CASE REPORT

Bilateral Neck Femur Fracture Following a Generalized Seizure- A Rare Case Report

Harshad M Shah, MD; Amit Grover, MD; Daksh Gadi, MD; Sudarshan K, MD

Research performed at M.S. Ramaiah Medical College, Bangalore, India

Received: 1 July 2014 *Accepted: 24 September 2014*

Abstract

Hip fractures are one of the most common injuries which present to an orthopaedic surgeon. Most of these cases are unilateral .Bilateral simultaneous femur neck fracture is a rare occurrence. We report a case of a bilateral neck femur fracture in a 30 year male following a generalized tonic clonic seizure in view of its rarity and also to increase the awareness of such rare injuries. The patient was operated within 3 hours. At 5 months, the patient had good radiological and functional outcome. During a convulsion, there is a powerful and forceful contraction of muscles which may lead to fracture or dislocation. The incidence of fractures following a convulsion is 1.1%. A delay in diagnosis can lead to complications like avascular necrosis, osteoarthritis, non union, functional disability and legal consequences. All orthopaedic surgeons and emergency physicians should be aware of such uncommon injuries to ensure early diagnosis and treatment.

Key words: Bilateral, Femur neck, Seizure

Introduction

Hip fractures are one of the most common injuries which present to an orthopaedic surgeon. Neck of femur fracture occurs following a high energy trauma in young individuals and in old age following a trivial trauma due to osteoporosis. Most of these cases are unilateral .Bilateral simultaneous femur neck fracture is a rare occurrence. In the medical literature there are only a handful of articles describing such an injury as a result of seizures (1). Common injuries described after a seizure include vertebral fractures and shoulder fracture dislocations (2).

We report a case of a bilateral neck femur fracture in a 30 years old male following a generalized tonic clonic seizure in view of its rarity and also to increase the awareness of such possible rare injuries among emergency physicians, neurologists and orthopaedic surgeons.

Case Presentation

A 30 year male presented to the emergency department following an episode of generalized tonic clonic seizure. There was no history of trauma. The patient was not a known epileptic and there was no history of any convulsions in the past. There was no history of any comorbid illness or chronic drug intake .The patient was a non alcoholic and a non smoker. Neurologist opinion was taken and a CT Scan of the brain was done which was normal [Figure 1]. The sugar level was 40 mg /dl therefore the cause of the seizure was attributed to hypoglycaemia. Patient was stabilized and anticonvulsant treatment along with dextrose in saline was started. Routine laboratory investigations including electrolytes, serum calcium and phosphate levels were within normal limits.

On examination, both the lower limbs were externally rotated. There were no open wounds or any evidence of trauma. There were no distal neurovascular deficits. Plain radiographs of the pelvis showed a bilateral neck of femur fracture – Transcervical on the right side and subcapital on the left side [Figure 2]. Since the patient was shifted to ICU and radiographs were done using portable machine so only anteroposterior views were possible. As there was bilateral involvement, lateral X-Rays were difficult due to pain and lack of cooperation by the patient. He was operated within 3 hours by closed Reduction and internal fixation with 6.5mm cannulated cancellous screws [Figure 3]. Post operatively bedside mobilization and hip and knee range of motion movements were started on the first day after surgery. Appropriate DVT prophylaxis was started. The patient

Corresponding Author: Amit Grover, MS Ramaiah Medical College, MSR Nagar, BEL Road, Bangalore, Karnataka , India- 560064.
Email: amitgrover88@gmail.com

AB&JS THE ONLINE VERSION OF THIS ARTICLE ABJS.MUMS.AC.IR

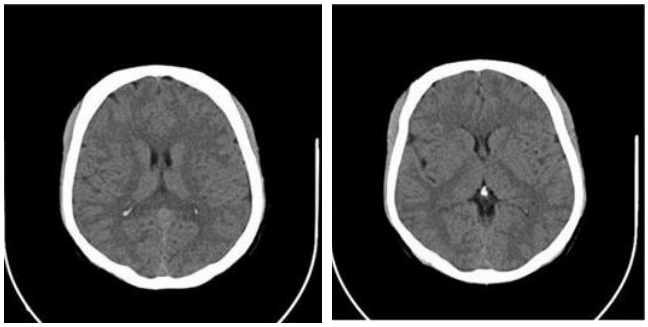

Figure 1. CT Scan of the Brain.

Figure 2. X-Ray of the pelvis showing a bilateral femur fracture.

was discharged on the 7th day with no other post operative complications.

At 5 months of follow up there is good union of both the fractures both clinically and radiologically and the patient is able to walk full weight bearing without support [Figure 4].

Discussion

During a convulsion, there is a powerful and forceful contraction of muscles which may lead to fracture or dislocation. Fractures may also occur due to indirect mechanisms like osteomalacia secondary to anticonvulsants, malnutrition, lack of physical activity and sunlight exposure (3).

Figure 3. Post operative radiograph after fixation with cannulated screws.

Figure 4. X Rays at 5 months of Follow Up.

Bilateral simultaneous hip fractures following a convulsion are rare and occurs mainly in patients with osteoporosis and osteomalacia (4-6). Our patient was a young patient with normal bone density which makes this case even more unique.

Cases reporting bilateral femur neck fracture with normal bones are very few. Among the report cases, one occurred during lumbar myelography and others as a consequence of hypocalcemia (7-9). Sakai et al. reported two cases- one due to tetany and other due to hypomagnesemia (4). Taminiau et al. reported two cases of bilateral neck seizure due to violent muscle spasms following myelography with Conray 60 which were managed using Smith Peterson Nails (7). Ribacoba et al reported a patient with simultaneous hip dislocation and fracture of the contralateral femur neck provoked by spontaneous seizures (8). Taylor et al. reported a case in which a bilateral neck of femur was caused due to dietary hypocalcemia which was managed by DHS bilaterally (9).

The mechanism of injury is that due to powerful and violent contractions of muscles in the proximal thigh during a convulsion there are forces directed towards the groin causing a hip fracture (10).

Hip fractures resulting from a seizure are often significantly more comminuted due to violent muscle contractions, osteopenia and reduced bone mineral density in epileptic patients (11).

The incidence of fractures following a convulsion is 1.1% (12). Therefore although the the risk of fracture is less, a high index of suspicion must be there when such patients are evaluated (13). A delay in diagnosis can lead to complications like avascular necrosis, osteoarthritis, non union, functional disability and legal consequences (8).

To conclude, we would like emphasize that a bilateral hip neck fracture is a rare entity. All orthopaedic surgeons and emergency physicians should be aware of such uncommon injuries to ensure early diagnosis and treatment. Even in the absence of trauma the emergency physician should have a high degree of suspicion for such rare injuries and should initiate timely investigations and appropriate management.

Harshad M Shah MD
Amit Grover MD
Daksh Gadi MD
Sudarshan K MD
MS Ramaiah Medical College, Bangalore, Karnataka, India

References

1. Grimaldi M, Vouaillat H, Tonetti J, Merloz P. Simultaneous bilateral femoral neck fractures secondary to epileptic seizures:treatment by bilateral total hip arthroplasty. Orthop Traumatol Surg Res. 2009; 95(7):555-7
2. Rahman MM, Awada A. Bilateral simultaneous hip fractures secondary to an epileptic seizure. Saudi Med J. 2003; 24(11):1261-3.
3. Mosekilde L, Hansen HH, Christensen MS, Lund B, Sorensen OH, Melsen F, et al. Fractional intestinal calcium absorption in epileptics on anticonvulsant therapy: short term effects of 1,25-dihydroxycholecalciferol and 25-hydroxycholecalciferol. Acta Med Scand. 1979; 205(5):405-9.
4. Sakai S, David D, Shoji H, Stenzel KH, Rubin AL. Bone injuries due to tetany or convulsions during hemodialysis. Clin Orthop Relat Res. 1976;(118):118-23.
5. Vanderhooft E, Swiontkowski M. Bilateral femoral neck fractures following a grand mal seizure. Ann Emerg Med. 1994; 24: 1188-91.
6. Haronian E, Silver JW, Mesa J. Simultaneous bilateral femoral neck fracture and greater tuberosity shoulder fracture resulting from seizure. Orthopedics. 2002; 25(7):757-8.
7. Taminiau AH, Slooff TJ. Bilateral femoral neck fractures as a complication of myelography. Acta Orthop Scand. 1980;51(4):621-4.
8. Ribacoba-Montero R, Salas-Puig J. Simultaneous bilateral fractures of the hip following a grand mal seizure. An unusual complication. Seizure. 1997; 6(5):403-4.
9. Taylor LJ, Grant SC. Bilateral fracture of the femoral neck during a hypocalcaemic convulsion. A case report. J Bone Joint Surg Br. 1985; 67(4):536-7.
10. Rath E, Levy O, Liberman N, Atar D. Bilateral dislocation of the hip during convulsions. J Bone Joint Surg Br. 1997; 79(2):304-6.
11. Marsh JP, Leiter JRS, MacDonald P. Bilateral femoral neck fractures resulting from a grand mal seizure in an elderly man with Down syndrome. Orthop Rev (Pavia). 2010; 2(1): e10.
12. Finelli PF, Cardi JK. Seizure as a cause of fracture. Neurology. 1989;39(6):858-60
13. Friedberg R, Buras J. Bilateral acetabular fractures associated with a seizure: a case report. Ann Emerg Med. 2005; 46(3):260-2.