Unusual Penetrating Cranioencephalic Injury by a Harpoon in a Brazilian Man

Traumatismo Cranioencefalico Perfurante Incomum por arpão

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RESUMO
Lesões cranianas penetrantes correspondem a uma causa incomum de traumatismo cranioencefálico diferentemente de ferimentos por projéteis de arma de fogo. A maioria dos casos relatados na literatura, embora notáveis pela gravidade, apresentam boa evolução pós-operatória. O objetivo do presente relato é descrever o caso de um homem brasileiro admitido com lesão craniana penetrante profunda por arpão e sem déficits neurológicos. Os autores discutem os principais mecanismos do trauma e realizam breve revisão científica da literatura sob os aspectos epidemiológicos e possíveis abordagens terapêuticas. O manejo neurocirúrgico precoce e apropriado, quando realizado por cirurgião experiente, pode contribuir consideravelmente no prognóstico dos pacientes.

Palavras Chave: trauma crânio-encefálico, lesões cranianas penetrantes; Arpão.

ABSTRACT
Penetrating brain injury due to low energy objects is an unusual cause of head trauma, unlike gunshot wounds. Most cases reported are noteworthy due to its large dimension and, sometimes, good functional outcome. The present report describes the case of a Brazilian man presenting with a deep penetrating brain injury by a harpoon and no neurologic deficits. We discuss the main mechanisms of trauma and make a brief review of the literature upon epidemiological aspects and possible therapeutic approach. The early and appropriate neurosurgical management, on experience hands, may improve considerably patient outcome.

Keywords: head injury, penetrating brain injury; Harpoon.
INTRODUCTION

According to the World Health Organization, 5.8 million people died worldwide in 2000 due to injuries from accidents and traumatic brain injury is one of the most common causes of morbidity and mortality in developing countries (8, 9). Gunshot wounds to the head are responsible for a significant portion of the mortality and poor neurological outcomes associated with penetrating brain injuries (10, 18). The changes that occur in intracranial pressure and cerebral blood flow following gunshot wounds to the brain are complex, but usually result from the vasogenic edema that develops along the missile track (13). Penetrating brain injuries from low-energy objects (foreign bodies), although also accompanied by many polytrauma risk factors, frequently present less effect on the surrounding brain tissue adjacent to the foreign body track and fewer neurologic deficits (1, 5).

The aim of the present report is to describe the case of a Brazilian man presenting with a deep penetrating brain injury by a harpoon and no neurologic deficits. We discuss the main mechanisms of trauma and make a brief review of the literature upon epidemiological aspects and possible therapeutic approaches.

CASE REPORT

A 32-year old brazilian man was admitted to the Emergency Department presenting with a 30 minutes history of a penetrating head injury on the occipital region close to the midline. He also referred an unremarkable past medical and surgical history. On clinical and neurological assessment, the patient was walking and talking normal and fluently, without any visuospatial, cognitive, motor or sensitive deficits. Cranial nerve functions were found to be normal and Glasgow Coma Scale was 15 points. A small continuous bleeding in the occipital region was noted. Cranial computed tomography (CT) revealed a deep penetrating foreign body lesion with little surrounding brain tissue edema (Fig. 1 and 2).

The patient was immediately taken to the operating room and submitted to an occipital craniotomy with careful dissection and removal of the harpoon. No hemorrhagic complications occurred during surgery and bleeding was controlled. The patient was maintained on clinical observation on Intensive Care Unit during 24 hours. He presented an uneventful surgical recovery and was discharged home on good clinical conditions and no neurologic deficits on the fifth postoperative day.

DISCUSSION

Trauma is an important cause of death in many countries, particularly in children and young adults, and head injury is the main cause of death in about 50% of trauma patients (3). Several epidemiological studies point to automobile accidents as the leading cause of head trauma and motor vehicle accidents as the most important mechanism of severe brain injury (4, 6, 7, 15). In Brazil, penetrating cranioencephalic injuries usually results from civilian gunshot wounds and are accompanied by a high morbidity and mortality rate, with poor neurologic outcomes (10, 11). Low-energy objects
Injury by a Harpoon in a Brazilian Man

Júnior SRM, Cohen MI, Chaves RA, Teixeira MAF, Ellakkis RFEH, Meguins LC, Morais DF. - Unusual Penetrating Cranioencephalic Injury by a Harpoon in a Brazilian Man

Many therapeutic approaches have been proposed to the management of patients with penetrating brain injuries, varying from a conservative treatment with clinical support and control of the risk factors to a decompressive craniotomy (2, 12, 17). The surgical approach of patients usually depends on many aspects, such as clinical presentation, location and dimension of the trauma, support of intensive care unit and neurosurgeon experience. In the present report, the harpoon proximity to the occipital midline and venous sinuses made the neurosurgical procedure particularly challenging and required careful surgical access and dissection to avoid any additional vascular injury. We believe that, in such cases, the operative management must be performed by an experienced neurosurgeon with great anatomical knowledge of the region.

In conclusion, the present report highlights that the early and appropriate neurosurgical management, on experience hands, may improve considerably the outcomes of patients presenting with low-energy penetrating cranioencephalic injuries.

References


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