

# A Case of Osteopoikilosis Mimicking Metastases on MRI Study

## MRG İncelemesinde Metastazları Taklit Eden Bir Osteopoikiloz Olgusu

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### Summary

Osteopoikilosis (OP) is a benign sclerosing bone dysplasia, which may mimic many different bone pathologies. We present here a case of OP, whose magnetic resonance imaging (MRI) study was considered to have bone metastases. Our case admitted with hip pain to another hospital. His MRI examination revealed multiple sclerotic areas which previously determined as bone metastases of unknown primary origin. MRI examination of pelvis with T2-weighted transverse image shows multiple round hypointense lesions located in both femoral heads. When we re-examined the MRI findings, these sclerotic areas were thought to be related to OP. We conclude that the MRI findings of OP may mimic the bone metastases. MRI findings suggesting bone metastases may be related to an OP. *Türk J Phys Med Rehab 2006;52(2):85-87*

**Key Words:** Osteopoikilosis, magnetic resonance imaging, bone metastasis

### Özet

Osteopoikiloz (OP) birçok kemik patolojisi taklit edebilen, benign bir sklerozan kemik displazisidir. Biz manyetik rezonans görüntüleme (MRG)'de kemikte metastaz varlığı olarak değerlendirilmiş bir OP olgusunu sunmaktayız. Olgumuz başka bir merkeze kalça ağrısı şikayeti ile başvurmuştu ve burada yapılan MRG'de tespit edilen multiple sklerotik alanlar, bilinmeyen primer bir odağın metastazları şeklinde yorumlanmıştı. Pelvisin T2-ağırlıklı transvers MRG kesitlerinde her iki femur başında lokalize multiple, yuvarlak, hipointens lezyonlar görülmekteydi. Bu MRG görüntüleri yeniden değerlendirildiğinde bu sklerotik alanların OP'a bağlı tutulumlar olduğu kanaatine varıldı. OP'un MRG bulgularının kemik metastazlarını taklit edebileceğini düşünmekteyiz. Kemik metastazını düşündüren MRG bulgularının varlığında OP da ayırıcı tanıda hatırlanmalıdır. *Türk Fiziksel Tıp Rehab Derg 2006;52(2):85-87*

**Anahtar Kelimeler:** Osteopoikiloz, magnetik rezonans görüntüleme, kemik metastazi

### Introduction

Osteopoikilosis (OP) is an uncommon benign sclerosing bone dysplasia, first described by Albers-Schönberg in the early 1900s (1). Small round and ovoid radiopacities in the juxtaarticular regions of bone are characteristic radiologic signs of OP (2). It may be difficult to distinguish the radiologic findings of OP from the bone metastases.

We report a case of OP who presented with hip pain. Initially, his magnetic resonance imaging (MRI) findings revealed a cancer metastasis of unknown primary origin, but when MRI findings were examined carefully again, these diffuse lesions were noticed to be related to OP.

### Case Report

A 43-year-old man was admitted to our department with hip pain. An MRI study of hip had been ordered elsewhere previously, and the findings at MRI was thought to be metastases of hip with unknown primary focus. He did not have any systemic disease and was not taking any medication. There was no history of trauma, morning stiffness, weight loss, fever and pain; nor any sign of arthritis. Range of motion (ROM) values of all joints were within normal limits; muscle strengths and neurological examination were also normal. Pelvis, knee and wrist radiographs show multiple symmetrical foci of dense radio-opaque spots in the

spongy bone tissue, and in the inner bone cortex located bilaterally in the epiphyses and metaphyses of proximal femur (Figure 1A), distal radius and ulna (Figure 1B). MRI examination was performed on a 1.5-T Expert system (Siemens, Erlangen, Germany). MRI examination of pelvis with T2-weighted transverse image shows multiple round hypointense lesions located in both femoral heads (Figure 2).

The results of routine complete blood count, serum electrolytes, tumor markers, erythrocyte sedimentation rate and urinalysis were within normal limits. Anti nuclear antibody (ANA) and anti-ds-DNA antibody were also negative. The three phase Tc 99m bone scan and abdominopelvic USG were normal. Ophthalmologic and otorhinolaryngologic examinations did not reveal any accompanying pathology. He was free of any cutaneous lesions.

According to the clinical and radiological findings, the patient was diagnosed as OP. He received paracetamol for his pain. After one month, he had no more pain at his hip and he became completely asymptomatic. When the family was reviewed, his daughter was found to have radiologic alteration of her shoulder and hip joints related to OP. His two sons have no radiological or clinical abnormality.

## Discussion

OP is a rare congenital bone disorder characterized by diffuse symmetrical bone islands. Small round and ovoid radiopacities in the juxtaarticular regions of bone are characteristic radiologic signs of OP (2). Osteoblastic metastases, tuberous sclerosis and mastocytosis are diseases which should be differentiated from the OP. Reports have emphasized the critical role of the radionuclide bone scan for distinguishing OP from the osteoblastic bony metastases in patients with a known or suspected primary neoplasm, but abnormal bone scan does not exclude the OP (3,4). As in our patient, whose daughter has also an OP, it is a hereditary condition, transmitted as an autosomal dominant trait (5,6).

OP must be considered as a distinct clinical entity rather than an incidental radiographic finding (7). Various pathological conditions, including dermatologic abnormalities, have been reported to accompany OP (8-11).

A typical radiographic appearance of OP includes multiple symmetrical foci of dense radio-opaque spots in the spongy bone tissue, and in the inner bone cortex located in the epiphysis and metaphysis of long bones, the pelvis, carpals and tarsals (2). Radiologic differential diagnosis of OP includes mainly osteopathia striata, melorheostosis, tuberous sclerosis, sclerotic bony metastases (6). Although our patient had many of the typical X-ray findings, he had no finding which may explain his hip pain. Distinguishing OP from the primary bone tumors and osteoblastic bony metastases is important. MRI study was indicated for the hip pain and it has shown findings concomitant with bony metastases. OP may mimic many pathologies as well as metastases in bone. There are only few reports of MRI finding of the involved bone of the patients with OP (12,13). To the best of our knowledge, the current case report is the first one which intensively examined the images of MRI study of OP which has similar appearance of bone metastases. In MRI examination of pelvis, T2-weighted transverse image shows multiple ovoid hypointense lesions located in both femoral heads (Figure 2).

Skeletal metastases represent the most common malignant bone tumors. They occur mainly in adults and even more frequently in the elderly. The most common metastases in men are from prostate cancer (60%) and in women from breast cancer (70%). The spine and pelvis are the most common metastatic sites. As a general rule, the radiographic pattern was lytic type; other aspects were osteosclerotic, mixed, lytic patterns (2). These lesions in osteoblastic metastases may cause subcortical destruction. They are a diffuse presentation in tubular bones. It is seldom seen. The lesions in OP are symmetric, smaller, uniform size and they don't cause cortical erosions (1,2). It has been reported that five out of ten patients with OP, admitted with findings similar to osteoblastic metastases (14). Diagnosis of osse-

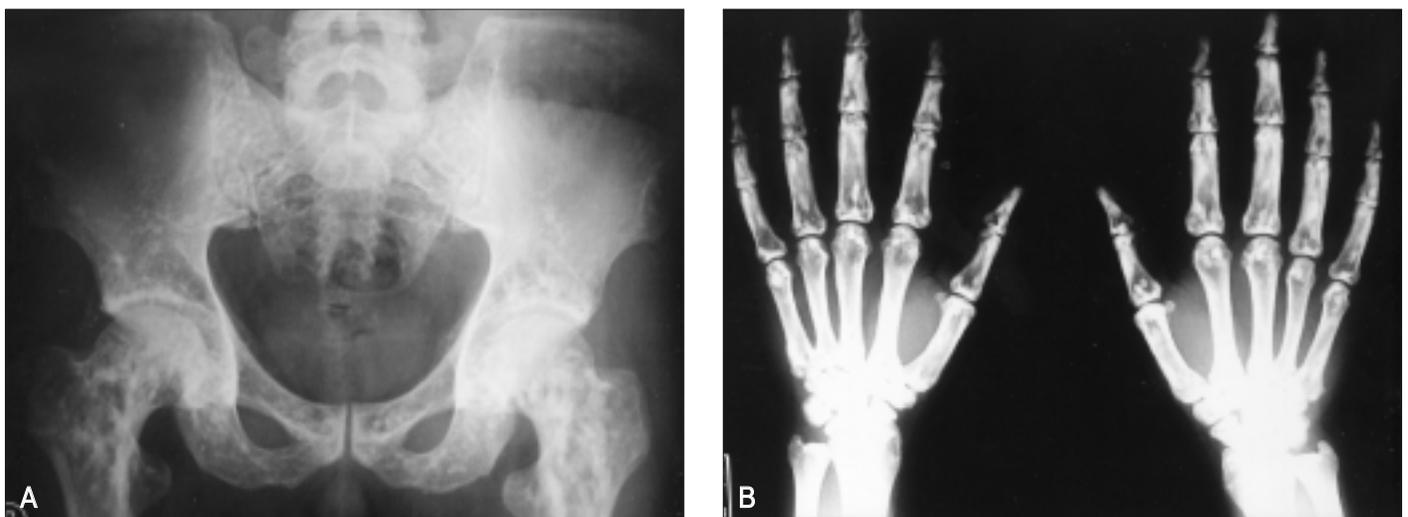


Figure 1. Plain radiograms. (A) AP Pelvis radiogram shows multiple dense radio-opaque spots in the proximal femoral epiphysis and metaphysis bilaterally. (B) Anteroposterior bilateral hand radiograph showing multiple small radiodense foci in the distal radial and ulnar epiphysis and metaphysis bilaterally.

ous metastases is made not only on the basis of radiological appearance but also on clinical symptoms supported by biochemical parameters (15). In our case, no systemic symptoms were evident, biochemical parameters were normal.

MRI is a frequently used radiologic examination method in many locomotor system diseases for the diagnosis and the differential diagnosis. Therefore, as in our case, pain at any point of locomotor system might also be an indication of an MRI study to evaluate the cause of the patient's symptom. In such a case, the etiology of the symptom may be related to an OP and the MRI findings may be confusing, which can mimic bone metastases. We conclude that, in patients with similar findings of metastases of MRI should be carefully re-evaluated for the presence of OP.

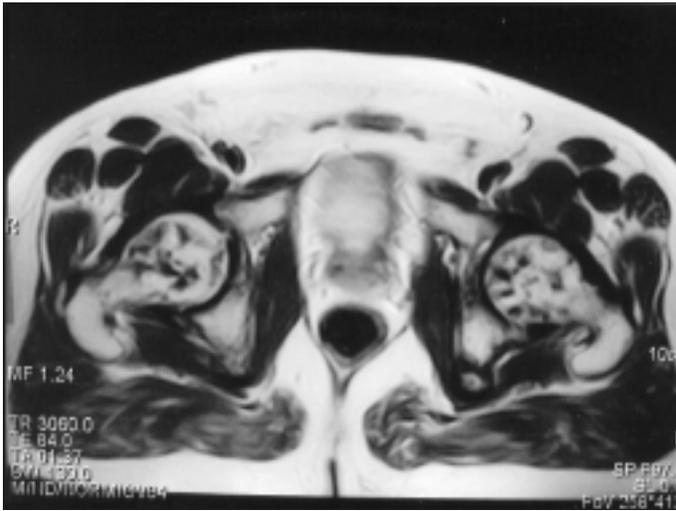


Figure 2. Magnetic resonance examination of pelvis T2-weighted transverse image shows multiple round hypointense lesions located in both femoral heads.

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