



Insufficiency femoral fractures in patients undergoing prolonged alendronate therapy

Uzun süreli alendronat tedavisi gören hastalarda femoral yetersizlik kırıkları

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A 76-year-old woman complaining of pain and swelling in her right thigh was admitted to our clinic. She had been undergoing alendronate therapy for more than 10 years. Physical examination revealed a mild swelling, pathologic motion and pain in her right thigh. Radiograms showed a transverse fracture with a medial spike in the area of thickened cortices of femoral diaphysis. She received surgical stabilization. The patient is now pain-free and she has walked with full weight bearing without any complications since the first postoperative day. Dual-energy X-ray absorptiometry revealed a T-score for the lumbar spine of -2.89 and for the hip of -3.55 . We stopped alendronate treatment. However the patient is receiving only calcium and vitamin D.

Key words: Insufficiency femoral fractures, prolonged alendronate therapy.

On yılı aşkın süredir alendronat kullanmakta olan 76 yaşında bir kadın sağ uyluğunda ağrı ve şişkinlik yakınmasıyla kliniğimize başvurdu. Fizik muayenede hastanın sağ uyluğunda hafif şişkinlik, patolojik hareket ve ağrı saptandı. Röntgen filminde kalınlaşmış femur cismi korteksinde medial kemik çıkıntı ile birlikte transvers kırık görülmüyordu. Hastaya cerrahi tespit uygulandı. Ameliyat sonrası birinci günden itibaren tam ağırlık ile komplikasyonsuz olarak yürüyebilen hastada herhangi bir ağrı sorunu olmadı. Çift-enerji X-ışın absorpsiyometri ile T-skoru belde: -2.89 , kalçada ise: -3.55 bulundu. Alendronat tedavisi durduruldu. Hasta kalsiyum ve D vitamini almaktaadır.

Anahtar sözcükler: Femur yetmezlik kırığı; uzun süreli alendronat tedavisi.

Osteoporosis is a major health problem characterized by compromised bone strength.^[1] The number of people with osteoporosis increases as the population ages. Increasing numbers of patients with osteoporotic fractures may have a negative economic impact on society and on the quality of the lives of patients.^[2]

Appropriate diagnosis and treatment of this disease is essential to prevent osteoporotic fractures and related morbidity and mortality. Bisphosphonates have been widely used for the treatment and prevention of osteoporotic fractures. Alendronate is a potent inhibitor of bone resorption, and was approved for use in the prevention of osteoporotic fractures by the USA Food and Drug Administration in 1995.^[3]

Odvina et al.^[4] reported that long-term alendronate use may cause an increased susceptibility to fractures. There are now many patients who have been using alendronate for more than five years. Recently, the number of patients who have atypical fractures of the femur as a result of prolonged bisphosphonate therapy is increasing.^[5-14] We present the case of an atraumatic femoral shaft fracture in an elderly woman undergoing long-term alendronate therapy who was admitted to our hospital, and emphasize the importance of being aware of the possible correlation between long-term alendronate therapy and insufficiency femoral fractures.

CASE REPORT

A 76-year-old woman had complaints of pain and swelling in her right thigh. She had been on alendronate therapy for more than 10 years. Physical examination revealed mild swelling, pathologic motion and pain in her right thigh. Radiographs (Figures 1a-d) showed a transverse fracture with medial spike in the area of thickened cortices of femoral diaphysis. She received surgical stabilization as described surgical technique. The patient is pain-free and she walks with full weight-bearing without any complications since the first postoperative day.

Dual-energy X-ray absorptiometry (DEXA) revealed T score for lumbar spine: -2.89 and T score for hip: -3.55 . We discontinued alendronate treatment. The patient is receiving only calcium and vitamin D.

Surgical technique

Following reduction, the fracture of femoral diaphysis was fixed with an intramedullary nail, using the image intensifier (Figures 2a, b). A fragment developed during surgery with minimal manipulation (Figure 2c). For this reason, the intramedullary nail was proximally and distally locked.



Figures 1. (a, b) A-P radiogram showing insufficiency fracture of femoral diaphysis. (c, d) Lateral radiogram showing insufficiency fracture of femoral diaphysis.

DISCUSSION

The administration of bisphosphonates is one of the first-line treatments for the prevention of osteoporotic fractures. However, severely suppressed bone turnover has recently been described as a potential complication of long-term alendronate therapy.^[4]

There are many reports of a link between prolonged bisphosphonate therapy and atypical fractures of the femur in patients.^[5-11] Osteoporotic fractures typically involve the spine, hip, wrist, proximal part of the humerus or tibia, and pelvis. The proximal femoral diaphysis is not a common region.

Increased microdamage accumulation has been reported in women with low bone mineral densities who are treated with alendronate.^[12] Severe

suppression of bone turnover, and micro damage accumulation may increase the risk of insufficiency fractures. Some bone specialists now recommend stopping alendronate intake in most patients after five years.^[13]

We discontinued alendronate treatment for our patient. She is now receiving only calcium and vitamin D. After a washout period, we will evaluate the patient again for antiosteoporotic treatment.

Insufficiency fractures have a characteristic fracture pattern consisting of cortical thickening of the subtrochanteric region, a transverse fracture, and a medial cortical spike,^[14] as displayed by our patient.

In conclusion, physicians should be aware of the possibility of these rare adverse reactions to the prolonged use of bisphosphonates and prolonged



Figures 2. (a, b) Postoperative A-P and lateral radiograms showing insufficiency fracture of femoral diaphysis fixed with proximally and distally locked intramedullary nail. (c) Postoperative A-P radiogram showing insufficiency fracture of femoral diaphysis fixed with proximally and distally locked intramedullary nail. "F", the fragment between arrows, is the fragment which developed during surgery with minimal manipulation.

usage should be reconsidered until long-term safety data are available. We recommend stopping alendronate after five years of use.

In patients on long-term alendronate therapy, who present with a subtrochanteric or diaphyseal femoral insufficiency fracture, we recommend taking radiographs of the contralateral femur. If a contralateral stress fracture is found, prophylactic fixation should be considered.

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