

Bilateral Posterior Dislocation of the Shoulder Caused by Seizure after Tramadol Usage; A Case Report And Literature Review

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Abstract

Posterior dislocation of the shoulder accounts for 2-4% of all shoulder dislocations. Non-epileptic seizures resulting from drug usage, is an important cause of posterior shoulder dislocation. In this case report, we described a case of bilateral posterior shoulder dislocation due to convulsion after tramadol usage and reviewed the literature recapitulating the causations of drug-induced seizures, non-traumatic shoulder dislocation, the mechanisms of dislocation related to seizure, and which are detected by imaging techniques.

Keywords: Tramadol; Seizure; Shoulder; Dislocation

Abbreviations: ED: Emergency Department; BPD: Bilateral Posterior Dislocation; CT: Computed Tomography; TCA: Tricyclic Antidepressant

Introduction

In patients with epilepsy, the most common type of shoulder joint dislocation followed by seizure episode is posterior type [1]. Bilateral shoulder dislocations are rare and mainly occurred in the posterior part relating form seizures [2]. A posterior dislocation should be considered a differential diagnosis in each episode of shoulder pain and immobility after seizures. After convulsion episode, any changes in shape of shoulder, pain in move, tenderness and limited motion at the shoulder should be assumed as a possible case of dislocation.

Case Report

A 30-year-old man who was referred to emergency department (ED) was complaining of confusion due to first episode of seizure in June 2017. He suffered from a single tonic-clonic self-limited convulsion that lasted nearly two minutes. He reported no history of pervious seizures, head trauma, epilepsy in his family and previous orthopedic problem. He had no problem until the first episode of convulsion. The patient reported a history of willfully use of tramadol for three years consumed as 100 mg per day and gradually increased to 700 mg daily two weeks before being referred to emergency department. At the first physical examination, his vital signs were: pulse 112 beat/min; blood pressure, 110/80 mmHg; RR, 18/min; temperature, 39.8°C. He was alert and oriented without any neurologic deficits. The patient' condition was further analyzed by following tests such as; checking the serum levels of blood sugar, Na, Ca, Mg, brain CT-scan, and electroencephalogram. The presence of tramadol was confirmed by urine rapid test. Non-contrast head CT-scan was normal. The patient was complaining of bilateral shoulder pain especially in anterior part. Additional examinations of upper extremities revealed flattening of anterior side of shoulders on both sides as the patient was

unable to move his shoulders. Antero-posterior x-ray revealed bilateral posterior dislocation of shoulder joints (Figure 1). Spiral CT-scan of shoulder also showed bilateral posterior semi-dislocation(Figure 2).



Figure 1: Bilateral posterior dislocation of shoulder.



Figure 2: Semi-dislocation of both Right and Left Shoulder.

Discussion

Types of shoulder dislocation related to seizures

The shoulder joint is one of the most common joints that is readily dislocated in patients referring to ED. Seizures of different causes such as epilepsy, hypoglycemia, toxic, or hypoxic can lead to shoulder dislocation [3-5]. When the bilateral posterior dislocation (BPD) of shoulders is present, it is almost resulted from the subsequent of seizures. Unlike the bilateral anterior dislocation which is more common, BPD of shoulder is rare and may miss-diagnosed after convulsion [6]. Mynter [7] was the first researcher that reported bilateral shoulder dislocation resulted from seizures in 1902. Only five percent of shoulder dislocations are posterior type and BPD is the most common type of shoulder dislocation resulting from seizures [8]. Posterior dislocations accounts for 2-4 percent of all shoulder dislocations [9,10] and approximately fifteen percent of these cases are categorized as BPD type [8]. Although, the most of bilateral shoulder dislocations resulting from seizures are posterior, anterior dislocation also may occur [2,3,8,11,12]. Seizures account for thirty percent of causation of bilateral anterior shoulder joint dislocation which is frequently misdiagnosed in patients with post-ictal phase [11-20]. Rethnam et al. described shoulder dislocation resulted from seizures and they believed that, convulsion could cause shoulder instability [21-23]. They concluded that dislocation related to seizures were usually posterior type while anterior type was rare.

In addition to tramadol, other drugs such as antipsychotics, antidepressants, bupropion, selective serotonin reuptake inhibitors (SSRIs), TCAs, and monoamine oxidase inhibitors also may provoke seizures [14]. These drugs may synergistically increase the neuro-excitatory effects of tramadol and the risk of seizures even in patients who have no susceptibility to be affected by it [15]. We recommend evaluating seizures that resulted from using other drugs for the presence of any joint dislocation and other possible injuries.

Mechanisms of shoulder dislocation after seizures

In case of seizure, the causations of dislocation are distinct from trauma. The forceful contractions of the selective group of muscles during seizures may lead to the dislocation [2]. A large mass of muscles existing around posterior shoulder girdle may also contribute to dislocation during seizure activity. Unbalanced muscle contraction during seizures might be considered as an alternative cause of posterior shoulder dislocation [13]. Dislocation also may occur in patients affected by shoulder instability due to looser ligaments in their shoulders. Moreover, dislocation should be considered in patients with non-epileptic seizures that may result from drug withdrawal and hypoglycemia. Bilateral anterior dislocation also may occur following seizures owing to the trauma of the shoulder in whom that are struck on the floor when they are fallen down [13]. Bilateral coracoid process has also been reported after seizures [16,17]. The mechanism underlying in this phenomenon is axial loading of the adducted internally rotated arm from violent muscle contraction during a seizure episode [1]. Because of probability of dislocation, compression fractures of the vertebrae [18] or other musculoskeletal and joints injuries [19,20] associated with convulsion, some authors [20,21] suggested that, all patients should be under a full musculoskeletal examination after seizure episode.

Diagnosis of dislocation related to seizures

Although, an acute dislocation would be associated with considerable pain, pain may be reduced in acute cases due to reduced nociception post seizures, or the ongoing effects of drugs. Late diagnosis of orthopedic injuries after episode of seizures are a matter of concern and the rarity of correlation between seizures and shoulder dislocation, may lead to improper estimation of the patient's clinical state, wrong treatment and unpleasant complications [12]. So, further radiological investigation is mandatory if there is any doubt on dislocation following seizures. It should be noted that anterior-posterior x-ray is not adequate to rule out a posterior dislocation by itself, as it may be normal. The best image for identifying posterior dislocation is an axillary film [5]. If auxiliary views cannot be obtained due to feeling of excessive pain in patient (a common occurrence), CT scan could show both the dislocation and any corresponding fractures [24,25]. Diagnosis of BPD of shoulder joint resulting from seizure can also delay possibly followed by feeling pain in the chest or shoulder area [25]. BPD may be misdiagnosed especially in intoxicated patients because of lack of consciousness. So some studies [26] suggest that taking a radiographic control after seizures would be recommended. Also, early consultation with orthopedic surgeon is worthwhile [27].

In adults, reduction of the pain should be carried out with procedural sedation or general anesthesia. Physical therapy can be useful in preventing the recurrence of dislocation in epileptic patients, in which that there is a high risk of shoulder dislocations.

Conclusion

Although, bilateral posterior shoulder dislocation is not common, however, as patients are often disoriented after seizures, the rate of misdiagnosing would be high. So, a history of seizure or pain in shoulder in patients with episode of seizure should alert the physician to seek for possible presence of posterior dislocation. Of note, a high degree of uncertainty should be kept in mind for physicians while treating patients in postictal phase as complete recovery of patient is seen when the procedure of the treatment is properly performed.

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