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CASE REPORT

Bilateral insufficiency fracture of the femoral neck in a male patient with anorexia nervosa

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Anorexia nervosa is a risk factor for secondary osteoporosis. Anorexia nervosa-related metabolic disturbances lead to disminished bone resistance and increased risk of fractures. We report a case of bilateral femoral neck fracture as the first symptom of anorexia nervosa in a male patient.

Keywords : anorexia nervosa ; risk of fracture ; femoral neck fracture ; insufficiency fracture ; secondary osteoporosis.

INTRODUCTION

Anorexia nervosa (AN) is an eating disorder with a number of medical implications in adults. Although it affects women more than men, and is indeed the third most common chronic disease among adolescent girls (*6*), its prevalence among men appears to be on the increase (*7*). This disease is associated with multiple medical comorbidities including significant and often permanent bone loss (*2*). Patients are therefore prone to brittle bones and insufficiency fractures. We report on the case of a male patient with AN who suffered spontaneous fracture of both femoral necks.

CASE REPORT

A 32-year-old man presented with bilateral groin pain of one month standing, radiating to both knees. He reported no previous injuries, and noted that the pain started during exercise, initially disappearing at rest but later becoming continuous, even in bed.

The patient had no relevant medical history, except occasional self-induced post-prandial vomiting during adolescence. Now he went jogging every day, since he considered himself obese, though clearly slender in appearance (height 175 cm, weight 60 kg, body mass index 19.59). Radiographs of hips and pelvis (Fig. 1) revealed fractures in both femoral necks, with mild displacement which was more marked in the right hip. Haematological and biochemical parameters were within the normal range, except for low serum albumin (3.7 g/dL – normal range 4.02-4.76 g/dL) and serum prealbumin values (14 mg/dL – normal range 20-40 mg/dL). Elevated values were also found for bone turnover markers alkaline phosphatase (219 U/L-normal range 35-104), and C-terminal

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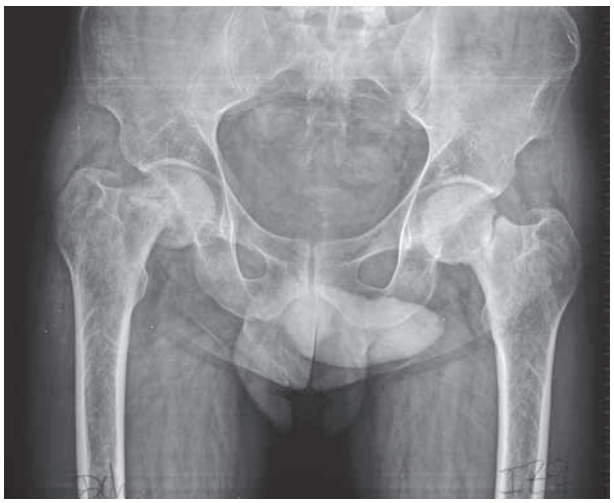

Fig. 1. — Plain radiograph demonstrated fractures in both femoral necks, with mild displacement more marked in the right hip.

telopeptide (0.56 ng/mL – normal range 0.02-0.32 ng/mL).

Dual energy X-ray absorptiometry revealed a significant loss in lumbar spinal bone mineral density (0.808 g/cm2 ; T.Score -3.1 SD ; Z-Score -3.2 SD).

The patient underwent surgical Gamma-nail osteosynthesis (Stryker Orthopaedics. Mahwah, NJ, USA) in both hips. At discharge, he was instructed to take calcium, vitamin D and alendronate, and was referred to the Nutrition Unit.

Five months later, he complained of lameness and bilateral groin pain. Radiographic examination (Figs. 2a & 2b) revealed bilateral loss of femoral head sphericity, fragmentation of the right femoral head, and signs of osteonecrosis of both femoral heads. The patient underwent repeat surgery : osteosynthetic material was removed, and a total hip arthroplasty was performed on the left hip, which was causing him most pain. The patient was discharged, and an appointment was scheduled for a right-hip total arthroplasty.

The patient never returned thereafter. Today, three years after the last operation, his family reported that he had committed suicide two years earlier.

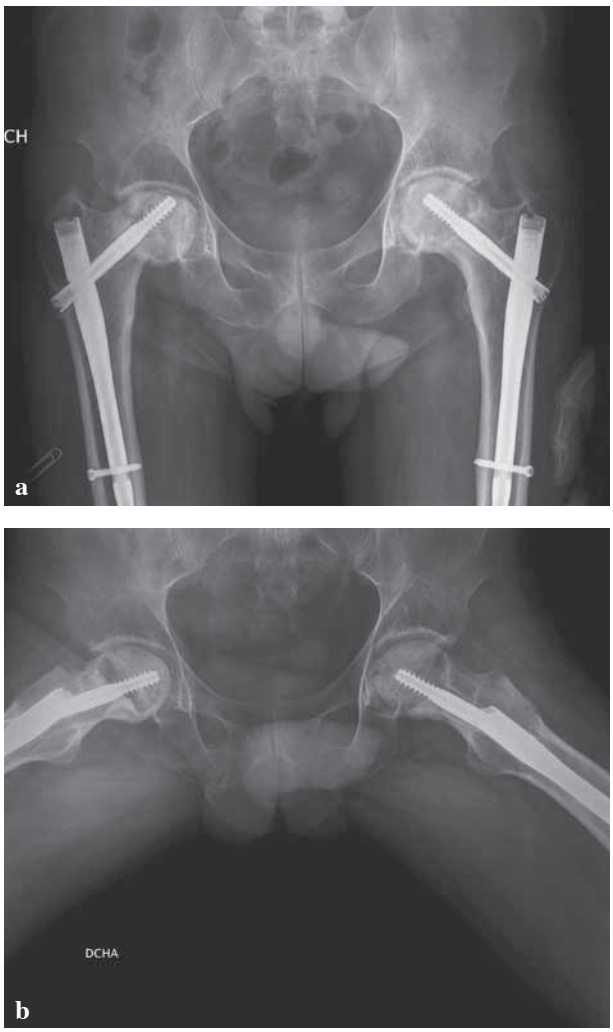

Fig. 2a & 2b. — Anteroposterior and axial roentgenogram of the pelvis shows bilateral loss of femoral head sphericity, fragmentation of the right femoral head, and signs of osteonecrosis of both femoral heads.

DISCUSSION

Although Anorexia Nervosa (AN) is a relatively common disorder, there are few reports of insufficiency fractures in AN patients, and even fewer in men (*3*) ; this would indeed appear to be the first reported case of bilateral femoral neck fracture secondary to AN in a male patient. In this case, the fractures were the first symptom of the disease.

Bone tissue disorders in AN patients are multifactorial in origin, involving both nutritional deficits

and hormonal abnormalities (*4*), and lead not only to loss of bone mineral density but also to impaired bone architecture. There is commonly a decline in bone trabecular volume and trabecular thickness, and an increase in trabecular repair (*1*). Adults AN patients display a decrease in trabecular number, and a loss of cortical thickness (*5*), leading to diminished bone resistance, as demonstrated using the finite element method (*9*).

All this accounts for the increased risk of insufficiency fractures in these patients, especially in extravertebral locations (*3*) ; these fractures may be – as in this case – the first presentation of the disease (*8*).

Accordingly, in any young patient presenting with insufficiency fracture but no other risk factors (e.g. alcohol or corticoseroid abuse), AN should be suspected, particularly if the patient has a low body mass index.

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