Penetrating Orbitocranial Injury After Trivial Eyelid Trauma: A Case Report

Lesión Órbito-craneal Penetrante Tras Traumatismo Palpebral Mínimo: A Propósito de Un Caso

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Abstract

Case report: We report a patient who, while in a drunken state, sustained a cerebral hemorrhage associated with an apparently trivial eyelid injury after an aggressive attack with a metallic object.

Discussion: Any apparently trivial eyelid injury may be associated with serious cerebral lesions. Making a correct diagnosis that distinguishes between that of drunkenness and an organic injury is essential, because failure to do so may result in both clinical and legal repercussions (Arch Soc Esp Oftalmol 2007; 82: 785-788).

Key words: Cerebral hemorrhage, penetrating eyelid injury, metallic object, drunkenness, aggression.

Introduction

Frontal orbital lesions go frequently unnoticed due to the relative absence of clinical symptoms (1). If we add to this drunken stupor as a factor of confusion, it is easy to ignore its diagnosis, which may have serious consequences at the clinical as well and legal level.

At present, a good neurological exploration is adequately supplemented by computerized tomography in hospital emergency wards. This technology provides a useful and essential diagnostic tool because, in addition to showing the extent of the orbital cranial damage, it indicates the mechanism of the lesion, its direction and the presence and localization of bone and/or metallic frag-
ments. It also is useful for monitoring the damages (2,3).

**CASE REPORT**

A thirty five-year-old man visited the urgency ward after suffering in the street an aggression in the upper left eyelid with a thin and long metallic object. He exhibited a considerable drunken stupor and gait instability.

The ophthalmological exploration revealed an unreliable visual acuity in the left eye due to the poor co-operation of the patience, but which was at least of 0.7. Intrinsic and extrinsic ocular motility were normal. The patient did not refer diplopia in any position of the gaze.

The patient also exhibited a superior palpebral clot with a small superficial cut wound which did not require suture.

Biomicroscopy, ocular tension and eye fundus were normal.

The patient was admitted in observation and in the following hours exhibited a progressive neurological deterioration consisting of time and space disorientation, incoherent responses, progressive sleepiness and repetitive vomiting. A Glasgow Coma scales test (GCS) was performed with a result of 12, as well as an orbitary CT (fig. 1) which showed an increase of periorbitary left soft tissue corresponding to a bruise and associated bone fragment with fracture in the upper posterior lateral margin of the left orbit. We also performed a brain CT (fig. 2) which showed a frontal left intraparenchymatose acute bruise which extended to the anterior horn of the adjacent lateral ventricle and to the rest of the ventricular system, as well as a subaracnoid hemorrhage in the left Silvio cissure, grooves of the left convexity, supraselar and permesencephallic cistern.

Analyses were performed to discard any hemorrhagic tendency of the patient (normal bleeding time, protrombine time, activated partial thrombo-plastine time, fibrinogen and platelet).

Due to the possibility of an active bleeding vessel as well as artery damages, a digital subraction brain arteriography (DSA) which did not reveal pathological findings (fig. 3).

The patient was admitted to the Intensive Care Unit. During his stay, control CT and DSA were performed on days 1, 2, 3, 7 and 14 which discarded new bleeding or vascular lesions. The patients involved favorably and was released with a GCS of 15. The final TC showed a front left bruise in resolution with a small frontal left intraventricular component and isodense hematic remains in the left Silvio cissure (fig. 4).
The most frequently described type of penetrating brain damage due to foreign bodies is that caused by firearms, whereas damages caused by other types of objects are much less frequent. Periorbitary wounds by foreign bodies have also been described, but in these the fact that the object causing the brain damage penetrates through the orbit is extremely rare (1-3).

In addition, the literature describes different types of materials with a range of susceptibility to complications such as infection or tissue reaction. In general, the brain tolerates metal objects quite well, although there are some cases of brain abscess even years after the trauma (1).

The orbit has a special configuration: its converging walls tend to guide penetrating objects towards the apex and, as the head instinctively pivots backward in a defensive movement, it is frequent for the object to fracture the roof of the orbit and penetrate the frontal lobe (1,2). Even though these lesions are severe, they go frequently unnoticed due to the large periorbitary bruise and the slight neurological signs (1). In this case, the drunken stupor of the patient further obscured possible signs of brain damage.

Moreover, and though anisochoria is usual, there are some exceptions and therefore a normal exploration of the light sensitive pupil reflexes does not always discard possible brain involvement. Accordingly, paying special attention to the characteristics of the object in what concerns material, shape, size and trajectory may help to elucidate the mechanism of the damages and their severity.

Besenski N et al communicated that the most frequent type of penetrating brain lesion shown by CT is hemorrhage (84%) followed by fractures with bone fragments (67%) (3). Fujitsu et al revealed that the most frequent cause of traumatic intraventricular hemorrhage is a blood clot in the frontal or temporal lobe, extending towards the anterior or inferior horn of the lateral ventricle, occurring with a 6-12 hour delay (4).

On infrequent occasions, brain trauma can be complicated by traumatic intracranial arterial lesions, including arterial dissections, pseudoaneurysms and arteriovenous fistulae. It is necessary to take always into account the possibility of said vascular lesions in order to prevent any hemorrhagic
complication which could be potentially life-threatening. This explains the importance of DSA (5), both at admission as well as in the follow up of the patient.

In any event, the main diagnostic tool for the emergency ophthalmologist who faces a penetrating palpebral trauma of unknown depth is CT because the ease with which edemas and hemorrhages can form in the orbitary region, coupled with faint neurological signs, could mask a concomitant brain involvement, particularly in the presence of drunkenness.

In conclusion, CT is an essential and irreplaceable tool even when the lesion is apparently superficial, both for the initial assessment to reveal the presence, extension and mechanism of the orbital cranial damage as well as to aid the patient follow up (1,3).

REFERENCES