CASE REPORTS

Bladder rupture following osteoporotic pubic ramus and sacral insufficiency fractures

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Abstract

We present a case report of an 86-year-old lady with pubic ramus and sacral insufficiency fractures who developed extra-vesical bladder rupture following displacement of the pubic ramus fracture, a very unusual complication.

Keywords: osteoporosis, sacral insufficiency fractures, pubic ramus fracture, elderly

Introduction

The incidence of sacral insufficiency fractures in the elderly is increasing [1, 2]. They often co-exist with pubic ramus fractures: 78% of those with sacral insufficiency fractures have concomitant pubic ramus fractures [3]. Certain complications can happen, such as urinary bladder injury in multiple pubic ramus fractures [4], and sacral fractures can be associated with sacral nerve root damage [5] and bleeding due inferior epigastric artery injury, particularly in those on oral anticoagulants [6, 7].

Case report

An 86-year-old lady was admitted to an orthopaedic ward following a trip from standing height on an uneven path outside her house. She had a history of osteoporosis treated with bisphosphonates (risedronate 5 mg OD), but was not on calcium and vitamin D supplements prior to admission.

Right superior and inferior pubic ramus fractures were diagnosed on a plain pelvic X-ray (PXR). An osteoporosis screen was normal. Vitamin D was low at 21 nmol/L. She was managed conservatively with mobilisation as tolerated and transferred to a rehabilitation ward, where serious complications arose. Her pain was difficult to control, particularly in her left buttock, and pelvic MRI subsequently revealed bilateral sacral insufficiency fractures.

She then developed haematuria and urinary incontinence, which were initially diagnosed as urinary tract infections (Escherichia coli and Enterococcus were isolated). The haematuria then worsened and she became haemodynamically unstable. Her haemoglobin dropped from 11 to 7.6 g/dL and she required blood transfusion. Aspirin and tinzaparin were discontinued at this stage. A pelvic ultrasound scan revealed an intra-vesical mass, possibly a blood clot. Views at cystoscopy were limited but suggested a haemorrhagic cystitis. A CT IVU showed an extra-vesical bladder injury thought to be caused by the pubic ramus fracture and a repeat PXR confirmed fracture displacement (Figure 1). A cystogram identified an extra-peritoneal bladder leak on the right side close to the fracture site. A pelvic MRI showed considerable haematoma formation and soft tissue oedema around the fractures with a displaced bone fragment from the pubic ramus lying posteriorly against the bladder wall. The haemodynamic instability was felt to have been caused primarily by the bladder tear, but was contributed to by blood loss at the fracture site.

The orthopaedic team initially felt bed rest, rather than active rehabilitation, was the most appropriate management, pending urological input. Once the urology team had opted for conservative treatment with urinary catheterisation and follow-up cystoscopy, the orthopaedic team advised we could begin to mobilise again within the limits of her pain. She also developed faecal incontinence, but MRI showed no evidence of cauda equina involvement.

She was treated with ergocalciferol 300,000 IU intramuscularly, and was discharged on calcium, vitamin D and strontium ranelate. She had a full physiotherapy assessment whilst in hospital, with education about prevention of falls. Discharge, after a total of 168 days, was to her own home.
Discussion

We could not find any published case reports of bladder rupture following closed osteoporotic pelvic fractures. However, it is a known complication of traumatic fractures. Koraitim [4] reports that the risk of urethral injury in sacral fracture is influenced by the number of broken pubic rami as well as involvement of the sacro-iliac joint. Urethral injury is much more common in men [4], and bladder neck injury usually only occurs in children [4]. Neurological involvement in sacral fractures can occur but is uncommon [5], and vascular complications are rare but do happen [6, 7].

Sacral fractures are difficult to diagnose on a PXR and are only seen after bony union and callus formation has begun [8]. MRI and isotope bone scans are more sensitive but may confuse fractures with malignancy and infection [9]. CT is the most accurate and specific imaging modality, being able to differentiate between fractures, malignancy and osteomyelitis [8, 9].

Orthopaedic management tends to be conservative and patients are advised to commence early rehabilitation with mobilisation as the pain allows [9]. Low molecular weight heparin reduces the risk of venous thromboembolism, and calcitonin is a useful analgesic if the pain is severe [10]. The treatment of osteoporosis [10] and reducing the risk of further falls is pertinent.

Key points

- Closed osteoporotic sacral fractures can cause serious complications.
- During rehabilitation, it is necessary to regularly reassess the patient clinically.
- A PXR is not reliable for identifying sacral insufficiency fractures.
- Isotope bone/MRI scans are more sensitive but less specific than a CT scan for identifying sacral insufficiency fractures.

Conflicts of interest

None.

References


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