Acute acetabular fracture following non-convulsive muscular contraction—a case report

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An athletic 38-year-old man stumbled due to a change in the pavement surface. He made a forceful flexion-abduction of the right hip because he was afraid of falling. He then heard something break and felt a sharp pain in his right groin. The patient denied previous hospital admissions, surgery, medical diseases and medication. He walked approximately 25 km 6–7 days a week as a waiter in an outdoor restaurant and had smoked 60 cigarettes/day for the last 20 years.

Physical examination revealed pain on palpation of the right groin and the greater trochanter. The range of motion of the right hip was severely restricted due to the pain.

Radiographs including AP and oblique (Judet) views of the pelvis showed an undisplaced transverse fracture of the right acetabulum (Figure 1). A CT scan (5 mm slices) confirmed the diagnosis (Figure 2). Serum electrolytes (Na, K, Ca, P, Mg), full blood count, creatinine, serum protein, alkaline phosphate, prostate-specific antigen, parathormone, 25 OH-cholecalciferol, C-reactive protein and ESR were normal.

Bone mineral density, measured by dual photon absorptiometry at the lumbar spine, was 1.3 mg/cm^2 (L 2–4), within the normal age- and sex-adjusted range. A bone scintigraphy showed a single spot of increased radionuclide uptake in the right acetabulum.

The patient was treated initially with 2 weeks of bed rest and skin traction, until other pathologies (tumor, infection) had been excluded, and thereafter a 6-week period of no weight bearing.

3 months after onset, the fracture had healed radiographically. 2 years later, at the last follow-up visit, the patient had no complaints and full hip motion. Radiographs of the hip were normal.

Discussion

Acetabular fractures, commonest after severe traumas, may also occur without extracorporal forces during epileptic seizures, electroconvulsive therapy and myoclonia. Patients on hemodialysis

Figure 1. Right acetabular fracture at admission.

Figure 2. CT scan shows undisplaced transverse acetabular fracture.

in end-stage renal disease, with hyperparathyreoidism, acute encephalitis, osteopenia, osteoporosis and steroid medication are at risk of sustaining an acetabular fracture during a seizure (Lovelock and Monaco 1983, Margulies et al 1983, Tauber et al. 1987, Bermann et al. 1993, Granhed and Karladani 1997, Papanikolaou et al. 1998). Margulies et al. (1983) speculated that a sudden involuntary simultaneous contraction of the muscles around the hip joint in abduction can result in a vector movement of the femoral head against the acetabular floor and fracture it.

Stress fractures of the pelvis have been recognized in long-distance runners, military recruits, patients with rheumatoid arthritis after total hip replacement and females suffering from anorexia nervosa (Rigotti et al. 1986, O'Brien et al. 1995, Van Heest et al. 1996). The typical location is the inferior pubic ramus (Hill et al. 1996). The symptoms develop gradually, without an acute onset of pain. In many cases, plain radiographs are normal in the early stages and the diagnosis is confirmed by bone scintigraphy.

In our case, smoking was a predisposing factor to bone weakness, but bone mineral density was normal. Therefore we assume that, even in a healthy man without metabolic bone disease or a history of severe trauma a sudden involuntary contraction of the muscles around the hip joint in flexion-abduction position can cause an acetabular fracture.

Our patient's injury was caused by an everyday event. Therefore we are surprised that there are no similar reports in the literature. We suspect that some cases called "sprains" are not always diagnosed adequately. A high degree of suspicion is recommended when a patient presents with a similar history, groin pain and impaired motion. Perhaps CT scans and MRI will disclose these injuries more often in the future.

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