1,318.8 kilometers from the city of Niamey, was referred to the surgical emergency room of the national hospital in Niamey five days after a fight between farmers over agricultural land. On admission, he presented with an impacted arrow in the left orbital rim 1 cm lateral to the medial canthus **(Figure 1)**. The patient was conscious, without signs of intracranial hypertension or focal signs. His vision was normal. The CT scan performed showed the extracranial path of the arrow. It crossed the left orbital rim, the base of the nose to the right external canthus without penetrating the cranium **(Figure 2)**. The patient had received antibiotics and tetanus prophylaxis. He underwent wound exploration with arrow removal under general anesthesia**(Figure 3).** The arrow was approached through a left eyebrow incision. Dissection was

completed to the tip of the arrow, and the arrow was gently removed. The patient did well after surgery, no complications were recorded, and he was discharged 1 week after admission. Postoperative follow-up has not noted any particularities to date and the wound has healed well **(Figure 4). Discussion** Head injuries are a major global public health problem. These traumas encompass a wide range of etiologies.[7] Among these etiologies we can mention, accidents on the public road, accidents at work, sports, trauma by bullets, trauma by arrows etc. Head injuries from arrows are too rare in developed countries, but in developing countries they have not disappeared despite advances in the field of tools of war. In developing countries, peasants still value their agricultural land, which is a source of wealth and economy.[2] Nevertheless, conflicts between them are frequent and are the source of fights that most often involve bladed weapons, including arrows. In this work we report the case of a patient suffering from an arrow trauma to the head after agricultural conflicts in his village. In the literature, very few cases are reported on head injuries by arrow. The clinical manifestation of penetrating arrow injuries in the head area depends on the structure affected and the severity of the injury. The degree and severity of the injuries depend on the distance at which the arrow was fired, the trajectory it followed, the degree of penetration and the possible application of poisons to the tip of the arrow.[8] Poisoned arrows cause paralysis or severe infection of the wound depending on the nature of the poison.[2,9] Poisoned arrows cause paralysis or severe infection of the wound depending on the nature of the poison.[2] Brain and spinal cord injuries can lead to paraplegia, quadriplegia, ventricular hemorrhage, or immediate death.[1] The good news is that our patient the path of the arrow was exclusively extracranial and the large vessels were not affected. The emergency action to be taken will depend on the clinical condition of the patient at admission. Patients whose injuries are immediately life-threatening should be treated urgently, while those who are clinically stable and have optimal hemodynamic status are examined before the decision to explore is made.[10,11] Our patient was clinically stable and had received a complete and unremarkable clinical examination. CT scan is an essential examination for the lesion assessment of patients with arrow trauma to the head.[1]It is usually indicated in patients who are hemodynamically stable, which was the case for our patient. The scanner is a non-invasive diagnostic tool that determines the trajectory of the arrow and its relationship with vital structures.[12] An attempt at blind extraction can lead to a serious disaster, especially if major vessels have been hit. Our patient was able to perform the cranioencephalic CT scan which clearly showed us the extracranial trajectory of the arrow.**Conclusion** Arrow wounds to the head have never disappeared in developing countries despite advances in the manufacture of tools of war. Care is difficult when noble structures are affected. The prognosis is life-threatening when there is damage to the large vessels, especially in a context of limited resources. The urgency of the emergency always depends on the patient's clinical condition at the time of admission to hospital.**ACKNOWLEDGMENT** None**CONFLICTS OF INTEREST** None**AUTHOR CONTRIBUTIONS** Assoumane Issa Ibrahim and Roméo Bujiriri Murhega have designed, conceptualized the study, and written the first draft under the supervision of Sanoussi Samuila .**ETHICAL STATEMENT** This case report received ethical clearance from the Ethical committee of the university of the first author.**CONSENT** Written informed consent was signed by the patient prior to the publication of this paper**DATA AVAILABILITY STATEMENT** All the materials used in this study are available on request.**Bibliography**

1. Abdullahi H, Adamu A, Hasheem MG. Penetrating Arrow Injuries of the Head and-Neck Region: Case Series and Review of Literature. *Niger Med J J Niger Med Assoc.* 2020;61(5):276-280. doi:10.4103/nmj.NMJ_17_20 2. Olasoji HO, Tahir AA, Ahidjo A, Madziga A. Penetrating arrow injuries of the maxillofacial region. *Br J Oral Maxillofac Surg.* 2005;43(4):329-332. doi:10.1016/j.bjoms.2004.10.026 3. Olasoji HO, Tahir A, Arotiba GT. Changing picture of facial fractures in northern Nigeria. *Br J Oral Maxillofac Surg.* 2002;40(2):140-143. doi:10.1054/bjom.2001.0716 4. Peloponissios N, Halkic N, Moeschler O, Schnyder P, Vuilleumier H. Penetrating thoracic trauma in arrow injuries. *Ann Thorac Surg.* 2001;71(3):1019-1021. doi:10.1016/S0003-4975(00)02179-2 5. Brywczynski JJ, Barrett TW, Lyon JA, Cotton BA. Management of penetrating neck injury in the emergency department: a structured literature review. *Emerg Med J EMJ.* 2008;25(11):711-715. doi:10.1136/emj.2008.058792 6. Hain JR. Fatal arrow wounds. *J Forensic Sci.* 1989;34(3):691-693. 7. Menezes JM, Batra K, Zhitny VP. A Nationwide Analysis of Gunshot Wounds of the Head and Neck: Morbidity, Mortality, and Cost. *J Craniofac Surg* .:10.1097/SCS.0000000000009268. doi:10.1097/SCS.0000000000009268

8. Madhok BM, Roy DDD, Yeluri S. Penetrating arrow injuries in Western India. *Injury*. 2005;36(9):1045-1050. doi:10.1016/j.injury.2005.05.032 9. Milner GR. Nineteenth-Century Arrow Wounds and Perceptions of Prehistoric Warfare. *Am Antiq*. 2005;70(1):144-156. doi:10.2307/40035273 10. Ngakane H, Muckart DJJ, Luvuno FM. Penetrating visceral injuries of the neck: Results of a conservative management policy. *Br J Surg*. 2005;77(8):908-910. doi:10.1002/bjs.1800770822 11. Biffl WL, Moore EE, Rehse DH, Offner PJ, Franciose RJ, Burch JM. Selective management of penetrating neck trauma based on cervical level of injury. *Am J Surg*. 1997;174(6):678-682. doi:10.1016/S0002-9610(97)00195-5 12. Gracias VH. Computed Tomography in the Evaluation of Penetrating Neck Trauma: A Preliminary Study. *Arch Surg*. 2001;136(11):1231. doi:10.1001/archsurg.136.11.1231