Atypical femoral fractures bilaterally in a patient receiving bisphosphonate: a case report

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Summary

Atypical femoral fractures are often associated with prolonged bisphosphonate use.

The American Society for Bone and Mineral Research (ASBMR) has set the diagnosis criteria for atypical subtrochanteric and diaphyseal femoral fractures by classifying them according to their major and minor criteria. Prolonged bisphosphonate use is correlated with AFF, but the pathogenetic mechanism that causes this kind of fracture has not been defined yet.

We describe simultaneous bilaterally femoral fractures in a 76-year-old woman.

KEY WORDS: atypical femoral fracture.

Introduction

Atypical femoral fractures

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The American Society for Bone and Mineral Research (ASBMR) has set the diagnosis criteria for atypical subtrochanteric and diaphyseal femoral fractures by classifying them according to their major and minor criteria. Prolonged bisphosphonate use is correlated with AFF, but the pathogenetic mechanism that causes this kind of fracture has not been defined yet.

We describe simultaneous bilaterally femoral fractures in a 76-year-old woman.

KEY WORDS: atypical femoral fracture.

Materials and methods

The patient is a 76-year-old woman.

In her pharmacological anamnesis use of alendronic acid 70mg 1cp per week is reported.

She doesn't know exactly for how long she has been taking this drug, but she states it has been taking alendronic acid for more than 5 years.

Remote medical history

The patient refers that about 2 years ago she started to have...
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occasional twinges in her right leg and to walk with a limp. She took pregabalin and other analgesics when the pain increased. She reports that after 4 months of analgesic therapy and walking with a crutch, the pain ended. In this period X-rays of her femur and vertebral rachides were taken. Femoral X-rays showed no pathological evidence, except for a thickening of the cortex (Figure 1).

The patient refers that about 3 months ago she felt acute pain in her left leg. She had RMN, EMG and ENG taken.

Recent medical history

The patient says that on the 5th of June 2014, while she was in the bathroom in her home, she felt a very acute pain, like a twinge, in her left leg. She couldn’t stand up so she sat on the WC. She had total functional impotence, and she had to call her sons to come and assist her. She couldn’t stand up and walk alone.

Her sons brought her to her bed. The pain didn’t decrease, and she continued to have complete functional impotence. On the 7th of June she decided to call the E.R. X-rays taken to her left leg showed a transverse fracture of the femoral diaphysis (Figure 2). The patient was admitted to the Orthopaedic Clinic of the Hospital of Cattinara for surgery. The surgical intervention for this type of fracture consists in IMHS implantation.

One day after being admitted in hospital the patient felt an acute pain in her right leg, so new X-rays of the limb were taken after she had been seen. These revealed an incomplete transverse fracture of the right femur diaphysis starting from the lateral cortex (Figure 3). The blood tests that were carried out during hospitalization revealed normal levels of calcium and phosphorus, just like previous blood tests that had been carried out from 2011 on had shown. PTH was normal too. The only anomalous parameter was vit. D, which was 12.7 pg/mL and 7.7 pg/mL in two different tests.
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Results

An endomedullary nail for each femur was used to treat the patient. The intervention was carried out using the classical technique (Figure 4).

When 2 days after the surgical intervention the patient underwent physiatric evaluation, she could flex her right hip up to 45°, while the left hip could only be passively flexed to 30° because of the pain. Passive and active mobilizations were carried out in bed during the first few days because the patient was overweight. The next step was assisted ambulation. On the 4th of July 2014 she was transferred to the rehabilitation ward in the Maggiore Hospital in Trieste, where she continued physiotherapeutical treatment until the 28th of August 2014. When the patient was discharged she ambulated with the help of two crutches and had to put one at a time, both her feet on every step when walking on stairs. Hip flexion reached 90° when active and 100° when passive. The pain the patient had been feeling for months before recovery had disappeared (Figure 5).

Discussion

Bisphosphonates are undoubtedly an excellent treatment for osteoporosis and their efficiency has been demonstrated. Their risk-benefit ratio is favorable, however, particular attention should be paid to the duration of the treatment. Intervals in the therapy are necessary because AFF are associated with the use of bisphosphonates and a long-term treatment increases the risk of further fractures. The atypical fracture pattern includes a transverse or short oblique fracture line originating at the lateral femoral cortex between the lesser trochanter and the distal metaphysis. Studies demonstrated that fracture pattern and bisphosphonate treatment are linked. A very interesting element is that atypical fractures are often bilateral. These fractures are spontaneous or may occur after a minor trauma. Some patients refer thigh or inguinal pain. This finding is crucial for a correct diagnosis and shows that X-rays of the contralateral femur in all patients with AFF, whether...
they be symptomatic or non-symptomatic, are needed. A meta-analysis suggested an increased risk of subtrochanteric, femoral shaft, and atypical femoral fractures among bisphosphonate users, therefore recommending special attention to patients that have been using bisphosphonates for more than 5 years (2). However, these atypical fractures occur rarely even when the bisphosphonate therapy is long and thanks to its prevention of typical osteoporotic fractures is considerably improved (7, 8).

References