Atraumatic Bilateral

of the femoral neck in a young patient

Abstract

Spontaneous bilateral femoral neck fractures in young individuals is extremely rare. We present the case of a young woman diagnosed with bilateral un-displaced fracture of neck of femur. No traumatic event was identified. Radiological and serological investigations were suggestive of osteomalacia. We believe this to be the first case report of atraumatic bilateral femoral neck fractures in a patient with coeliac disease.

Introduction

Spontaneous femoral neck fractures in young individuals are rare. Simultaneous bilateral femoral neck fractures are rarer still, and previously have been associated with high energy trauma, repetitive minor trauma (1, 2), anatomical variations (3), seizure (4-6), diabetic kidney insufficiency (7), bisphosphonate therapy (8), myeloma (9), hyperparathyroidism (10), narcotic drug abuse (11) and metabolic bone diseases such as osteomalacia (12).

We present a unique case of a young adult female with coeliac disease who sustained simultaneous atraumatic bilateral fracture neck of femur and her subsequent management.

Case Presentation

A 26-year-old female adult presented to accident and emergency with pain in her left hip for the past month. She denied any serious trauma and was still weight bearing on presentation. Radiographs of her hip were normal (Fig 1) and she was given analgesia and conservative advice.

3-weeks later she re-presented and reported worsening pain in her left, but also pain in her right hip. Again there was no history of trauma. Her regular medications included folic acid, and vitamin B supplements. She was not taking any contraceptive medications. Her past medical history included coeliac disease for which she was on a gluten-free diet. She worked as a banker and did not part-take in any regular exercise. There was no significant family history that would predispose her to insufficiency fractures.

Examination revealed a slender girl at 57 kg of South-Asian descent. There was no leg length discrepancy on examination, and no visible sign of acute injury. Both active and passive motions were painful and restricted. Active straight leg raise was possible but limited by pain.

Initial serological investigations of her renal and liver function were normal, and her pregnancy test was negative. An MRI was requested to clarify the pathology. This revealed a complete subcapital fracture on the left, and an incomplete subcapital fracture on the right (Fig 2). The appearances of the MRI suggested the presence of osteomalacia. The following day she underwent bilateral in-situ fixation with dynamic hip screws to both hips.

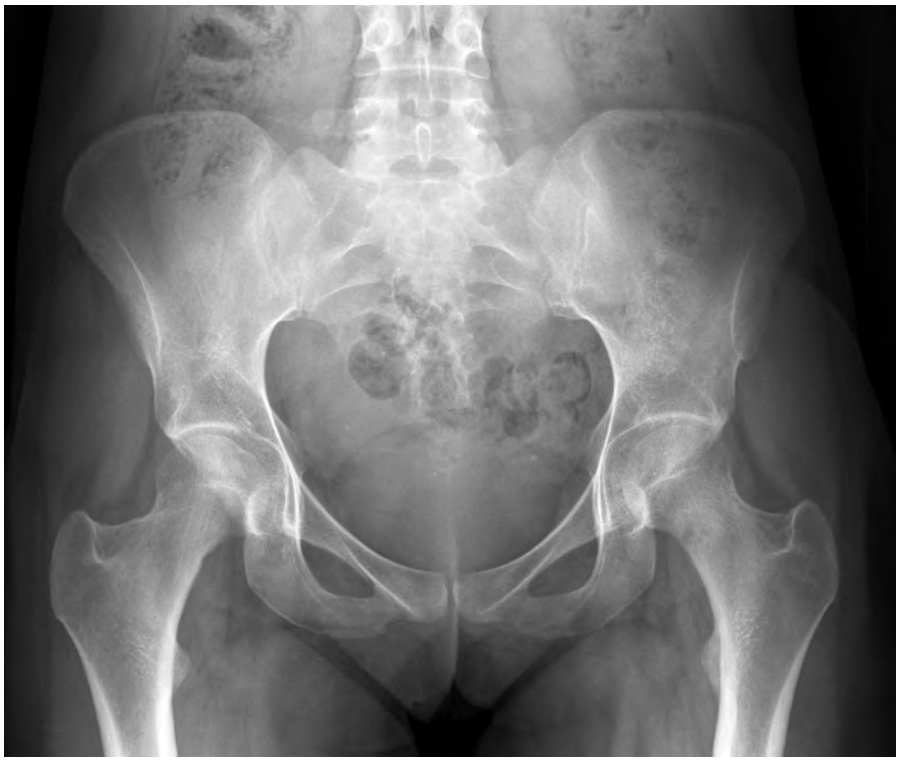

Figure 1. X-Ray AP Pelvis at initial presentation

Post-operatively, biochemical investigations of her bone metabolism were arranged. Her vitamin D level was 8.3nmol/L (normal range >30-50 nmol/L), adjusted calcium 2.11 mmol/L (normal range 2.12 - 2.55 mmol/L) and her serum parathyroid hormone was 61.8 pg/ml (normal range 10-60 pg/ml). A bone densitometry scan of her lumbar spine confirmed the presence of osteopenia (T-Score -2.33; Z-Score -2.33).

Fractures
with coeliac disease

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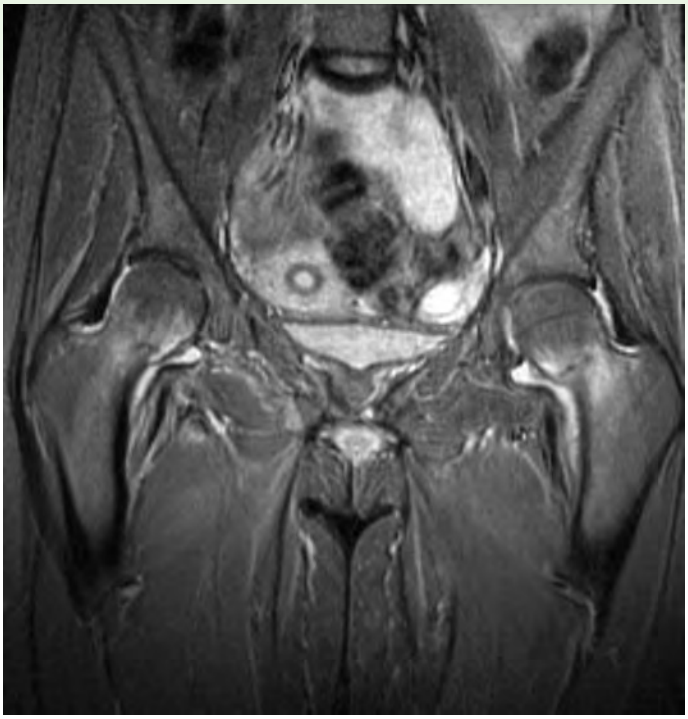

Figure 2. MRI demonstrating the bilateral fractured neck of femur.

Further examination of her case notes revealed a clinic letter by her gastroenterologist a month earlier. It noted that her tissue trans- glutaminase (tTG) levels were raised at >80.00 U/ml (normal range 0.00 - 7.00 U/ml)- suggesting, she was still consuming gluten.

She was started on vitamin D supplements, and made a good post-operative recovery and discharged home with a follow-up with the endocrinologists.

Discussion

The association between coeliac disease and osteomalacia was first described in 1953 (13). Further research recognised that patients with coeliac disease could develop osteomalacia without manifesting signs and symptoms of malnutrition (14). Untreated or poorly-controlled coeliac disease can lead to extreme villous atrophy of the small bowel. The fat soluble vitamins (A, D, E and K) are usually absorbed at this site (15). Subsequently the malabsorption of these vitamins, in particular vitamin D, leads to osteomalacia.

A review of the literature reveals 4 cases of simultaneous bilateral fractured neck of femur secondary to osteomalacia (16-19). Of these 4, only one other report features a subject with coeliac disease, that of Jerosh et al (19). In contrast to the report described, the subject is male whose bony injuries are the presenting feature of his coeliac disease.

The authors believe this to be the first case report of atraumatic bilateral femoral neck fractures in a young, non-vegetarian Asian female with known coeliac disease. Her raised tTG levels are suggested that she was still consuming gluten in her diet. Long-term non-compliance leads to small bowel villous atrophy causing deficiency in vitamin D.

A combination of a strict gluten-free diet and vitamin D supplementation has shown to be effective in managing these patients(20).

Conclusion

Osteomalacia as a presenting symptom of coeliac disease has been well discussed(21, 22). We propose that in patients with coeliac disease presenting with hip pain, one should have a low threshold for obtaining a MRI scan to exclude insufficiency fractures of the hip.

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