






Foreign Body in the Posttraumatic Skull: Case Report

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Abstract

Head traumas with penetrating injuries are among the most common reasons for presentation to the emergency department. Penetrating injuries to the head with a foreign body may sometimes heal without sequelae or with mild sequelae, but sometimes may result in severe disability and even death.

A 28-year-old male patient was brought to the emergency department unconscious as a work accident. According to the anamnesis obtained from the patient's relatives, the patient was cutting with a cutting instrument device and lost control of the cutting instrument device. In the computerized tomography imaging of the patient; a foreign body with a depth of 75 mm and a thickness of 20 mm and a shape of a quarter circle with a depth of 75 mm and a thickness of 20 mm, which disrupted the integrity of the lower wall of the orbit and extended to the right temporal lobe.

In this presentation, we tried to emphasize that mortality may be avoided with good care in patients who are predicted to have a high mortality rate in penetrating head trauma due to foreign body or bodies, which may be seen rarely.

Keywords: Head trauma, Penetrating injury, Foreign body

Introduction

Head traumas with penetrating injuries are among the most common reasons for presentation to the emergency department. Penetrating injuries to the head with a foreign body may sometimes heal without sequelae or with mild sequelae, but sometimes may result in severe disability and even death.^{1,2} Many complications may be observed in penetrating foreign body injuries. These complications include intracerebral hematoma, cerebral contusion, intraventricular hemorrhage, pneumocephalus, brain stem damage and carotid cavernous sinus fistula.^{3,4} Depending on the speed, penetrating sharps can damage an area in the brain tissue that is 3-4 times larger than the size of the wounding instrument. Glaskow Coma Score (GCS) score guides the evaluation of the prognosis of patients. Patients with a GCS score above 8 and pupillary response have a 25% mortality risk, while patients with a GCS score be-

low 5 have a mortality risk of up to 100%. In penetrating head traumas admitted to the emergency department, intubation to protect the airway, intravenous (IV) fluid therapy to protect from hypovolemia, IV broad-spectrum antibiotic treatment should be started rapidly to prevent the development of infection.

We aimed to contribute to the literature with our management of this case, which we think is a different and uncommon phenomenon in daily life from a traumatic perspective.

Case Report

A 28-year-old male patient was admitted to the emergency department unconscious as a occupational injury. According to the anamnesis obtained from the patient's relatives, the patient was cutting with a cutting instrument

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Figure 1. Axial view – foreign body



Figure 2. Coronal view – orbital damage



Figure 3. Sagittal view – intracranial extension

device and lost control of the cutting instrument device. Since the patient's vitals were stable and consciousness was not good at the time of admission, he was intubated to ensure airway safety. On initial examination, a disc fragment approximately 3*8*10 cm in size was observed penetrating the right nasal orbital pit and orbital wall and invading the brain. In the CT imaging of the patient; a foreign body with a depth of 75 mm and a thickness of 20 mm and a shape of a quarter circle with a depth of 75 mm and a thickness of 20 mm, which disrupted the integrity of the lower wall of the orbit and extended to the right temporal lobe and right frontal lobe inferior, disrupting the maxillary sinus in the midline and right side of the face was observed (Figure 1-3). The patient was evaluated by the relevant specialties and emergency surgical intervention was not planned, elective multidisciplinary surgery was planned and the patient was transferred to intensive care unit. After preoperative preparations were completed in the intensive care unit, elective surgeries were performed and the patient was followed up and treated.

Discussion

In daily life, craniocerebral injuries are usually caused by traffic accidents, falls from height or gunshot wounds. In addition to these, intracranial penetrating injuries due to foreign bodies can also be seen.⁵ Factors such as the size, shape and elasticity of the foreign body are also important factors affecting the patient's clinical presentation.⁶ Intracranial penetrating injuries may cause severe symptoms and even death by damaging vital structures and causing hematoma, thrombosis, vasospasm or infection. Patients must be closely monitored. In head traumas with penetrating sharps exposure, the patient may be brought to the emergency department by the teams as confused or unconscious. Since these injuries have a high mortality risk, the cases should be intubated to protect the airway. Complications that may occur in penetrating head trauma depend on the location of the foreign body, its relationship with important cerebral structures and the lesions it causes. Except for gunshot wounds, penetrating head traumas are very rare. Especially the bony structures in the head are the most important barrier for these traumas. The fact that the temporal bone is thinner than other bones makes this region more sensitive to trauma. However, fracture of other bones may be inevitable in severe traumas and penetrating traumas may occur as a result. When the literature is reviewed, intracranial foreign bodies are usually seen in the orbital, frontal sinus and nasal regions.^{5,6} The mortality risk in patients ranges from 25% to 100%. The use of new generation antibiotics that

cross the blood brain barrier has significantly decreased the risk of infection after penetrating head trauma. In these patients, removal of foreign materials during surgery and excessive washing of the surgical field with saline are important to reduce the risk of infection.^{7,8,9,10} The surgical treatment to be chosen in penetrating head trauma should be evaluated individually according to the pathologies and each patient. However, there are some features that may be a guide for the surgical procedure to be applied. These are; to comprehend the localization of the foreign body very well, to determine its relation with important cranial structures and then to remove the foreign body by performing a craniotomy or craniectomy around the foreign body without damaging the surrounding tissues.

Conclusion

In this presentation, we tried to emphasize that mortality may be avoided with good care in patients who are predicted to have a high mortality rate in penetrating head trauma due to foreign body or bodies, which may be seen rarely.

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