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CASE REPORT

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Femoral neck fracture following an epileptic seizure

Abstract: Although the occurrence of dislocations in shoulders is a well-known complication of convulsive activity, femoral fractures are seen very rare. In this study, a case of a femur neck fracture after epileptic seizure was reported. A 49-year-old man presented to the emergency department following a first grand mal seizure. There was no history of trauma and co-morbid disease. Initial physical examination was normal. When the patient was taken to the computerized tomography room, he experienced 2 generalized tonic-clonic seizures. After the post-ictal period, the patient complained of pain on the left hip and left shoulder. Anteroposterior pelvic and shoulder x-rays were performed. Left femoral neck fracture was found in the pelvic x-ray. Forceful tonic muscular contractions during seizures can result in long-bone fractures as in femur. This potential complication should not be overlooked by emergency physicians.

Key words: Epileptic seizure, femoral fracture, emergency department

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Epileptik nöbet sonrası görülen femur boyun kırığı

Özet: Epileptik nöbet geçiren hastalarda gelişen omuz çıkığı iyi bilinen bir komplikasyon olmasına rağmen, femur kırığı gelişmesi nadirdir. Çalışmamızda, nöbet sonrası femur boyun kırığı gelişen bir olgu sunulmuştur. Kırk dokuz yaşındaki erkek hasta geçirdiği ilk grand-mal epileptik nöbet sonrası acil servise getirildi. Travma ve ek hastalık öyküsü bulunmayan hastanın ilk fizik muayene bulguları normaldi. Hasta, bilgisayarlı beyin tomografisi çekilmek üzere götürüldüğü ünitede iki kez daha tonik klonik tarzda epileptik nöbet geçirdi. Post-iktal konfüzyon sonrası kendine gelen hasta, sol omuz ve sol kalça ağrısından şikayet etti. Hastanın ön-arka pelvis ve omuz grafileri çekildi. Pelvis grafisinde sol femur boyun kırığı tespit edildi. Epileptik nöbet sırasındaki güçlü tonik kasılmalar başta femur olmak üzere uzun kemik kırıklarıyla sonuçlanabilir. Epileptik bir hastada böyle bir komplikasyonun olabileceğini acil hekimlerinin akıldan çıkarmaması gerekir.

Anahtar sözcükler: Epileptik nöbet, femur kırığı, acil servis

Introduction

Severe muscle spasms during generalized seizures are known to lead to various musculoskeletal injuries (fractures of the proximal humerus, femur, acetabulum, and dislocation of the shoulder). Fractures in epileptic patients, related with trauma or not, are 6 times more frequent than in the general population. In this paper we described a patient with a femur neck fracture after an epileptic seizure and reviewed the literature concerning femur fractures following epileptic insults.

Case report

A 49-year-old man presented to our emergency department following a grand mal seizure. There was no history of trauma. The patient had no known co-morbid disease. Further medical history was not relevant and the patient had no history of epilepsy before. On admission, physical examination was normal. When the

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patient was taken to the computerized tomography room in the emergency department, he experienced 2 generalized tonic-clonic seizures. After the post-ictal period, the patient complained of pain on the left hip and left shoulder. Although no fracture was suspected at the initial evaluation, repeated physical examinations revealed tenderness and swelling on the left hip with an external rotation deformity. Since the patient had severe pain with limited range of motion at the left hip joint, an anteroposterior pelvic x-ray was performed, which revealed a left femoral neck fracture (Figure 1). The patient underwent an orthopedic surgery for definitive treatment.

Figure 1. Anterior-posterior view of pelvis in our patient.

Discussion

Although seizure patients represent only 0.4% of ED visits, 14% of these patients have accompanying traumatic or non-traumatic injuries (1). Several factors may contribute to the increased non-traumatic fracture risk in seizure patients. Muscular contraction generated by seizures may directly fracture bone; however, indirect mechanisms may also elevate the risk of fracture in epileptic patients. Known predisposing factors are anticonvulsant drugs, malnutrition, lack of physical activity, and sunlight exposure (2).

A review of the literature revealed several cases of non-traumatic femur fractures associated with epilepsy. Vanheer described 2 patients, 1 with bilateral supracondylar femur fractures and 1 with a unilateral supracondylar femur fracture after an epileptic seizure (3). Kause described bilateral subcapital femur fractures in patient with eclamptic seizures (4). Vanderhooft reported the case of a young man with bilateral hip fractures following a seizure (5). Atilla presented a patient with an acetabular femur fracture resulting from a generalized convulsive attack (6).

Evaluation of extremity pain, deformity, ecchymosis, and crepitus should aid in the identification of bone injury after a seizure and should always be followed by radiographs of the affected area. Likewise, an anterior-posterior radiograph of the pelvis should be obtained for any epileptic patient complaining of hip or groin pain. Although the risk of fracture in this population is small, the risk of injury is high and thus needs to be a concern when the epileptic patient is evaluated (7). A delay in diagnosis may have direct consequences: osteonecrosis of the femoral head, non-union of the fracture resulting in pain, joint disorders, and degenerative joint disease. Unrecognized injuries following an epileptic seizure may result in long-term functional disability and legal consequences (8).

Conclusion

Femur fractures are uncommon after epileptic seizures but are described. The proposed aetiological mechanism of this injury is strong and simultaneous contraction of both agonist and antagonist muscles cause shearing stress and lead to fracture**.** Even in the absence of external trauma, this potential complication should not be overlooked by emergency physicians.

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