Traumatic Intracerebral Foreign Bodies
Case Report

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Summary

Penetrating injuries of the cranium has specific feature point of view their effect mechanism, principles of treatment and patient's postoperative care and follow up.
Because of the pieces of glass in the cranium, following head injury is very rare, such a case is reported in light of literature.

Key Words: Intracranial penetrating foreign bodies - Head injury

INTRODUCTION

Head injuries are frequent during times of war. Such injuries are usually caused by guns (1). In civil life, injuries to the head are usually caused by pencils, iron rods, stone etc (2,3). Penetrating injuries are important for the complications they cause as well as their direct affects.

Pieces of glass were detected in the skull of the patient on admittance. The case was compared with literature and discussed, as it is a rare case.

Case Report

A 20 years old, right handed, male, worker. He was admitted to Cerrahpasa Medical Faculty on June 29th, 1991 as a result of a traffic accident. On first examination, the patient was fully concience, and totally cooperative.

The right frontal sinus region there were seen multiple, irregular skin lesions. Pieces of glass were seen in the hemorrhaging lesions. Palputations indicated a broken frontal bone. Pre-operative vision was full, and the eyeball had free movement in all directions. Right periorbital ecchymosis was apparent, with no liquid drainage. A 1 cm x 1 cm skin defect was detected on the right eyelid during the plastic surgeons consultation. Surgery was advised. Orthopedic consultation showed that there was a hip-bone displacement. Traction was applied. Biochemical examination were found to be normal. Craniography showed right frontal sinus to have a depressed fracture. A 2 cm x 2 cm radio-opaque mass was also detected (Figure 1).6

Adli Tip Derg., 9, 105 - 108 (1993)
CT scan taken 4 hours after the accident showed foreign object in the frontal sinus, and a frontal sinus depressed fracture. The right orbital medial walls upper continuation was broken. In the right frontal lobe multiple foreign objects were detected (Hiperdense [618 HU], amorph type, the largest of which the diameter was 18 mm) (Figure 2). There was edematous area around foreign bodies. In the light of this clinical and radiological findings, the foreign objects were surgically removed. The open wall of the frontal sinus was covered with bone wax. The insplicable dura tears were sutured. The patient was given a broad spectrum antibiotic therapy (sulfatrimox + ornidazol + gentamicine) and antiepileptic. The control CT scan showed a 3 cm defect of the frontal bone in the interorbital region and intracranially located remained foreign bodies that had been surrounded by considerable amount of edema.

Therefore, in the extradural exploration done with a right frontal craniotomy, the following day under elective conditions only sutured dural tears in the frontal pole were detected. The dura was therefore incised. By using transcortical approach, multiple sharp edged pieces of glass and fragments of bone were found in the middle of frontal lobe, approximately 3 cm deeper than surface. Around the glass pieces, there was minimal contusion. This area was progressing towards the entrance, in the right frontal pole. Whilst 5 pieces of glass of variable sizes and 3 fragments of bone were being removed, many small pieces were also aspirated. After hemorrhage control, and irrigation of the surgical pouch, antibiotic serum drenched sponge pieces were placed under the dura, and the surgical pouch. The incision layers were closed according to the their anatomy. The patient was continued on antibiotic therapy. He was discharged on the 7th day. The radio-opaque mass that had been found in the first craniography of patient wasn't seen in the control craniography. The follow up CT scan was also clean of its previous findings (Figure 3).

We did not notice an epileptic attack or any kind of infection in patient 18 months follow up duration.

**DISCUSSION**

Penetrating wounds of a speed less than 320/m/sc and faster than 320/m/sc, are divided into two groups (4). High speed wounds from gun wounds (bullets etc.) are seen mainly in wars. Low speed wounds are caused more commonly by lead pencils, iron rods, stones, etc. These are often found to be the main causes of murder and accidents.

Apart from the body damage caused by fast speed wound penetration, shock waves may cause damage to the brain and brain stem (3,4). The vacuum caused at entrance can allow the entrance of hair, skin, and bone fragments, which open way to infections (4). In relation this, slow speed wounds, have a more direct pathology to the entry itself (1).

On admittance to hospital, these types of wounds, are followed by a preliminary craniography and CT scan. Localised inspection is made of the wound. If the CT scan is insufficient to observe the vascular pathology, an anjiography may be performed (4,5).

The main purpose of treatment is to reduce the pressure in the head, reduce the risk of infection, and epilepsy, remove any foreign objects, control bleeding, and repair the bone and skin. Medically, according to ICP, hiperosmotic fluids, and diuretics, prophylactic antiepileptics and broad spectrum antibiotics, against infection are used. Surgically, any heamatomas present are drained, foreign objects are removed, local irrigation, and hemorrhage control are maintained, and the necessary bone and skin repairs are made. Ultrasonography should be used if possible during surgery to ensure no foreign objects are still present (4).

It is recorded in literature from the Vietnam war, that out of patients observed, 29% developed epilepsy during 2 years, and within 15 years, these numbers rose to 53% (6).
Figure 1. Preoperatively craniography. A 2 cm x 2 cm radio-opaque mass was showed (arrow).

Figure 2. Preoperatively CT scan. In the right frontal lobe, multiple pieces of glass (618 HU, the largest of which the diameter was 18 mm).

Figure 3. Postoperatively CT scan. It was also clean of its previous findings.
The numbers recorded by Brandvold and associates (1) for the Lebanese/Israel war showed out of 113 observations, 22% developed epilepsy within 6 years. Brandvold and associates (1) also observed that patients with CSF fistula had a high risk of meningitis. Also signs of late infection and hemorrhage, traumatic aneurysm, CSF fistula. It is therefore necessary for clinic and CT scan control, and the patient should be watched for epilepsy and infection development.

REFERENCES


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