

CASE REPORT

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# Acute subdural hematoma in a footballer following a head-ball of the ball: a rare neurosurgical complication

Victor-Claude Eyenga<sup>1,2</sup>, Ignatius N. Esene<sup>3\*</sup>  and Ernestine A. Bikono<sup>1</sup>

## Abstract

Acute subdural hematoma is a frequent complication of high-energy head injuries. Herein, we report an unusual case of this condition that occurred in a young footballer after he head-balled a football. A 37-year-old footballer, during a match, jumped and gave a head shot on the ball. Upon landing, he felt severe headaches forcing him out of the stadium. About 4 h later, he lost consciousness and went into a coma. After resuscitation, he remained clouded, with cephalalgia and had left hemiparesis. The performed brain scan revealed an acute right fronto-parietal subdural hematoma and the patient benefited from craniotomy surgery in our department with simple postoperative suites. The authors, after a brief discussion of the biomechanics of this serious condition, ask all the actors of this very popular sport, to consider the possibility of occurrence of this condition in players.

**Keywords** Acute subdural hematoma, Ball, Football, Head-ball

## Introduction

Acute subdural hematoma (ASDH) is a common complication of head trauma and is the most serious sequela in sport-related head injury [1–4]. ASDH accounts for more than 90% of sport-reported catastrophic injuries and the trends are alarmingly increasing [1]. In young subjects, ASDH occurs more frequently during high-energy trauma with a direct impact on the skull [1, 5]. The literature on football-related ASDH is limited and restricted to case reports.

Herein, we report an unusual case of this ailment, which occurred in a footballer after he gave a head shot on the ball, an ordinary gesture of this sport.

## Case report

A 37 years old, healthy, with an unrewarding past medical history participated in a local regional football game. He jumped and gave a headshot on a ball through the right parieto-temporal region. Upon landing, he felt a violent, rapidly progressive diffuse headache, forcing him out of the stadium. About 4 h later, he lost consciousness and entered a coma. He was taken into care in a non-specialized hospital, resuscitated and transferred secondarily to our hospital 24 h later. On arrival, the patient was confused, with headaches and had a Glasgow Coma Scale Score of 13/15 as well as a left hemiparesis.

An emergency brain scan done revealed an acute right fronto-parietal subdural hematoma (Fig. 1). The patient received emergency right fronto-parietal craniotomy with a normal postoperative follow-up.

## Discussion

Head injuries are a common occurrence in sports and can involve injuries to the brain, skull and superficial soft tissues [3, 4]. ASDH is a common complication of

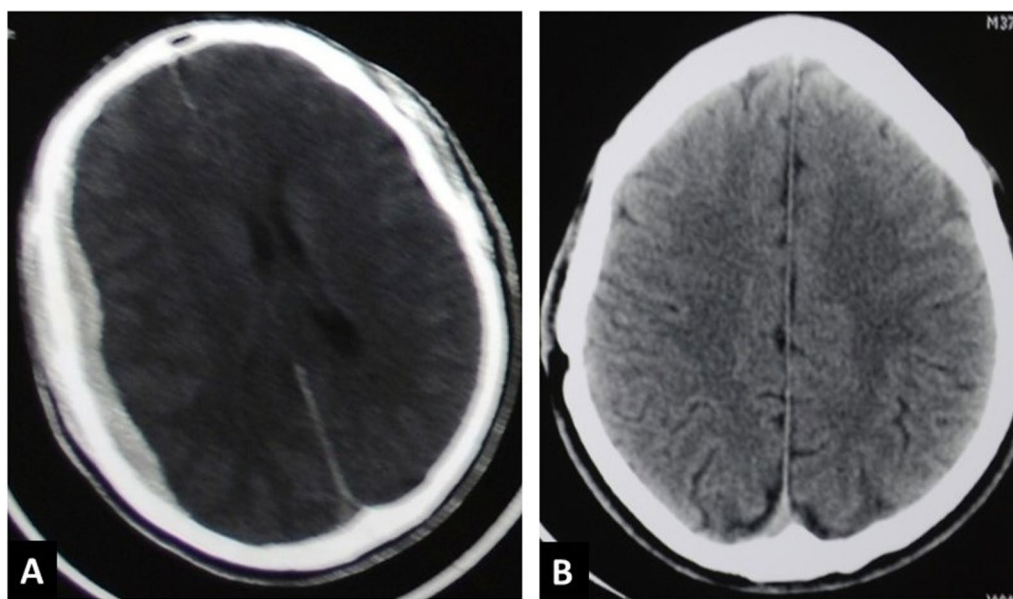
\*Correspondence:

Ignatius N. Esene  
ignatiusesene@yahoo.co.uk

<sup>1</sup> Faculty of Medicine and Biomedical Sciences, University of Yaounde 1, Yaoundé, Cameroon

<sup>2</sup> Yaounde General Hospital, Yaoundé, Cameroon

<sup>3</sup> Neurosurgery Division, Department of Clinical Sciences, Faculty of Health Sciences, University of Bamenda, Bamili, Cameroon



**Fig. 1** Pre (A) and Post (B) CT Scan of Brain. A—Right fronto-parietal acute subdural hematoma of about 10 mm in thickness, with effacement of ipsilateral ventricle and midline shift. B—Normal scan after craniotomy and evacuation of the hematoma

head trauma and is the most serious sequela in sport-related head injury [1–3].

The case presented here shows an ASDH (a collection of fresh intracranial blood, located between the dura mater outside and the arachnoid inside), secondary to a closed head trauma (moving football against a moving skull). This accumulating blood exerts pressure on the brain that it pushes back inside, thus causing its suffering manifested by several signs (headaches, disorders of consciousness, paralysis, etc.). On the biomechanical level, ASDH involves the rupture of one or more veins bringing blood from the brain to larger veins located on the periphery, when they cross the space under dural (virtual space). Indeed, during a shock on the skull, the brain undergoes a relative movement with respect to the cranial box of the same meaning and proportional to the kinetic energy involved by the trauma. Under the point of impact, the sudden displacement of the brain mass, opposing the braking with percussion to the inner wall of the skull, is observed. The subdural space, the virtual space that allows this relative movement, therefore undergoes strong constraints as well as its contents, the veins, which undergo elongation and/or crushing that can cause their rupture with subsequent bleeding in the subdural space [2, 5, 6]; other but less frequent mechanisms remain possible. With age, the brain mass decreases physiologically, the space under the rural matter expands so that even a relatively

low-energy impact on the skull can result in the same lesions.

The originality of this case, whose pathophysiology is probably that described above, lies in the fact that playing the head ball is an ordinary gesture of this sport and that the subject is still young, so one should not expect this type of serious injury. Furthermore, the protracted lucid interval of 4 h in our case is unusual. Classically, in ASDH, a brief lucid interval occurs between the head trauma and the patient becoming comatose [2]. Usually the patient is comatose from the time of trauma. We could not get any plausible reason to justify the long lucid interval in our case.

## Conclusions

This observation therefore has the merit, to challenge all the actors of this very popular sport, on the possibility of occurrence of this serious condition, but easy to recognize by its classic clinical signs: headaches, disorders of consciousness and sometimes hemiplegia, after a shock to the head even if it is a ball voluntarily fed.

## Abbreviations

ASDH Acute subdural hematoma  
CT Scan Computer tomographic scan

## Acknowledgements

None.

**Author contributions**

All authors contributed equally. In addition, the first author operated the case.

**Funding**

None.

**Availability of data and materials**

Not applicable.

**Declarations****Ethics approval and consent to participate**

Not applicable.

**Consent for publication**

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

**Competing interests**

None.

Received: 27 September 2021 Accepted: 23 September 2023

Published online: 20 December 2023

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