J Orthop Spine Trauma. 2021 June; 7(2): 64-6. DOI: http://dx.doi.org/10.18502/jost.v7i2.7004

Case Report

Bilateral Anterior Shoulder Dislocation after an Episode of Grand-Mal Seizure: A Case Report and Literature Review

Shahin Talebi[1], Alireza Teimoury[2], Aboulfazl Ghadiri[3,*]

[1] Assistant Professor, Department of Orthopedic Surgery, Orthopedic Research Center, Mazandaran University of Medical Sciences, Sari, Iran
[2] Medical Student, Student Research Committee, School of Medicine, Mazandaran University of Medical Sciences, Sari, Iran
[3] Resident, Department of Orthopedic Surgery, Orthopedic Research Center, Mazandaran University of Medical Sciences, Sari, Iran

[*] Corresponding author: Aboulfazl Ghadiri; Department of Orthopedic Surgery, Orthopedic Research Center, Mazandaran University of Medical Sciences, Sari, Iran. Tel: +98-9113905982, Email: saghadiri.70@gmail.com

Received: 21 February 2021; **Revised:** 10 April 2021; **Accepted:** 07 May 2021

Abstract

Background: Among all joint dislocations, dislocations of the shoulder are the most common. Although posterior shoulder dislocation is infrequent, it is more common following seizures. Trauma, electrocution, and seizures can cause bilateral shoulder dislocation. Anterior shoulder dislocations can be accompaniment by greater tuberosity (GT) fractures, Bankart fractures, and other complications such as rotator cuff tears and neuro-vascular injuries.
Case Report: This article describes a 19-year-old boy who suffered from bilateral anterior shoulder dislocation due to an episode of generalized seizure, which happened after taking tramadol.
Conclusion: Any sign of shoulder pain in a patient who has experienced a generalized tonic-clonic seizure should warrant full radiographic evaluation to prevent the complications.

Keywords: Shoulder Dislocation; Tramadol; Tonic-Clonic Seizure; Grand-Mal Seizure Disorder

Citation: Talebi S, Teimoury A, Ghadiri A. **Bilateral Anterior Shoulder Dislocation after an Episode of Grand-Mal Seizure: A Case Report and Literature Review.** *J Orthop Spine Trauma* 2021; 7(2): 64-6.

Background

Bilateral shoulder dislocation is usually secondary to seizures, epilepsy, electrocution, or hypoglycemia (1). Most commonly, after a seizure attack, an anterior dislocation occurs, nevertheless the most common reason of a posterior shoulder dislocation is also a seizure (2). Unless there is a high index of suspicion, this injury will most probably be missed by the physician (3). Especially in bilateral cases, the two shoulders look the same and correct diagnosis requires a high index of suspicion. As mentioned, the seizure is a known cause of bilateral posterior shoulder dislocation and is also a side effect of tramadol overdose (4). Usually 24 hours after taking tramadol, its neurotoxicity manifests as tonic-clonic seizure (4).

Here we report a 19-year-old boy who experienced tramadol-induced generalized seizure, which caused bilateral anterior shoulder dislocation. Unfortunately, the shoulder dislocation was missed at first.

Case Report

A 19-year-old boy was brought to the emergency department following the first episode of generalized tonic-clonic seizure, by his friend, in an unstable cardiorespiratory state with an oxygen saturation (SpO_2) of 82%, heart rate of 70 beeps per minute (bpm), blood pressure of 100/70, and respiratory rate of 10/min. On presentation, he was confused and had a Glasgow Coma Scale (GCS) of 13 and showed hypothermia with a temperature of 36 °C.

According to his friend, who witnessed the event, the seizure occurred about 45 minutes after taking an excessive dose of oral tramadol and lasted about 5 minutes.

After initial examinations, he received a naloxone injection, but his consciousness did not change significantly. The dose of naloxone was then repeated.

Any history of previous seizures and addiction to tramadol were denied.

As mentioned earlier, the patient was initially unconscious and did not complain of neck or shoulder pain. Therefore, emergency physicians did not request any further diagnostic modalities and examinations for fractures, dislocations, and bone or joint injuries; also, no consultation with orthopedic physicians was performed. The patient was discharged after the patient poisoning process was controlled.

After one week, the patient referred to the orthopedic clinic with the complaints of pain and limited movement in all directions in both shoulder joints. His pain gradually worsened within the last week, so with the slightest movement of this joint, he was suffering from severe pain and it was annoying for him. On the evaluation, deformity of both shoulders was noticed. On the physical examination, both active and passive movements of the shoulders were limited and painful. Decreasing bilateral shoulder function and movements were evident. The neurovascular examination was normal.

Plain radiography of shoulders revealed bilateral anterior shoulder dislocation and right side greater tuberosity (GT) fracture (Figure 1).

Figure 1. Bilateral anterior shoulder dislocation and right greater tuberosity (GT) fracture

Closed reduction was performed for shoulder dislocation and non-operative treatment was chosen for the GT fracture, since it was not displaced (Figure 2). He was discharged on the same day with bilateral slings for 3 weeks. Re-examination after 1 month showed full range of motion (ROM) without any instability on either shoulder.

Figure 2. Successful reduction confirmed by fluoroscopy

After 4 weeks of follow-up postoperatively, he had a normal ROM without pain and both shoulders were in a stable position.

Discussion

Tramadol is a synthetic analgesic with central acting, which is similar to opioids structurally. The mechanism of action most probably involves both non-opioid and opioid receptors (5) and it can easily cross the blood-brain barrier (4).

Digestive disorders (nausea, vomiting, dry mouth, constipation), visual disorders, neurologic disorders (seizures, vertigo, headache, hypotonicity), and psychological disorders (euphoria, dysphoria, hallucinations) are some side effects of tramadol overdose (4).

This drug is relatively contraindicated in epileptic patients, and also for use with other drugs used to lower the seizure threshold (5).

One of the common complications after an epileptic seizure is musculoskeletal injuries of the shoulder joint (2). About 85% of all dislocations are shoulder dislocations, which are divided into three categories: anterior, posterior, and inferior (6). Among the types of dislocations, anterior, posterior, and inferior dislocations are most common, respectively (6).

Nowadays, bilateral anterior shoulder dislocation is not as rare as believed in the past (7). Forced extension, abduction, external rotation (6), and direct trauma to the posterior side of the shoulder after collapse and striking the floor can cause anterior shoulder dislocation (8). In this case, the patient had not experienced trauma during the seizure episode. It is likely that his shoulder dislocation was the result of forceful contraction in tonic phase of generalized seizure.

Anterior shoulder dislocations can be accompanied by a GT fractures, Bankart fractures, and other complications such as rotator cuff tears and neuro-vascular injuries (9).

Early reduction and immobilization should be performed in both anterior and posterior dislocations (10) as we did.

Mynter first described bilateral shoulder dislocation in 1902 (11) and Aufranc et al. first described bilateral "anterior" shoulder dislocation following seizure in 1966 (12). Based on the study by Dinopoulos et al., only 28 cases of bilateral anterior shoulder dislocations have been reported until 1999 (13). Since then, more cases have been reported. All studies that have been published so far have reported acceptable results in their follow-up.

We randomly chose 10 articles that related to bilateral anterior shoulder dislocation caused by seizure to provide a literature review, which are briefly described in table 1.

Conclusion

In conclusion, bilateral anterior shoulder dislocations are infrequent and could be easily missed. Any sign of shoulder pain in a patient who has experienced a generalized tonic-clinic seizure should warrant full radiographic evaluation.

Conflict of Interest

The authors declare no conflict of interest in this study.

Acknowledgments

None.

Table 1. Summary of recorded observations

Author	Age/Sex	Type of the injury	Treatment	Result
Suryavanshi et al. (14)	45/Man	Bilateral anterior shoulder dislocations with GT fractures	Kocher maneuver	Good after 12 month follow-up
Bremner et al. (10)	28/Man	Bilateral anterior-inferior glenohumeral fracture dislocations	Longitudinal traction, external rotation, abduction, and extension, combined with anterior pressure on the shoulder	Good after 18 months of follow-up
Taneja et al. (15)	37/Woman	Bilateral anterior glenohumeral dislocation and coracoid processes fracture	Not mentioned for shoulder dislocation For other disorders: conservative treatment and immobilization of both arms in a broad arm sling	Good after 6 month follow-up
Shiber et al. (16)	33/Man	Bilateral anterior shoulder dislocations with GT fractures	Close reduction and bilateral shoulder immobilizers for 2 weeks	Not mentioned
Wheelton and Dowen (7)	32/Man	Bilateral anterior shoulder dislocations	Kocher maneuver	Good
Martin et al. (17)	30/Man	Bilateral anterior shoulder dislocations with a right-sided GT fracture	Kocher maneuver	Good after 12 month follow-up
Safdari et al. (18)	32/Man	Bilateral anterior shoulder dislocations with a right-sided GT fracture	Close reduction + internal fixation	Not mentioned
Rudy and Hennrikus (6)	16/Woman	Bilateral anterior shoulder dislocations with bilateral Hill-Sachs lesions	Traction-countertraction method	Good after 4 day follow-up
Abdelaziz et al. (19)	19/Woman	Anteroinferior bilateral shoulder dislocations with a right-sided GT fracture	Close reduction	Not mentioned
Onuoha et al. (1)	40/Man	Bilateral anterior fracture dislocations of the shoulder and both side proximal humerus fracture	ORIF with the PHILOS plate	Not mentioned

GT: Greater tuberosity; ORIF: Open reduction and internal fixation; PHILOS: Proximal humeral interlocking system

References

1. Onuoha K, Olubukola A, Akinola B, Felix O, Ekwe K. Bilateral anterior fracture-dislocation of shoulders following new onset seizure. *International Journal of Medical Science and Clinical Research*. 2020;2(3):1-3.
2. Raptis K, Koutserimpas C, Alpantaki K, Kaiafas S, Fandridis E, Bourlos D. Neglected bilateral anterior shoulder dislocation following epileptic seizure: A case report and literature review. *Kurume Med J*. 2020;66(1):65-70. doi: 10.2739/kurumemedj.MS661008. [PubMed: 32336735].
3. Meena S, Saini P, Singh V, Kumar R, Trikha V. Bilateral anterior shoulder dislocation. *J Nat Sci Biol Med*. 2013;4(2):499-501. doi: 10.4103/0976-9668.117003. [PubMed: 24082765]. [PubMed Central: PMC3783813].
4. Boostani R, Derakhshan S. Tramadol induced seizure: A 3-year study. *Caspian J Intern Med*. 2012;3(3):484-7. [PubMed: 24009919]. [PubMed Central: PMC3755854].
5. Katzung BG. Basic & clinical pharmacology. New York, NY: McGraw-Hill Education; 2017.
6. Rudy BS, Hennrikus WL. Bilateral anterior shoulder dislocation. *JAAPA*. 2017;30(7):25-7. doi: 10.1097/01.JAA.0000515543.89945.e5. [PubMed: 28644218].
7. Wheelton A, Dowen D. A Case of Bilateral Anterior Gleno-Humeral Dislocation following First Time Seizure. *J Orthop Case Rep*. 2015;5(2):38-40. doi: 10.13107/jocr.2250-0685.269. [PubMed: 27299040]. [PubMed Central: PMC4722586].
8. Lasanianos N, Mouzopoulos G. An undiagnosed bilateral anterior shoulder dislocation after a seizure: A case report. *Cases J*. 2008;1(1):342. doi: 10.1186/1757-1626-1-342. [PubMed: 19025598]. [PubMed Central: PMC2596117].
9. Abdelaziz G, Haouzi MA, Fekhaoui MR, Moncef B, Bassir RA, Kharmaz M, et al. Inferior Dislocation of the Shoulder Complicated with Brachial Plexus Palsy: A Case Report. *Sch J App Med Sci*. 2020;8(8):1852-4. doi: 10.36347/sjams.2020.v08i08.011.
10. Bremner LF, Dewing CB, McDonald LS, Provencher MT. Simultaneous bilateral anterior shoulder fracture dislocation following a seizure: A case report. *Mil Med*. 2013;178(3):e400-e403. doi: 10.7205/MILMED-D-12-00378. [PubMed: 23707135].
11. Mynter H. XIV. Subacromial dislocation from muscular spasm. *Ann Surg*. 1902;36(1):117-9. doi: 10.1097/00000658-190207000-00014. [PubMed: 17861143]. [PubMed Central: PMC1430708].
12. Aufranc OE, Jones WN, Turner RH. Bilateral shoulder fracture-dislocations. *JAMA*. 1966;195(13):1140-3. [PubMed: 5952086].
13. Dinopoulos HT, Giannoudis PV, Smith RM, Matthews SJ. Bilateral anterior shoulder fracture-dislocation. A case report and a review of the literature. *Int Orthop*. 1999;23(2):128-30. doi: 10.1007/s002640050327. [PubMed: 10422035]. [PubMed Central: PMC3619786].
14. Suryavanshi A, Mittal A, Dongre S, Kashyap N. Bilateral anterior shoulder dislocation with symmetrical greater tuberosity fracture following seizure. *J Orthop Case Rep*. 2012;2(1):28-31. [PubMed: 27298850]. [PubMed Central: PMC4844497].
15. Taneja AK, Pecci Neto L, Skaf A. Bilateral anterior glenohumeral dislocation and coracoid processes fracture after seizure: Acute MRI findings of this rare association. *Clin Imaging*. 2013;37(6):1131-4. doi: 10.1016/j.clinimag.2013.08.007. [PubMed: 24050938].
16. Shiber JR, Diaz JA, Bohsali KI. Bilateral anterior shoulder dislocations due to seizure. *Trop Med Surg*. 2014;2(1):160.
17. Martin AN, Tsekes D, White WJ, Rossouw D. Chloroquine-induced bilateral anterior shoulder dislocation: A unique aetiology for a rare clinical problem. *BMJ Case Rep*. 2016;2016:bcr2015214292. doi: 10.1136/bcr-2015-214292. [PubMed: 27005796]. [PubMed Central: PMC4823559].
18. Safdari M, Tavakoli M, Tafaghodi P, Rahimian M, Abad M. Bilateral anterior shoulder dislocation following trramadol use. *J North Khorasan Univ Med Sci*. 2016;7(4):939-45. [In Persian].
19. Abdelaziz G, Mohammed F, Omar K, Moncef B, Bassir RA. Ghannam Abdelaziz., et al. Acute bilateral anterior shoulder dislocation after an epileptic seizure: A case report. *EC Ortho-Paedics*. 2020;11(5):59-61.