

Case Report

An Unusual Case of Bilateral Symmetric Anterior Shoulder Dislocation with Associated Bilateral Greater Tuberosity Fracture during Rapid Eye Movement Sleep Behavior Disorder

Ameni Ammar^{1*}, Oussama Abcha¹, Ahmed Gharbi¹, Mohamed Samih Kacem¹, Mahmoud Smida¹, Mohamed Samir Daghfous¹

¹Traumatology Department, KASSAB Institute, Manouba, 2010, Tunisia

Article History

Received: 14.07.2021

Accepted: 20.08.2021

Published: 03.09.2021

Journal homepage:

<https://www.easpublisher.com>

Quick Response Code



Abstract: Bilateral shoulder dislocation is rare, and often posteriorly directed. Bilateral symmetric anterior shoulder dislocation is all the more rare. Its mechanism can be due to fall in an unconscious state or due to the contraction of the pectoralis and latissimus against an unyielding arm. We report a rare case of bilateral symmetric anterior shoulder dislocation with associated bilateral fracture of the greater tuberosity caused by violent muscle contractions during sleep, as part of the rapid eye movement sleep behaviour disorder. This trauma circumstance has never been reported in the literature, to our knowledge. The diagnosis was suspected clinically and confirmed by standard radiography and CT scan. The Bilateral dislocation was managed by closed reduction, and the associated bilateral greater tuberosity fracture had internal fixation by screws. The anatomical and functional result was satisfactory after three months postoperatively. Through this case, we wanted to draw the attention of orthopaedic surgeons to this pathology which is rarely missed in trauma condition, but it can be missed in non-traumatic and involuntary muscular contraction conditions.

Keywords: Bilateral, Shoulder dislocation, Greater tuberosity fractures, Rapid eye movement sleep behavior disorder.

Copyright © 2021 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution **4.0 International License (CC BY-NC 4.0)** which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

INTRODUCTION

Although the shoulder is the most frequently dislocated joint, bilateral glenohumeral dislocations are rare and almost always posterior. Simultaneous bilateral anterior shoulder dislocation is very rare and Bilateral fracture-dislocation is even rarer [1]. Its mechanism can be due to a fall in an unconscious state or to a violent muscle contraction against an unyielding arm during seizures [2]. To our knowledge, there were no reports of bilateral shoulder dislocation occurred as part of a sleep disorder. We report a rare case of bilateral symmetric anterior shoulder dislocation (BSASD) with associated bilateral fracture of the greater tuberosity caused by violent muscle contractions during sleep, as part of the rapid eye movement (REM) sleep behaviour disorder.

PATIENT AND OBSERVATION

A 27-year-old bodybuilder consulted the emergency room, at 4 am, for pain and restriction of

movements of both shoulder joints. He had no history of seizure, epilepsy or alcohol intake. He reported three episodes of dislocations of his right shoulder. The patient reported that he was asleep, and that he dreamed of a fight. Then, he woke up hitting and kicking. His mother said that he was screaming and hitting while sleeping, but he did not fall from his bed. She reported also that he was followed in psychiatry for sleep disorders.

Physical examination revealed flattening of the contour of the shoulders. The arms were held in external rotation and abduction. A bilateral sub-acromial hollow was revealed in the shoulders. There were no neurovascular complications.

Radiographs revealed a bilateral anterior shoulder dislocation, with a bilateral fracture of the greater tuberosity (Figure 1).

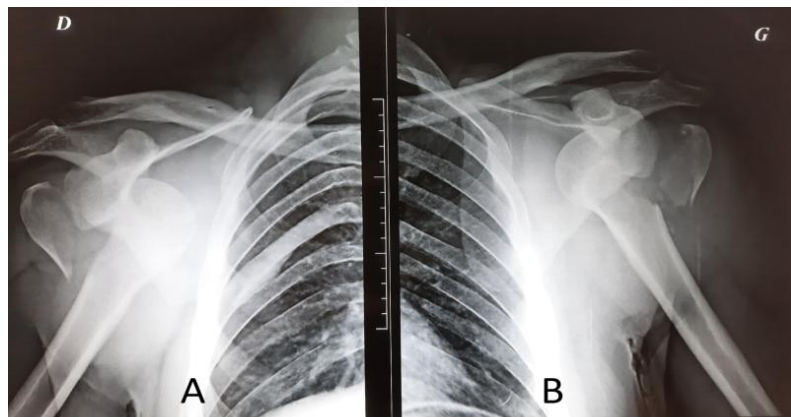


Fig-1: Radiographs showing a bilateral symmetric anterior shoulder dislocation, with a bilateral fracture of the greater tuberosity: A: Right shoulder; B: Left shoulder.

Both shoulders were reduced by an external manoeuvre, under general anaesthesia. Post reduction

radiographs and CT scan showed persistent displacement of both the greater tuberosities (Figure 2).



Fig-2: CT scan showing persistent displacement of both tuberosities after reduction of dislocations; A: Right shoulder; B: Left shoulder.

The fractures of the greater tuberosities had a surgical reduction and bilateral screwing, via trans-deltoid approach (Figure 3). At 6 weeks postoperatively, the fractures were consolidated, and the patient started physiotherapy. The patient was able to carry out all shoulders functions, three months later.

By consulting his psychiatry file, we found that the patient had rapid eye movement (REM) sleep behaviour disorder. We noted that he has never had epileptic seizures.

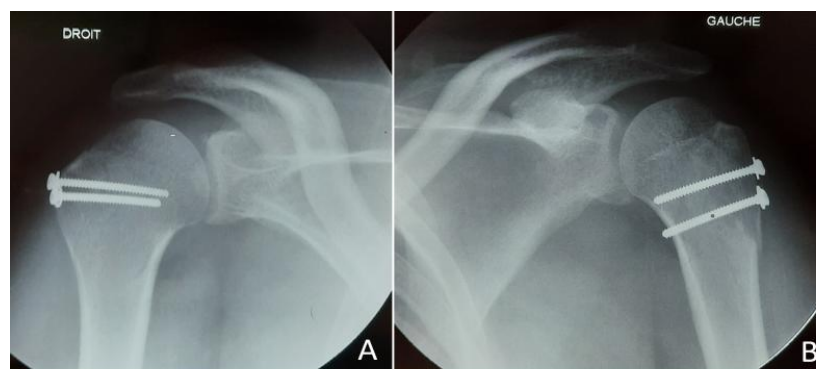


Fig-3: Postoperative radiographs of both shoulders: A: Right shoulder; B: Left shoulder

DISCUSSION

Bilateral dislocations of the shoulder are a rare entity usually caused by sports injuries, epileptic seizures, electrical shock, electroconvulsive therapy, hypoglycaemic episodes or dyskinetic disorders [2]. The two humeral heads can dislocate from the scapular glenoid fossa in the same direction (bilateral symmetric shoulder dislocations) or in different directions (bilateral asymmetric shoulder dislocations) [1]. There are three subtypes of bilateral symmetric shoulder dislocations: posterior, anterior, and inferior [1]. Bilateral symmetric shoulder dislocations are often posteriorly directed, especially when associated with seizures [1–3]. Nevertheless, there have been reports of Bilateral symmetric anterior shoulder dislocations (BSASD) after involuntary muscle contractions [3].

In cases with anterior dislocation after a seizure episode, most authors believe that the mechanism was due to a fall in an unconscious state with the flail upper limb held in abduction and extension at the shoulder, causing impingement of the greater tuberosity on the acromion process, levering the humeral head out of glenoid. Further, the humeral head is pushed downward by the rotator cuff, which is finally displaced anteriorly by the flexors and external rotators. It may also occur due to the contraction of the pectoralis and latissimus against an unyielding arm, as in a patient restrained in a lateral position while having the seizures [3]. Bilateral dislocations generally occurs after high energy trauma, but can occur also after minimal trauma [4].

The mechanism of greater tuberosity fractures has been reported to be either from impaction or from avulsion. Impaction can occur against the acromion or superior glenoid. Whereas, avulsion occurs with anterior gleno-humeral dislocation [5,6]. In our case, the BSASD was caused by violent muscle contractions during sleep, as part of the REM sleep behaviour disorder. To our knowledge, the BSASD has never been described in the REM sleep behaviour disorder. A single case of unilateral dislocation of the shoulder in the REM sleep behaviour disorder has been reported in the series of Fernandez *et al*. [7].

Rapid eye movement sleep behaviour disorder is a parasomnia characterized by loss of skeletal muscle atonia and dream-enacting behaviours associated with aggression and violence during rapid eye movement sleep [8]. Injuries resulted from jumping out of bed, attempting strangulation, punching or biting the bed partner, and hitting the wall or the nightstand. Injuries included ecchymosis, lacerations, bone fractures, and a unilateral shoulder dislocation in one single case [7].

Patients having BSASD, rarely had previous unilateral or bilateral shoulder dislocations [1]. In our case, the patient had previously presented three

episodes of unilateral dislocation of the right shoulder. Dislocations are rarely missed in trauma condition. However, non-traumatic and involuntary muscular contraction conditions can lead to missed dislocations [1].

Radiographs combined with computed tomography (CT) are recommended to make an accurate and early diagnosis. CT scan is superior to radiographs in revealing bone fragments displacement, and may be useful for planning the reduction procedure. MRI may evaluate rotator cuff tear and other shoulder pathologies [1, 2].

Acute BSASD are mainly managed by closed reduction. Associated bone lesions often necessitate surgical management. Displaced greater tuberosity fractures are managed by plates and screws with washers [9].

CONCLUSION

Bilateral symmetric anterior shoulder dislocation with associated bilateral fracture of the greater tuberosity is a rare injury. The mechanism can be due to fall in an unconscious state or due to the contraction of the pectoralis and latissimus against an unyielding arm. In our case, bilateral symmetric anterior shoulder dislocation was caused by violent muscle contractions during sleep, as part of the REM sleep behaviour disorder, which has never been reported in the literature, to our knowledge. Physical examination may help to suspect the bilateral dislocation, but radiographs are mandatory to make an accurate and early diagnosis. Bilateral symmetric anterior shoulder dislocations are mainly managed by closed reduction, and the associated bilateral greater tuberosity fractures often require operative management.

Competing interests

The authors declare no competing interests.

Authors' contributions

All the authors have contributed to the management of the patient and the write up of the manuscript. All the authors have read and approved the final version of the manuscript.

REFERENCES

1. Diallo, M., Soulama, M., Kaboré, D. S. R., Dakouré, P. W., & Liverneaux, P. (2020). Bilateral anterior shoulder dislocations: A review of two cases and the relevant literature. *Clinical Case Reports*, 8(12), 3379-3388.
2. Manoharan, G., Singh, R., Ahmed, B., & Kathuria, V. (2014). Acute spontaneous atraumatic bilateral anterior dislocation of the shoulder joint with Hill-

- Sachs lesions: first reported case and review of literature. *Case Reports*, 2014, bcr2013202847.
3. Goudie, E. B., Murray, I. R., & Robinson, C. M. (2012). Instability of the shoulder following seizures. *The Journal of bone and joint surgery. British volume*, 94(6), 721-728.
 4. El Antri, I., Benyass, Y., & Zine, A. (2020). Simultaneous bilateral anterior shoulder dislocation as a result of minimal trauma. *The Pan African Medical Journal*, 36.
 5. Suryavanshi, A., Mittal, A., Dongre, S., & Kashyap, N. (2012). Bilateral anterior shoulder dislocation with symmetrical greater tuberosity fracture following seizure. *Journal of orthopaedic case reports*, 2(1), 28.
 6. Dlimi, F., Mahfoud, M., Lahlou, A., El Bardouni, A., Berrada, M. S., & El Yaacoubi, M. (2012). Bilateral anterior shoulder dislocation with bilateral fractures of the greater tuberosity: a case report. *Journal of clinical orthopaedics and trauma*, 3(2), 122-125.
 7. Fernández-Arcos, A., Iranzo, A., Serradell, M., Gaig, C., & Santamaria, J. (2016). The clinical phenotype of idiopathic rapid eye movement sleep behavior disorder at presentation: a study in 203 consecutive patients. *Sleep*, 39(1), 121-132.
 8. Yang, C., Chang, J., Liang, X., Bao, X., & Wang, R. (2020). Gray Matter Alterations in Parkinson's Disease With Rapid Eye Movement Sleep Behavior Disorder: A Meta-Analysis of Voxel-Based Morphometry Studies. *Frontiers in aging neuroscience*, 12, 213.
 9. Koufagued, K., Chafry, B., Bouabid, S., & Chagar, B. (2015). Pure bilateral anterior dislocations of the shoulder of special mechanism: report of two cases. *The Pan African Medical Journal*, 22, 178-178.

Citation: Ameni Ammar *et al* (2021). An Unusual Case of Bilateral Symmetric Anterior Shoulder Dislocation with Associated Bilateral Greater Tuberosity Fracture during Rapid Eye Movement Sleep Behavior Disorder. *EAS J Orthop Physiother*, 3(5): 52-55.