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Case Report

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Intra-cerebral hemorrhage in a professional boxer after a knockout: case report

Summary

Introduction: Intra-cerebral hemorrhage is a rare neurological disorder in boxing characterized by alterations in alertness, headache, as well as in some cases leading to rapid clinical deterioration of the patient. The clinical presentation is variable, the diagnosis is confirmed with imaging studies, and the treatment is medical and sometimes surgical.

Clinical case: 32-year-old man, professional boxer who presented loss of consciousness for less than a minute after receiving an impact on the head during a boxing fight, additionally presented headache, nausea, vomiting and memory alterations and anxiety. The imaging study documented intracerebral hemorrhage, so he was hospitalized and given conservative management by the neurology and neurosurgery service. He was discharged 2 weeks after admission to his home, and referred to the neurology.

Conclusions: Early diagnosis, adequate and timely management can improve the prognosis of the disease, reduce mortality and healthcare costs.

Keywords: Intracerebral hemorrhage, boxing, Computed tomography

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Introduction

Boxing is a contact sport characterized by the dominance of the opponent, through blows that go to the chest, abdomen, face and head of the opposing fighter, it is carried out on a roped ring, it is a very popular sport in Mexico and in the world, it is a sport where injuries and even diseases that require hospital management and sometimes surgery are common. Intracerebral hemorrhage is a complication that can occur in boxing fighters. It is associated with high morbidity and mortality as well as high healthcare costs. The increased volume of bleeding in the initial stages carries a worse prognosis.

Intracerebral hemorrhage (ICH) accounts for 7-15% of all strokes, with an approximate mortality of 40%.[1] Hematoma volume, intraventricular discharge, infratentorial location, Glasgow Coma Scale (GCS) score at baseline, and age are predictors of prognosis after cerebral hemorrhage.[2] Recently, hematoma growth in the initial phase after the onset of symptoms has also been associated with a worse prognosis; This growth occurs in one third of intracerebral hemorrhages.[3,4] The definition of hematoma growth is an absolute growth greater than 6 mL or a relative growth of more than 33% of the initial volume, although there are other values better related to the clinical outcome, such as absolute growth greater than 12.5 mL.[3,5] This growth is one of the main objectives in the treatment of intraparenchymal hemorrhages, since it is one of the prognostic characteristics that we can influence, and it has been demonstrated that the early reduction of blood pressure after ICH reduces the growth of the hematoma, with improved prognosis of these patients.[6]

At the same time, attempts have been made to develop treatments to prevent said growth in the first hours. However, trials that have studied hemostatic treatments, such as intravenous recombinant factor VIIa, showed reduction in hematoma growth, but without demonstrating improvement in clinical outcomes.[7,8] Perhaps this discrepancy is due to poor selection of patients who received the treatment, since approximately only one third of patients have hematoma growth and it is possible that, with better selection of patients with a higher risk of hematoma growth , will improve the effectiveness of hemostatic treatments.[9]

Aim

To present a case report of intracerebral hemorrhage in a professional boxer.

Case report

The presentation of the case with the diagnostic tests and results was carried out with prior written authorization, through the patient's informed consent. Male patient, 32 years old, Mexican, with no previous history of the current condition, professional boxing athlete, with 26 hours of weekly training, record of 16 fights without previous KO during his sports career, presents the beginning of the clinical picture after a knockout professional fight for 10 rounds, he is transferred from the arena to the hospital to the emergency department, due to loss of consciousness lasting 1 minute, upon admission to the hospital he has 12 points on the Glasgow coma scale, he is already conscious, with a headache pulsating type, nausea and vomiting, the patient was admitted to the emergency room, a simple computed tomography of the skull was requested, and consultation with the neurosurgery department was requested.[10–12]

Simple cranial computed tomography (CT) documented images with intracerebral hemorrhage (Figure 1). Reason why it was decided to admit the patient to the neurology department of the hospital, as well as coordinated management with the neurosurgery department, non-surgical management was chosen at the time, the patient was kept on continuous monitoring, complete rest, intravenous solutions, pain management, as well as extravascular nutritional support. Due to clinical improvement and reduction in cerebral hemorrhage, he was discharged 2 weeks after admission to his home, and referred to the neurology.

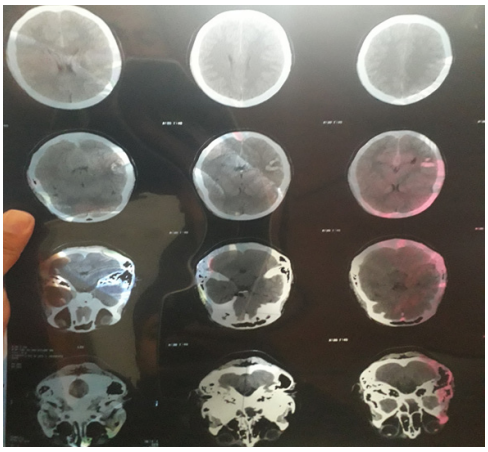

Figure 1 Hematoma with heterogeneous density, CT, taken in the first 4 hours of the condition.

Discussion

In recent years, several articles have described cases of hemorrhage in contact sports, in some of them the growth of the hematoma in the initial phase, both in brain CT. In this report, the only sign on the tomography that has shown an association with a longer hospital stay has been the irregular shape of the hematoma, which is associated with greater mortality in the first seven days, although when categorizing the GCS score below 13, between 12 and 5. The rest of the signs (heterogeneous density, liquid level and mixture sign) are not associated with higher mortality at 7, 30 and 90 days.

Conceptually, a hematoma originating from a single focus tends to show regular growth, growing from the epicenter to the periphery. However, a hematoma originating from several bleeding foci presents irregular growth.[13,14] The existence of various foci would favor greater bleeding and greater persistence of the inflammatory process reactive to said bleeding.[15,16] Likewise, it is possible that the irregularity is related to the intrahematoma pressure, such that, in regular hematomas, the intrahematoma pressure is low and the white matter limits its expansion, while a high intrahematoma pressure favors a more aggressive dissection. of brain tissue, resulting in a more irregular shape. Such elevated intrahematoma pressure could be caused by the existence of multiple bleeding foci.[15] All of this would explain the relationship between the irregularity of the hematoma and the greater mortality at 7 days.

The heterogeneous density of a hematoma reflects bleeding at different times, suggestive of a dynamic process, where bleeding may still be active. Likewise, it may reflect multifocality. More hypodense areas are related to recent bleeding, and hyperdense areas are related to older bleeding, which represents an organized thrombus.[13] This heterogeneity has been studied since the 1980s in epidural and subdural hematomas, and the swirlsign was described, which was a hypodense area encapsulated in the hyperdensity of the hematoma.[17] This sign was associated with active bleeding, which was demonstrated in surgical interventions for epidural and subdural hematomas.[18] In recent years, the heterogeneity of ICH has been associated with early hematoma growth, as well as various signs (mixing sign, fluid level), which could be considered part of the concept of heterogeneity.

This result demonstrates the importance of assessing the characteristics of the hematoma in the acute phase, and irregularity is a finding on non-contrast CT that would help identify patients with the worst prognosis, in whom strict monitoring, especially of factors related to hematoma growth, could improve your prognosis.

Conclusion

Irregular bleeding would allow us to identify patients with a worse prognosis, in whom strict monitoring, especially of factors related to hematoma growth, could improve their prognosis. Early diagnosis, appropriate and timely management can improve the prognosis of the disease, reduce mortality and health costs.

Acknowledgments

None.

Conflicts of interest

The authors declare no conflicts of interest.

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