



CASE REPORT

Subdural and intracystic haematomas in an arachnoid cyst secondary to a boxing injury

Luis A. Robles^{a,*}, Victor Hernandez^b^a *Department of Neurosurgery, Hospital Cornerstone, Puerto Vallarta, Mexico*^b *Department of Internal Medicine, Clinica San Miguel, Puerto Vallarta, Mexico*

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Introduction

The sport of boxing is a well known cause of brain injury.^{10–12} These injuries can be acute, such as intracranial haematoma, or chronic, such as dementia pugilistica.⁶ Acute subdural haematoma (SH) is the most common acute brain injury in boxing, and is the leading cause of boxing fatalities.¹¹ Even though new protective measures have been adopted to decrease the severity of these injuries, the high incidence of boxing-related injuries continues.

Arachnoid cysts are developmental collections of fluid that form within the arachnoid membrane; nearly two-thirds of the cysts occur in the Sylvian fissure (middle cranial fossa) and, for unknown reasons, the left hemisphere is involved twice as often as the right.⁹ Middle fossa arachnoid cysts (MFAC) may manifest themselves in several different ways. Most often they remain asymptomatic and are only diagnosed incidentally on computed tomography (CT) or during autopsy. We report the rare case of a previously asymptomatic individual who presented with subdural and intracystic bleeding associated with an arachnoid cyst; the bleeding was secondary to head trauma in a boxing practice match.

Case report

A 20-year-old man received a blow to the left temporal area during boxing practice (non-professional). He felt dizzy and the bout was stopped, but he did not lose consciousness. The next day he presented with generalised mild headache. In the following days the severity of the headache increased, and he was seen by several physicians who prescribed analgesics. Diagnoses of migraine and tension headaches were made. He started vomiting 1 month after the injury and the headache became more severe. Because of this, he was admitted to the hospital.

The patient was alert (Glasgow Coma Score 15) and well oriented, and his speech was normal. Fundoscopy revealed papilloedema, but the rest of the cranial nerves were intact. Strength in the upper and lower limbs was normal and sensation and reflexes were normal. Brain CT showed a left isodense chronic SH with important mass effect, shifting the midline to the right; the ipsilateral lateral ventricle was compressed and deformed. An isodense haematoma was evident in the left temporal fossa; this image continued superiorly, showing different densities, suggesting that different stages of bleeding were present. The basal cisterns were compressed (Fig. 1). Because the CT findings suggested a temporal arachnoid cyst associated with a

* Corresponding author. Tel: +52 322 2252759.
E-mail address: larob@prodigy.net.mx (L.A. Robles).

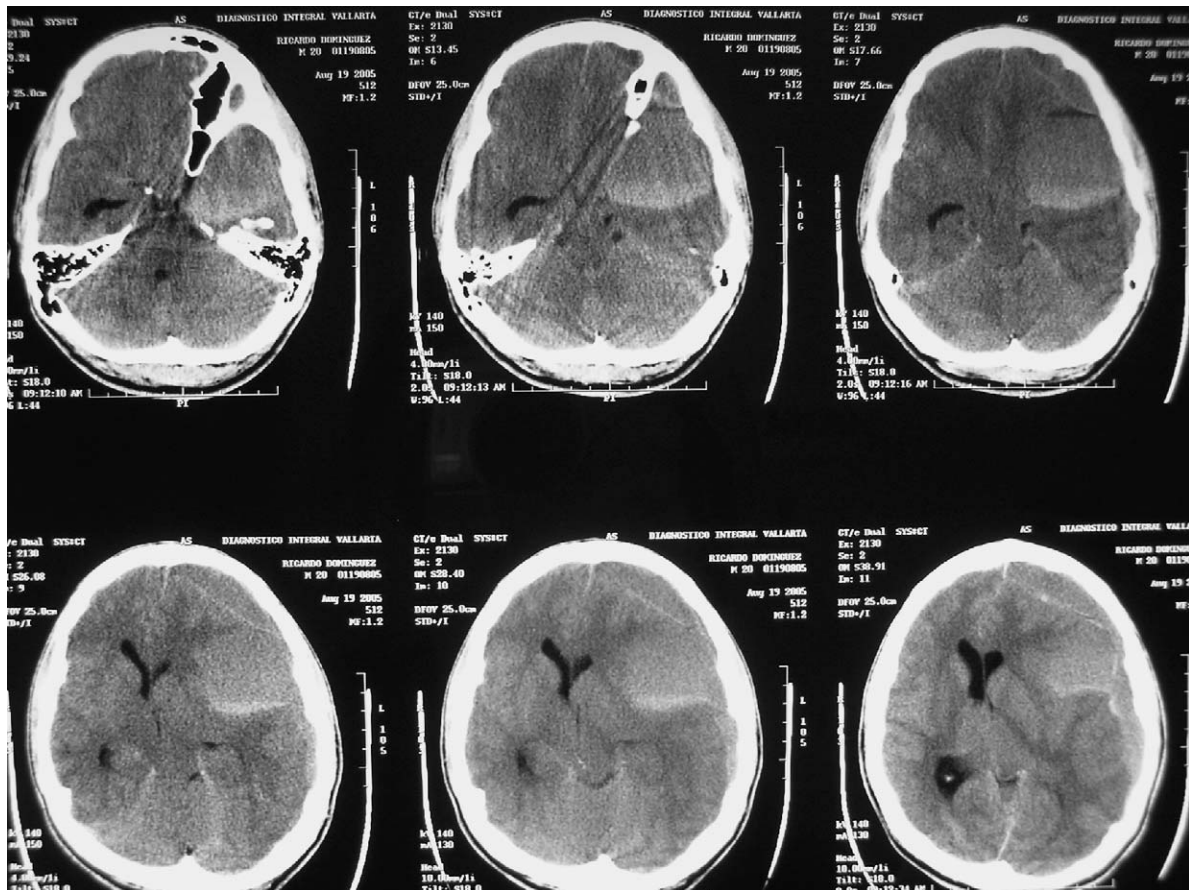


Figure 1 Left temporal intracystic haematoma. Upper right view shows different densities, suggesting different stages of bleeding. Note important compression of basal cisterns around brain stem and important midline deviation. An isodense subdural haematoma is evident.

chronic SH, the patient underwent surgery to drain the haematomas. During surgery a chronic SH and a temporal arachnoid cyst with intracystic haematoma were found and drained. The wall of the

arachnoid cyst was partially removed (Fig. 2). Post-operatively, the patient made an uneventful recovery and was discharged from the hospital. Control CT only showed the arachnoid cyst (Fig. 3).

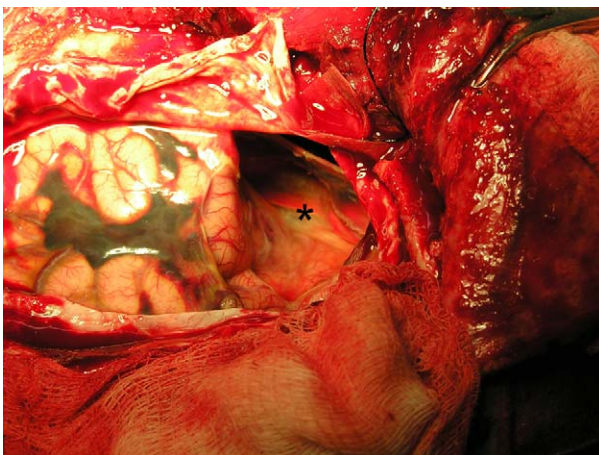


Figure 2 The haematomas have been drained. The asterisk shows where the intracystic haematoma was. Note absence of brain parenchyma in this area.

Discussion

Arachnoid cysts occur sporadically in approximately 1% of the population, and they are complicated occasionally by hygroma or intracystic or subdural haemorrhage, caused by damage to veins surrounding the cyst or stretched across the Sylvian fissure.¹ Chronic SH complicates 20% of arachnoid cysts, mainly those located in the middle cranial fossa.⁷

The mechanism of injury to the brain during boxing is complex because it depends on both the effect of the direct impact of the gloved fist on the skull and the motion of the brain and skull in response. It is believed that, at the time of impact, there is a transient acceleration of the head.^{2,5} As a result, the brain impacts on bony ridges of the skull

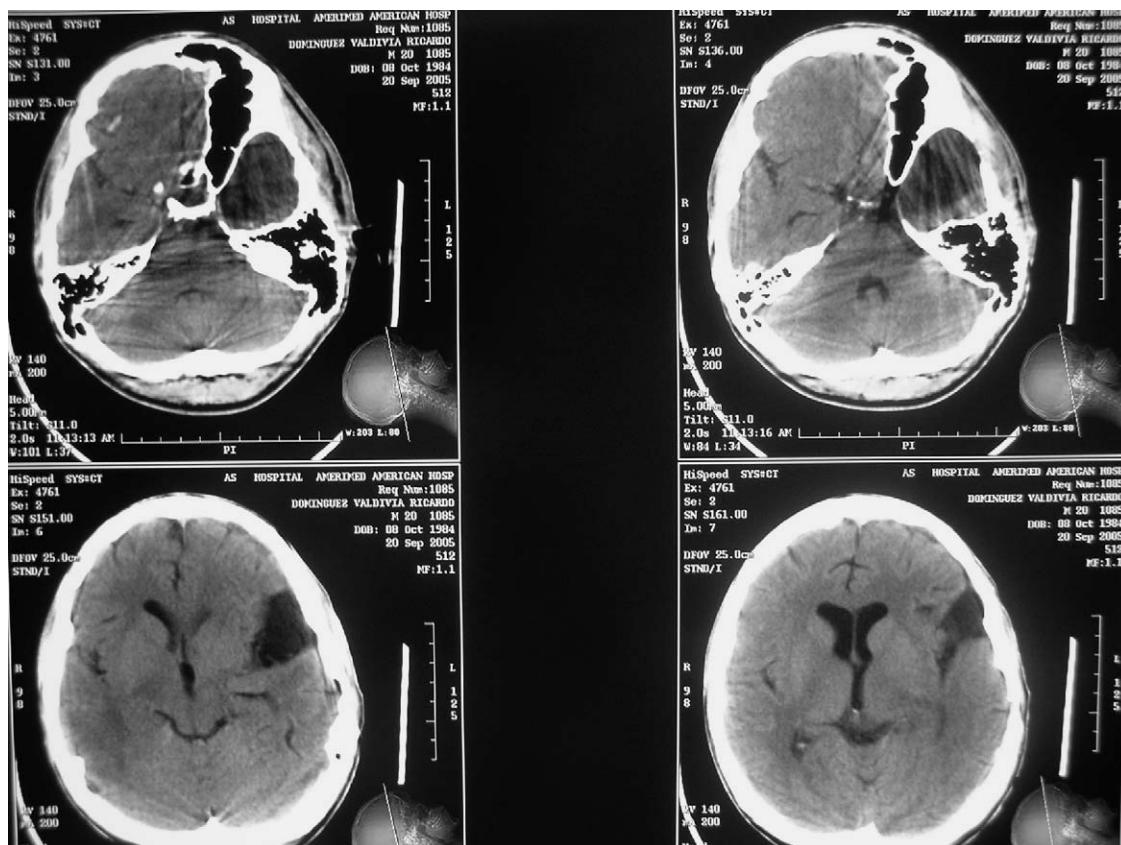


Figure 3 Postoperative CT at 1 month shows middle fossa arachnoid cyst.

surface or on the edge of the dural attachment. Stretching forces on bridging veins result in the development of SH, which is responsible for most deaths from boxing.

At least 650 deaths from boxing have been recorded, with an average of 9 each year.² It appears that there has been a decreasing trend in the number of fatalities in more recent years.¹⁰ This is because measures such as limitation of the number of rounds, wearing of safety head guards and better medical control over boxers have been adopted.⁴ The World Boxing Association safety code states that head CT is obligatory for all classified boxers.

The literature records that the presence of an arachnoid cyst increases the risk of haemorrhagic complications, and these injuries can often occur after mild head trauma.

In the present case, the patient was fortunate, because an almost neurologically intact patient with this severe degree of midline brain deviation is unusual. Probably the already-present arachnoid cyst allowed better toleration of the increase in intracranial pressure.

Haemorrhage into arachnoid cysts has previously been reported, following heading the ball in soc-

cer.^{3,8} We have not found any substantial mention in the world literature of the association of arachnoid cyst bleeding with boxing injuries.

In conclusion, to reduce these injuries, patients with known MFAC must avoid contact sports with a high incidence of blows to the head, because of the high risk of haemorrhagic complications. Therefore, this case shows the importance of performing initial CT for athletes who are exposed to repetitive blows to the head, and demonstrates that boxing can be a fatal sport, particularly for individuals with previous brain conditions with a propensity to bleed.

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