

CASE REPORT

Shake Till You Break – Bilateral Neck of Humerus Fracture Post Seizure

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ABSTRAK

Kepatahan tulang boleh terjadi selepas serangan sawan. Walaupun ia jarang berlaku, kelewatan dalam diagnosis dan rawatan dapat dielakkan sekiranya pemeriksaan fizikal yang teliti dilakukan terhadap golongan yang berisiko tinggi. Di sini, kami melaporkan satu kes yang mana kami hampir terlepas mendiagnosis kepatahan di bahagian proksimal humerus selepas serangan sawan tonik-klonik. Seorang wanita berusia 58 tahun yang menghidap penyakit epilepsi telah datang ke Jabatan Kecemasan kerana mengadu sakit badan setelah mendapat serangan sawan tonik-klonik yang berlaku beberapa jam sebelumnya. Semasa pemeriksaan, beliau didapati berada dalam kesakitan serta tidak berupaya untuk menggerakkan kesemua anggota badannya. Selepas diberikan ubat tahan sakit, beliau masih mengadu berasa sakit serta tidak boleh menggerakkan kedua-dua bahunya. Pemeriksaan lanjutan menunjukkan pergerakan yang terhad dalam semua arah pada kedua-dua bahu beliau namun tiada abnormaliti kelihatan pada struktur bahunya. X-ray pada kedua-dua bahagian bahu beliau menunjukkan kepatahan pada bahagian proksimal tulang humerus kiri dan kanan. Kepatahan bahagian proksimal tulang humerus jarang berlaku dengan sendirinya berikutan sawan; mereka selalu dikaitkan dengan dislokasi sendi glenohumeral.

Kata kunci: epilepsi, humerus, kepatahan tulang, sawan

ABSTRACT

Fractures may occur after an episode of seizures. Although rare, with a high index of suspicion and proper physical examination, delay of diagnosis and treatment can be avoided. We report a case of near missed bilateral proximal humerus fracture after an episode of generalized tonic-clonic seizure. A 58-year-old lady with a background history of epilepsy complained of generalized body ache after a generalized tonic-clonic seizure which happened few hours before presentation

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to our Emergency Department. On assessment, she was in pain and unable to move all four limbs. After given analgesia, patient was reassessed whereby she complained of bilateral shoulder stiffness and pain. Examination of the upper limbs revealed restricted range of movement in all directions with no shoulder squaring. X-ray showed bilateral proximal humerus fracture. Proximal humeral fractures rarely occur by itself following seizures; they are almost always associated with dislocation of the glenohumeral joint.

Keywords: bone fracture, epilepsy, humerus, seizure

INTRODUCTION

In the absence of direct trauma, certain fractures are suggested to be pathognomonic of seizures or electrocution, such as bilateral posterior fracture dislocation of the shoulders (Brackstone et al. 2001). Forceful muscular contractions as a result of convulsive seizures contributing to various types of fractures and dislocations have been reported; which includes the vertebrae, hips, shoulders and jaw (Brackstone et al. 2001; Cagırmaz et al. 2015; Gosens et al. 2000; Lasanianos & Mouzopoulos 2008; O'connor-Read et al. 2007). Unilateral fractures may be caused by direct mechanical trauma, but convulsions occurring in epilepsy or electrocution are the most common cause of simultaneous bilateral fractures (Kristiansen & Christensen 1984).

Generally, patients presenting to the Emergency Department post seizures without direct trauma, rarely present with complications of fractures. However, an orthopaedic complication should not be undermined and patients should be evaluated for fractures or dislocations after a seizure episode.

CASE REPORT

A 58-year-old lady who has been treated for epilepsy for the past 10 years was at home when she had 2 episodes of seizures, both 2 hrs apart. According to her children who witnessed the seizures, the patient was sleeping on the bed when the seizures occurred. The patient had generalized tonic-clonic seizures, which lasted for 5 mins each, associated with up rolling of eyeballs and drooling of saliva. She was in a post-ictal state for an hour, following the seizures. Several hrs later, the children decided to bring the patient to the hospital as she was unable to get out of bed and complained of generalized body aches.

On arrival at the Emergency Department, she was alert, but refused to move or talk much. On further history, she had one week history of fever with upper respiratory tract infection. She was independent and compliant to her anti-epileptic medication which was tablet Epilim 200mg twice daily. Eyewitness claimed there was no direct trauma during the seizure episode.

On physical examination, her vital signs were: blood pressure,



Figure 1: Anteroposterior radiograph of right shoulder: displaced fracture neck of right humerus.

153/75 mmHg; pulse, 90 beats/min; respirations, 16/min; temperature, 37.1°C. Blood glucose level was 8.3 mmol/L. General assessment revealed an alert and conscious lady who was grimacing in pain. She was unable to pinpoint the exact location of the pain, but claimed she was unable to move both her upper and lower limbs. Initial examination of her heart, lungs and abdomen were unremarkable.

The patient was prescribed some analgesia to relieve her pain, which was initially thought of as body aches secondary to the seizures. After some time, the patient was able to move her lower extremities, but still complained that her shoulders were stiff and painful.

More detailed examination of the extremities revealed that there was fullness in both the shoulders, which were symmetrical. No obvious deformity was seen and there were no lacerations or bruising. On palpation of the shoulders, humeral heads were within the glenoid fossae and there were no bony crepitus felt. The patient



Figure 2: Anteroposterior radiograph of left shoulder: displaced fracture neck of left humerus.

was unable to perform abduction, adduction, flexion, extension or rotation in either shoulder. Neurovascular status of the upper extremities was intact bilaterally. Examination of her lower extremities revealed no abnormalities and she was able to actively move them without any pain or restrictions.

Anteroposterior (AP) radiographs of each shoulder were ordered and revealed bilateral head and anatomical neck of humerus fractures (Figure 1 & 2). The rest of her blood works revealed no electrolyte imbalances, while infective markers were not raised. She was subsequently referred to the orthopaedic team for further intervention. Bilateral U-slabs were applied. Open reduction and internal fixation with Philos plate were done for both humerus (Figure 3 & 4). Intra-operatively bilateral comminuted fracture of proximal humerus was found. She was later discharged with no post-operative complications.

The patient was followed-up a few months later at the orthopaedic clinic



Figure 3: Anteroposterior radiograph of right shoulder showing fixation of right proximal humerus fracture dislocation.



Figure 4: Anteroposterior radiograph of left shoulder showing fixation of right proximal humerus fracture dislocation

for her fractures and the neuromedical clinic for her epileptic disease. She was seizure free and compliant to her anti-epileptic drugs. A year after the operation, the range of movement of her shoulders is still limited but she has no issues with activities of daily living.

DISCUSSION

Bilateral proximal humerus fracture with shoulder dislocation is rare in seizure. Roux et al. in 2012 reported that three percent of neck of humerus fracture are associated with epilepsy (Roux et al. 2012). It is also known that

posterior shoulder dislocation is more common following an epileptic seizure (Court-Brown et al. 2001). Typically, squaring of shoulder in a post ictal patient suggests presence of fracture with associated shoulder dislocation. However, this was not present in our patient which made the diagnosis of a fracture dislocation rather challenging. Persistent pain despite analgesia raised our suspicion which was later confirmed as bilateral head of humerus fracture radiologically. Seizure related proximal humeral fractures are almost always associated with dislocation of the glenohumeral joint, anterior and posteriorly (Noachtar 1998).

During convulsions, the shoulder joints are typically adducted, internally rotated and flexed, while scapular region muscles pull on the humeral head (Kristiansen & Christensen 1984). When the shoulder girdle muscles (infraspinatus, teres minor, deltoid, latissimus dorsi and teres major) contract with unbalanced force, it causes the humeral head to move superiorly and posteriorly. Humeral head fracture occurs due to the continuous pressure against the glenoid rim during seizure activity. Thus, these two combined mechanisms will lead to shoulder fracture dislocation (Brackstone et al. 2001; Gill et al. 2015).

Chronic use of antiepileptic drugs can increase catabolism of vitamin D and reduce calcium absorption leading to increase serum parathyroid hormone levels, and increase bone turnover. It is reported that the use of antiepileptic drug can lead to the development of pathological fractures by reducing bone mineral density (Wirrell 2006).

Increased load on the osteoporotic bones during forceful muscle contractions in seizures can increase the risk of fractures. This may be true in our case, as the patient's long-term usage of an antiepileptic drug may have caused the decrease in bone mineral density, which is associated with a risk of fracture.

Emergency department doctors should have high index of suspicion towards fractures or dislocations of the extremities, even without significant history or physical evidence supporting it. A complete evaluation should be performed when the patient has recovered from the post-ictal period (Friedberg & Buras 2005). Early recognition and treatment hence will improve prognosis and outcome.

CONCLUSION

Seizures in patients with epilepsy can cause non-direct traumatic fractures and dislocations of the extremities and the diagnosis of it is of importance for early referral and fixation to avoid ongoing patient discomfort and long-term morbidity. This case report was to highlight the uncommon occurrence of bilateral proximal humerus fracture after an epileptic seizure and the importance of secondary evaluation of post seizure patients presenting to the Emergency Department, in order not to misdiagnose fractures or dislocations of the extremities.

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