



Case Reports

Transorbital penetration of the skull base with an occult foreign body

D.J. Verret MD, R. Defatta MD, Yadranko Ducic MD, FRCS(C), FACS*

Department of Otolaryngology–Head and Neck Surgery at the University of Texas Southwestern Medical Center in Dallas, TX, USA

Division of Otolaryngology and Facial Plastic Surgery, John Peter Smith Hospital, Fort Worth, TX 76104, USA

Accepted 10 June 2005

Intracranial foreign bodies related to trauma have been well described over the centuries. King Henry II of France died in 1559 after a broken shaft of a lance was driven through his orbit during a joust [1]. The severity of the potential complications arising from intracranial-penetrating foreign bodies is often quite dramatic and includes intracranial hemorrhage, major vessel injury, arteriovenous fistula formation, focal neurological deficits, cerebral contusion and edema, hydrocephalus, seizures, and central nervous system infections with the majority of deaths generally occurring early from intracranial bleeding [2]. Many penetrating intracranial foreign bodies are simple to identify from external trauma. Occasionally, diagnosis may be difficult with more occult objects or routes of penetration [3–9]. We present a case which presented to our institution with delay in diagnosis.

A 27-year-old white man presented to an outside emergency room after being hit with a branch in the face while riding a horse. The patient was noted to have an approximately 2-cm laceration of the upper eyelid which was primarily closed without complications. On the next day, the patient presented to the emergency room again complaining of headaches, fever, and decreased vision in the affected eye. A computed tomography scan of the brain was performed which revealed a foreign body tracking through the ethmoid and sphenoid sinuses and extending intracra-

nially (Fig. 1). He was diagnosed with meningitis and retained intracranial foreign body. An ophthalmologic examination revealed decreased range of motion of the left eye and 20/70 vision in that eye, which was worse than baseline. An angiogram was obtained which showed no carotid artery abnormalities. He was started on intravenous antibiotics and taken to the operating room for removal of the foreign body. The patient's traumatic laceration was opened, and a wooden foreign body was noted approximately 1 cm under the skin. The wound was explored, and a



Fig. 1 Reconstructed 3-dimensional computed tomography scan showing the foreign body entering the orbit and extending intracranially.

* Corresponding author. Tel.: +1 817 927 1171; fax: +1 817 927 1605.
E-mail address: yducic@sbcglobal.net (Y. Ducic).

7-cm wooden stick was removed. The patient was taken to the intensive care unit, and his postoperative course was complicated by syndrome of inappropriate secretion of antidiuretic hormone which resolved after medical treatment. The patient was discharged with resolution of his syndrome of inappropriate secretion of antidiuretic hormone and improvement of his vision. In follow-up, the patient's vision had returned to preoperative levels, and he had no long-term neurological sequelae.

1. Discussion

A majority of penetrating intracranial trauma is due to high-velocity injuries, often gunshots, with obvious diagnosis from external signs [5]. In some instances though, intracranial foreign bodies are less obvious and can result in a delayed diagnosis. In addition, plain radiographs of the head will not reveal radiolucent objects such as wood and plastic. Delay in diagnosis of intracranial foreign body has been reported as long as 15 years after the initial incident [4]. A study by Miller et al found that, in patients with intracranial wooden foreign bodies, survival was only 38% without surgery but improved to 90% with a combination of appropriate antibiotics and surgery [10]. A high index of suspicion is warranted in any patients presenting with a history of what may appear to be minor

facial trauma but with a symptom complex out of proportion to physical findings.

References

- [1] Faria Jr MA. The death of Henry II of France. *J Neurosurg* 1992;77(6):964-9.
- [2] De Villiers JC. Stab wounds of the brain and skull. In: Vinken PJ, editor. *The handbook of clinical neurology*. Amsterdam: Elsevier; 1975. p. 477-503.
- [3] Henley M, Dewar EP, Brice J. An unusual injury in a most unusual situation: conservative management of retained intracranial foreign body. *Ann R Coll Surg Engl* 1984;66(3):204-6.
- [4] Fein W, Carton CA. Transorbital removal of intracranial foreign body in middle fossa. *Ann Ophthalmol* 1976;8(1):89-92.
- [5] Irwin Jr GE, Tilelli J. Unrecognized penetrating intracranial foreign body. *Am J Emerg Med* 1986;4(5):412-3.
- [6] Noterman J, Retif J, Klastersky J. Staphylococcal meningitis and abscess associated with intracranial foreign body, as a late complication of cranial trauma. *Acta Neurochir (Wien)* 1973;29(1):131-6.
- [7] van Damme W, Beeckman P, Calliauw L, Marchau M. Intracranial foreign body subsequent to head injury in childhood. *Neuroradiology* 1975;9(4):215-6.
- [8] Rao BD, Reddy DR. An unusual intracranial foreign body. *Neuro India* 1971;19(2):95.
- [9] Kahler RJ, Tomlinson FH, Eisen DP, Masel JP. Orbitocranial penetration by a fern: case report. *Neurosurgery* 1998;42(6):1370-3.
- [10] Miller CF, Brodkey JS, Colombi BJ. The dangers of intracranial wood. *Surg Neurol* 1997;(7):95-103.