Case report

Acute knee pain in pregnancy. Case report of Regional Transient Osteoporosis

Raúl Javier García Renedo,a,* Antonio Ortiz Menéndez,b Miguel Giráldez Sánchez,a Juan Ribera Zabalbeascoa,a and David H. Gonzaloc

a Servicio de Cirugía Ortopédica y Traumatología, Hospital Universitario Virgen del Rocío, Sevilla, Spain
b Servicio de Cirugía Ortopédica y Traumatología, Hospital Comarcal de La Merced, Osuna, Sevilla, Spain
c Servicio de Anatomía Patológica, Hospital Universitario Virgen del Rocío, Sevilla, Spain

ARTICLE INFO

Article history:
Received February 13, 2009
Accepted April 29, 2009

Keywords:
Regional transient osteoporosis
Bone marrow edema syndrome
Pregnancy
Knee
Fracture

ABSTRACT

The article presents the case of a patient who after her first pregnancy, during the immediate postpartum period, suffered a femoral supracondylar fracture complicated by bone marrow edema syndrome (BMES), also known as regional temporary osteoporosis (RTO). The fracture of the distal femur was treated with an open reduction and internal fixation of the distal femur by means of a minimally invasive procedure.

© 2009 Elsevier España, S.L. All rights reserved.

Introduction

Regional transient osteoporosis (RTO) is an uncommon bone alteration, usually self-limited, with a currently unknown exact etiology.¹ The most common localization of this problem is the hip, with a lesser degree of affection on the knee.²³ A common complication is the appearance of pathologic fractures.⁴

Case report

Anamnesis

A 32-year-old woman with no history of importance or toxic habits came to the clinic during her fifth month of pregnancy due to the sudden onset of pain and the inability to use the right knee. She had no history of trauma. Pain was irradiated to the leg and increased with walking and prolonged standing.

She had come to the ER on two occasions prior with the same symptoms; she had been treated conservatively with analgesics, anti-inflammatory drugs and relative rest, after ruling out an x-ray due to her pregnancy. Symptoms did not improve and three days after delivery she came to the ER again, sent by a traumatologist.
Physical examination

Right knee-swelling, pain upon palpation of both femoral condyles and the internal joint line, limited flexion and extension due to pain, discrete patellar crepitation, no ligament instability. Distal neurovascular examination was normal.

Complementary tests. The initial x-rays showed diffuse radiopacity of the metaphysis and distal femoral epiphysis, with no fracture lines; the joint space remained normal (Figure 1). Magnetic resonance (MR) showed extensive bone edema of the distal femoral epiphysis, especially on the external condyle, with a reduction in T1 signal and an increase in T2, in addition to a diffuse joint effusion (Figure 2).

Hours after these tests the patient fell spontaneously, with immediate onset of intense pain and functional limitation of the right knee. X-rays showed a right femoral suprachondyleal pathological fracture (Figure 3).

Diagnosis

Pathological fracture of the distal femur in a patient with RTO (bone marrow edema syndrome) during pregnancy.

Treatment

The fracture was surgically stabilized 48 h after with a minimally invasive technique (MIPO) (Figure 4); two biopsies were taken for pathological study, which later confirmed the diagnosis of bone marrow edema syndrome with no areas of trabecular necrosis (Figure 5).

Progression

In the last clinical and radiological control (14 weeks after the intervention), the patient was completely asymptomatic, performing complete loads, with a 5°-110° joint balance. Radiological control showed the consolidation of the fracture and re-establishment of bone density.
Discussion

The clinical course of RTO usually follows a characteristic pattern, appearing during the third trimester of pregnancy, characterized by pain and functional limitation of the affected joint, with a rapid or gradual onset. Symptoms are self-limited, with recuperation of the bone density.\(^\text{1,2}\)

Complementary data of interest, such as laboratory analysis are usually no different than in other asymptomatic pregnant patients. At the onset of symptoms, x-rays are normal; several degrees of osteopenia of the condyles can be seen between the fourth and eighth week. A bone scan with Tc99 reveals an increase in focal uptake in the affected joint, something that can be present before onset of symptoms. MR has shown that alterations can occur within 48 hours since symptoms onset, with hyperintense lesions in T2 and fat suppression (STIR) and hypointensity in T1.\(^\text{3}\)

Differential diagnosis must be made with osteonecrosis, infection (osteomyelitis, septic arthritis), pigmented villonodular synovitis, stress fractures and neoplastic processes (metastasis, myeloma, lymphoma or primary bone tumor). An MR is indispensable in order to reach the correct diagnosis. RTO is differentiated from osteonecrosis mainly because the transient bone marrow edema compromises the metaphysis and epiphysis, preserving the joint contour. It can be differentiated from osteomyelitis because this presents mainly epiphyseal affection.\(^\text{4-6}\) It has been suggested that RTO is also a form of reflex sympathetic dystrophy.\(^\text{7,8}\)

Disclosures

The authors have no disclosures to make.

References


Figure 5. Bone marrow with severe edema, vasodilation and hemorrhage. Lax fibrous tissue with isolated islets of adipose tissue. Absence of hematopoietic cells. Altered pattern of bone trabeculae with irregularity and alterations in their disposition.