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Clinical letter

Incidence of shoulder injuries after generalized tonic–clonic seizure admitted to intensive care

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Shoulder injury (including isolated gleno-humeral dislocation, fracture dislocation or fracture without evidence of dislocation) is a rare complication of seizures occurring with or without direct trauma.¹ Bilateral posterior fracture dislocation may occur as a direct consequence of the motor manifestations of generalized tonic–clonic seizures (GTCS) in the absence of trauma.² Although described as early as 1902, and considered as pathognomonic of seizures, this type of shoulder injury is the rarest form and few cases are reported in the literature.³ The observation of a misdiagnosed bilateral posterior fracture-dislocation following GTCS, prompted us to evaluate the incidence of shoulder injuries in patients admitted with seizures to our intensive care unit (ICU).

A 46 year-old woman without significant past medical history was admitted to the emergency room following a first seizure episode. After a series of seven consecutive GTCS with return of consciousness between seizures, she was transferred to our ICU. Upon admission the patient was confused (Glasgow coma scale of 14/15), her temperature 37 °C, and arterial pressure 140/80 mm Hg. Clinical examination did not reveal any focal neurologic deficit or meningism. The rest of the physical exam was normal with the exception of bilateral shoulder pain. Cerebro-spinal fluid and brain CT scan were unremarkable. Chest X-ray performed in bed was normal. There were no pulmonary or bony abnormalities (although the gleno-humeral joints were not captured). The seizures were successfully controlled with a loading dose of phenytoin. There was no acute seizure recurrence and the patient was discharged

home two days later with an appointment for a follow-up visit with a neurologist. As shoulder pains and functional disability persisted, however, shoulder X-rays were performed and revealed bilateral posterior fracture-dislocations of the shoulder.

A retrospective review of all discharge reports of patients admitted to our ICU for GTCS during the preceding 18-month period revealed three additional cases of shoulder injuries among 56 patients, giving an overall incidence rate of 7% (4/56) (Fig. 1). Different injuries were identified in the 3 additional patients: one anterior dislocation with fracture of the lesser tuberosity (Fig. 2), and one unilateral and one bilateral surgical neck fracture. The diagnosis was suspected because of pain or visible deformation in a patient still comatose, and confirmed by shoulder radiography, whereas the chest X-ray missed one of them.

To the best of our knowledge, there is only one report on the incidence of shoulder injuries associated with seizures among 2800 patients admitted to a neurology department.¹ Of 30 patients (1%) having a fracture, only 7 (0.25%) had a shoulder injury (1 bilateral posterior fracture dislocation, 3 surgical neck and 3 anatomical neck fractures).¹ The higher incidence of shoulder injuries recorded in our ICU patients is likely to be explained by the greater severity of the seizure disorders (series of GTCS or GTC status epilepticus) with which our patients presented. Notably, our

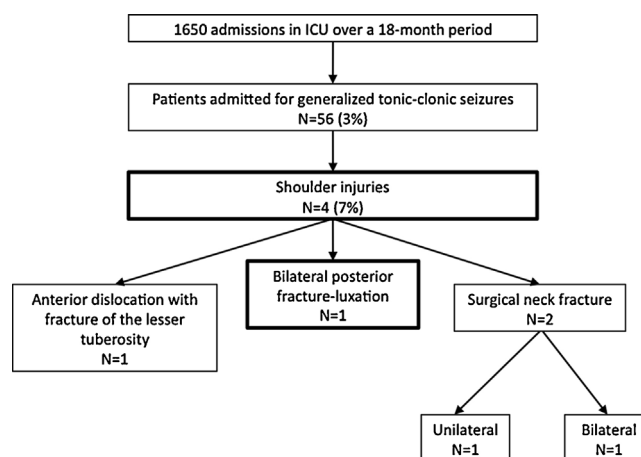


Fig. 1. Flow chart. Among the 56 patients admitted for seizure in our ICU, 4 patients had a shoulder injury for an incidence of 7%.

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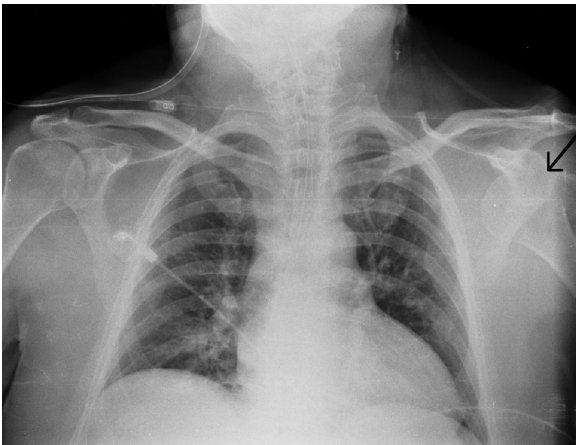


Fig. 2. Chest X-ray performed in intensive care unit showing anterior dislocation with fracture of the lesser tuberosity (arrow).

7% incidence rate may underestimate the real incidence of ictal shoulder injuries as it reflects only those identified during the course of ICU stay. Some of seizure-related shoulder injuries may have remained undetected during patients' hospital stay and then presented subsequently as shoulder instability. Posterior instability is less common than anterior.⁴ However, in the absence of trauma, posterior dislocation is virtually pathognomonic of seizure, especially if it is bilateral. Moreover, glenohumeral dislocations are frequently associated with injury to the rotator

cuff tendons or coracoid fracture. Therefore, even in the absence of confirmed dislocation or fracture, patients with functional impairment of the shoulder joint following seizures should be referred for orthopaedic assessment.

Although there are uncertainties about the true incidence of this rare complication, we believe our report should prompt neurologists and intensivists to be more aware of seizure-related shoulder injuries, although they are not well described in textbooks focusing on "seizure" or "status epilepticus". We recommend a comparative clinical bilateral examination of both shoulders with active mobility tests in all patients admitted to the ICU for seizure and a systematic bilateral X-Ray of shoulder in case of shoulder pain.

Conflict of interest statement

The authors have no conflict of interest to declare in relation to this manuscript and confirm that this manuscript has not been published elsewhere and is not under consideration by another journal.

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