

Bilateral Double-Layered Patella (DLP) with supra-patellar impingement

Published on 17.01.2017

DOI: 10.1594/EURORAD/CASE.14379

ISSN: 1563-4086

Section: Musculoskeletal system

Area of Interest: Musculoskeletal bone Abdominal wall
Musculoskeletal joint

Procedure: Diagnostic procedure

Imaging Technique: CT

Imaging Technique: MR

Special Focus: Dysplasias Case Type: Clinical Cases

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Patient: 22 years, male

Clinical History:

The authors present a case of a 22-year-old man complaining of anterior knee pain and no history of trauma.

Imaging Findings:

A computed tomography (CT) and a magnetic resonance imaging (MRI) were performed demonstrating two patellar layers, one anterior and one posterior, on both knees, confirming the diagnosis of bilateral DLP (Figure 1 and 2). In this case, cartilage tissue was found between the two layers and there was no significant condropathy (Figure 3 and 4).

The anterior osseous patellar layer attached to the extensor mechanism.

On MRI with fat suppression on DLP (Figure 4), both knees show a fluid like signal and abnormal convex posterior margin replacing the normal suprapatellar fat pad. These imagiological findings suggest suprapatellar impingement which was assumed to be the cause of the pain.

An all body x-ray was also performed and there were no signs suggesting association with multiple epiphyseal dysplasia (MED).

Discussion:

The DLP is a rare entity [1] that consists of two distinct patellar layers, one being anterior and one posterior.

The literature admits frequent association of DLP with autosomal recessive form of multiple epiphyseal dysplasia (MED) [2, 3]. An all body x-ray should be performed to exclude signs of MED.

Patients with DLP may be asymptomatic and the abnormality is often discovered incidentally on X-ray or CT studies. However, when the interface between the two layers is unstable, it can cause pain and sensation of subluxation. The abnormality of the normal patellar anatomy can affect the extensor mechanism and, although we didn't find any literature to support this statement, having this case in mind, we believe it can cause inflammation of the suprapatellar fat pad.

X-ray, CT and MRI are the main diagnostic imaging studies for this pathology, with the x-ray and the CT playing important roles in the characterization and identification of the two layers. On the other hand, MRI has an important role in the characterization of the cartilage and the soft tissue involvement.

Imaging techniques are important to rule out other differential diagnosis, such as multipartite patella and old fracture,

because they demonstrate the orientation of the two bone patellar layers. In addition, MRI is helpful to confirm the presence of cartilage.

Due to the rare incidence of this syndrome, its treatment is not standardized. However, when pain is an important complain, surgical approach with fusion between the two layers has been an option [1].

Differential Diagnosis List: Bilateral double layered patella, Bipartite patella, Old fracture

Final Diagnosis: Bilateral double layered patella

References:

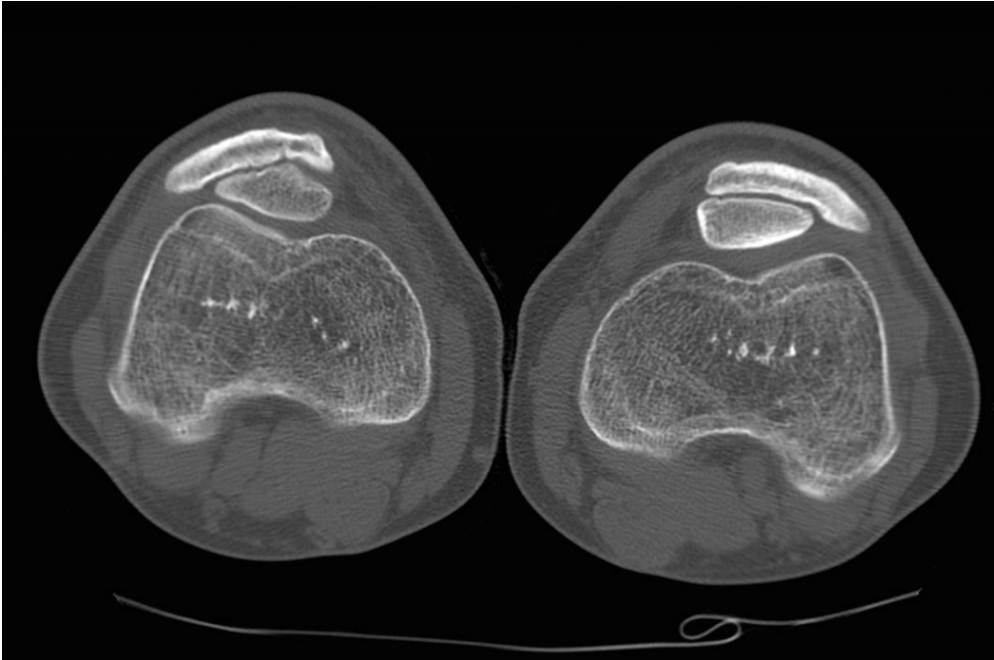
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Figure 1

a



Description: Left and right knee with two patellar layers and normal patellofemoral joint space. **Origin:** Centro Hospitalar do Porto

Figure 2

a



Description: Cartilage tissue between the two layers.

The anterior osseous patellar layer is attached to the extensor mechanism. **Origin:** Centro Hospitalar do Porto

b



Description: Cartilage tissue between the two layers.

The anterior osseous patellar layer is attached to the extensor mechanism. **Origin:** Centro Hospitalar do Porto

Figure 3

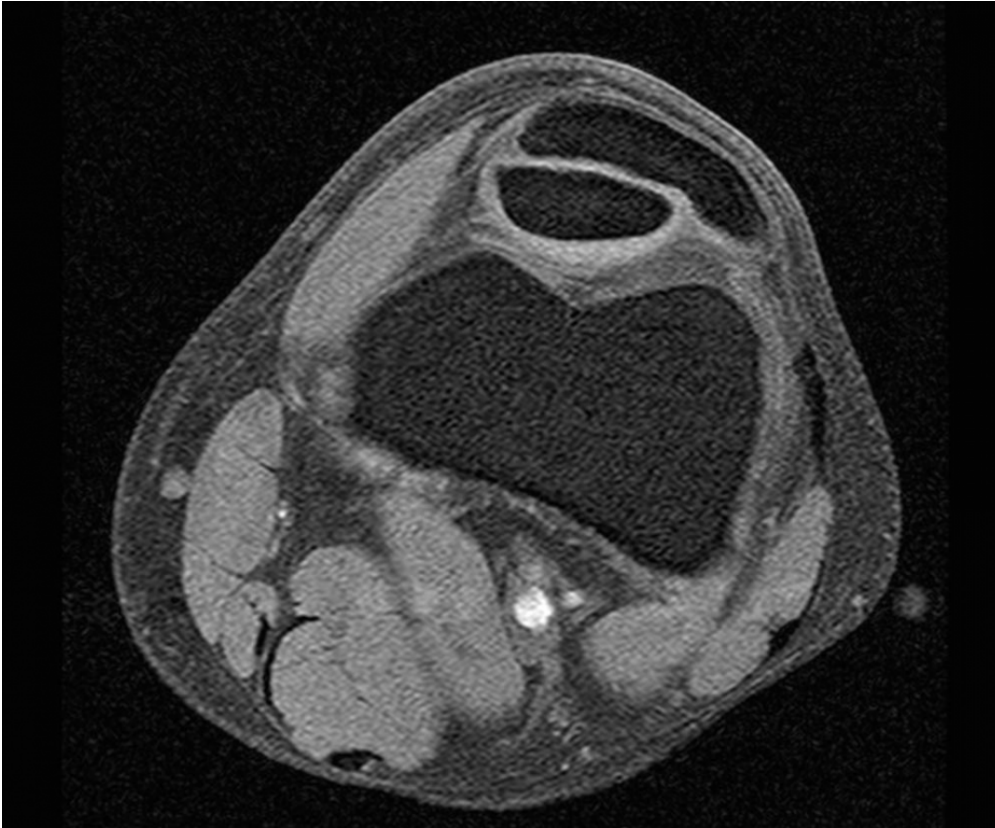
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Description: Abnormal convex posterior border of the suprapatellar fat pad associated with fluid like signal replacing the normal suprapatellar fat pad. **Origin:** Centro Hospitalar do Porto

Figure 4

a



Description: Cartilage between the two patellar layers. **Origin:** Centro Hospitalar do Porto