

Bilateral Simultaneous Colles Fractures: A Case Report

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Abstract

Colles' fracture is most commonly seen in postmenopausal women due to osteoporosis. Although several articles have been published concerning the Colles' fracture in osteoporosis, bilateral simultaneous Colles' fractures reports appear to be extremely rare in the literature. Herein we report bilateral simultaneous Colles' fractures in a young adult patient without osteoporosis according to bone mineral density measurements.

Key-words: Colles' fracture, osteoporosis, bone quality, bone mineral density

Eşzamanlı Bilateral Colles Kırığı: Olgu Sunumu

Özet

Colles kırığı osteoporozla bağlı olarak sıklıkla postmenapozal kadınlarda görülmektedir. Osteoporozda görülen Colles kırığı ile ilgili çok sayıda makale yayınlanmış olmasına rağmen, eşzamanlı bilateral Colles kırığı ile ilgili bildiri oldukça nadir görülmektedir. Burada kemik mineral yoğunluğu ölçümlerine göre osteoporozu olmayan genç erişkin bir hastada bilateral eşzamanlı Colles kırığı bildirilmiştir.

Anahtar Kelimeler: Colles kırığı, osteoporoz, kemik kalitesi, kemik mineral yoğunluğu

Introduction

Colles' fracture is one of the most common sites of osteoporotic fracture, contributing to a significant morbidity particularly in the elderly. The occurrence of Colles' fracture, as with all osteoporotic fractures, is explained by a fall in an individual with low bone mineral density (BMD)¹.

We described herein a rare case of bilateral simultaneous Colles' fractures in a young adult without osteoporosis according to BMD measurements.

Case Report

A 38-year-old premenopausal housewife, previously healthy with no history of systemic disease, presented with a painful and swollen right hand and wrist. She had a prior history of simultaneous bilateral Colles' fractures after a fall while sitting on a chair 8 months ago (Figure-1). At that time bilateral below-elbow plaster casts had been applied for 2 months. After the removal of plaster casts she had experienced limitations at both wrist movements. She had been treated with regular physiotherapy, which produced a significant clinical improvement in her left wrist range of motion, whereas no improvement had been occurred at the right wrist movement. Her orthopaedic re-evaluation had been required an orthopaedic intervention because of the malunion of the fracture at the right wrist. External fixation had been performed in that surgical intervention. After the removal of external fixation the patient had felt bursting like pain, limitation in the mobility of her right

wrist and swelling at her right forearm, thus the patient was referred to our outpatient unit. She had no significant past or family history relating to fracture. She had a sedentary life-style without habits of smoking or alcohol usage.

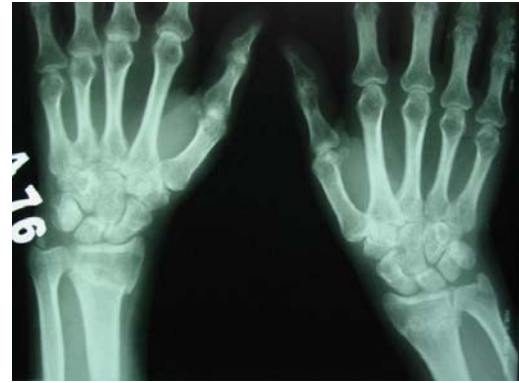


Figure 1: Bilateral Colles' fractures with entirely marked osteopenia

Table-1: Bone mineral densitometry measurements of the patient

BMD Measurements	T	Z
AP lumbar spine (L ₂ -L ₄)	1.15	1.09
Lateral spine (L ₃)	-0.22	-0.02
Femur neck (left hip)	-1.12	-0.65
Total body	-0.71	-0.70

BMD: Bone mineral density, AP: Anteroposterior

On the clinical examination, the skin of the dorsum of the right hand was reddish and warm. Her right wrist was swollen and the joint movement was painful with a limited range of

motion that is 10 ° in dorsiflexion and 30 ° in palmar flexion.

Laboratory studies was unremarkable, demonstrating a normal serum calcium, phosphate, total and bone-specific alkaline phosphatase, osteocalcin, 25-hydroxyvitamin D, type I collagen C-telopeptides marker, parathormone, thyroid function tests, and sex hormones levels. Bone densitometry by dual-energy X-ray absorptiometry (DXA; Norland XR-36, Norland Inc., Fort Atkinson) was performed at our outpatient unit and the results are shown in Table-1.

A diagnosis of reflex sympathetic dystrophy complicating Colles' fracture was made based on the clinical and radiological examination. Conservative treatments for the painful forearm include local physiotherapy, anti-inflammatory treatments with nonsteroidal anti-inflammatory drug and calcitonin, which produced a significant clinical improvement. Physiotherapy helped to maintain the range of motion and medical treatment minimized the symptoms of the patient.

Discussion

Fracture is a stochastic and rare event that depends on the extrinsic factors; such as the magnitude, duration and direction of the forces acting on the bone, as well as the rate at which the bone is loaded, and the intrinsic factors; such as energy-absorbing capacity, modulus of elasticity, fatigue strength and density². Most of those factors have their own heritable and nonheritable components and are difficult to control for³.

Bilateral simultaneous Colles' fracture without a major trauma in a young premenopausal female is considered unique and to our knowledge, it has not been reported in the literature previously.

Colles' fracture, which is generally accepted to be a fracture of osteoporotic bone, is one of the most common fractures of postmenopausal women, with a female lifetime risk of 15%⁴. It is an uncommon condition in premenopausal women without an underlying predisposing cause and is even less likely to occur in young healthy adults. They are almost always the consequence of unspectacular falls to the floor on a reflexly outstretched arm, and they result in immediate localized pain, swelling, and disability⁵. As with all osteoporotic fractures, the occurrence of Colles' fracture is generally explained by a fall in an individual with low BMD. It may also be an inevitable consequence of high energy trauma such as traffic accident or fall. However, when occurred after a low energy

trauma in young healthy adults, possible predisposing factors should be evaluated more carefully. BMD measurements of our patient, performed 8 months after the fractures did not show osteoporosis at any site. She had no past or family history of previous fracture.

Currently, BMD measurement by DXA is the main diagnostic tool in prediction of osteoporotic fracture risk (4), however the era in which bone mass measurement was the only technique available to assess bone competency in vivo is coming to a close. Bone mass measurement will continue to be an important tool in the diagnosis and management of patients with osteoporosis, but soon it will be supplemented with information on bone microarchitecture⁶.

As a conclusion, BMD is one of the most important but not the only predictor of fracture risk. In this way we believe that a comprehensive template for the diagnosis and management of osteoporosis is needed, remembering that each patient will require an integrated knowledge and a broad perspective.

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