

Simultaneous bilateral fractures of the femoral neck as the first presentation of hypocalcaemia and renal impairment.

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Abstract

Femoral neck fracture used to be reported as rare complication of convulsions secondary to epileptic fits or electroconvulsive therapy. This injury could occur also secondary to convulsions in patients known to have osteomalacia and other structural bone disorders. In this report we present a case of a 44 years old lady who developed bilateral femoral neck fractures secondary to hypocalcaemic convulsions. Investigations revealed that she had hyperparathyroidism secondary to renal impairment. The convulsions and the fractures were the first presentation of her illness as her bone density and histopathology were normal. We also stress on the need to exclude any musculoskeletal injuries when evaluating any patient in the post convulsion period, not only those with known bone disease.

INTRODUCTION

Convulsions have been known to be a rare cause of bone and joint trauma [1]. Beside the shoulders and the vertebrae; hip joint and the femoral neck injuries form an examples of this uncommon trauma [2]. Bilateral simultaneous fracture of the femoral neck was reported secondary to hypocalcaemic convulsions in patients with structural bone disease [3]. In this paper; we present a case of bilateral femoral neck fractures secondary to hypocalcaemic convulsions. The unique feature of our patient is that she had normal bones, while the convulsions were the first sign of renal impairment and secondary hyperparathyroidism

CASE REPORT

A 44 years old female, was brought to the emergency department at King Abdulla University Hospital; Irbid Jordan, because she fell on the ground after an episode of generalized convulsions and momentary loss of consciousness. On clinical examination; she was slightly drowsy with Glasgow coma scale of 15/15 and normal vital signs. She complained of significant pain and limitation of movements of both hip joints. She was a school teacher, mother of three children, and was not diagnosed to have any chronic illness; however, during the last few months she was feeling slightly unwell and less energetic. She denied any previous attacks of fits or convulsions. Blood investigations revealed low haemoglobin (6.8 gms%), elevated blood urea (8.3 mmols/litre), high creatinine (317 mmols/ litre), low

serum calcium (1.16 mmols/litre), slightly elevated phosphorus (1.61 mmols/ litre) and low albumin (3.1gm per litre). X-ray of the hips and pelvis showed bilateral inter- trochanteric fractures of the femur (Figure).

Figure 1



She was admitted for investigating her medical condition and fracture management.

. Haematology investigations revealed the anaemia is microcytic hypochromic secondary to both nutritional and renal causes. Renal ultrasonography showed small sized kidneys with relatively thin cortex.

Blood vitamin D level was low and parathormone level was

elevated. Hypocalcaemia was explained to be nutritional and the hyperparathyroidism secondary to renal impairment. Bone density was measured and was normal, both at the pelvis and the spine levels.

Few days later, after correcting the blood calcium and haemoglobin, she was operated upon; fractures were reduced and fixed bilaterally utilizing sliding screw and plate. Bone biopsy from the fracture area came later as normal bone structure. She had uneventful post operative course and was discharged home on oral calcium, vitamin D3 and iron supplement, she was also advised regular follow up to the dietary advisor. Six months later she showed satisfactory clinical and radiographic healings of the fractures with improvement of her haemoglobin and renal functions.

DISCUSSION

In adults, with normal bone structure, bilateral femoral neck fracture is a rare condition, as it requires significant external force like motor vehicle accidents or a fall from a height [1,4]. On the other hand minor and probably unnoticed trauma may cause the fracture when the bone is the site of structural or metabolic changes as in osteomalacia and osteoporosis [5,6]. Seizures in epileptic patients or convulsions secondary to metabolic problem are recognized as uncontrolled and sometimes unnoticed kinds of trauma. Seizure associated trauma was reported to occur in the shoulder region causing posterior dislocation, in the spine causing compression fractures of the vertebrae and in the pelvis causing hip dislocation and femoral neck fracture; its incidence was estimated to be around 0.3% [2]. In fact; unexplained injuries within these regions could sometimes be related to convulsions as a possible unnoticed cause [8].

Regarding hip injuries, it has been suggested that it occur secondary to simultaneous contraction of the pelvi-trochanteric muscles during the tonic phase of the convulsions [7,8]. These muscles can apply their force irrespective of the positions of the femur and pelvis at the time of their contraction. Hip injuries were also reported as an uncommon complication following electrically or pharmacologically induced seizures for the treatment of psychiatric disorders. This is no more encountered since the routine use of general anaesthesia and muscle relaxants during this kind of therapy [1].

Most of the spontaneous unilateral or, less frequently, bilateral femoral neck fractures were reported in patients

with abnormal bone structure; like in osteomalacia, osteoporosis and parathyroid disorders. One of the causes of injury is the hypocalcaemic convulsions which could be the first presentation of the underlying bone pathology that will be apparent on bone X-ray as looser zones or the generalized decrease in bone density [3].

A similar case of bilateral fractures of the femoral neck and superior pubic ramus, secondary to renal failure induced convulsions, was reported [9]. However, in our patient, the convulsions and the resultant fractures were the first event that brought her to be investigated and later diagnosed to have renal impairment and secondary hyperparathyroidism. The normal bone density and histopathology confirmed that our patient's bone was normal; a point that makes the case worth reporting.

Post seizure skeletal injuries could be late to be discovered, as attention during post convulsions period is mostly directed to patient's early management, especially those with known bone disease [10]. We feel that this is an important point to be stressed on when evaluating any patient after convulsions by performing proper musculoskeletal clinical examination and requesting the needed X-rays. Late identification and management of bone and joint injuries could have adverse clinical and medico legal sequences.

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