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The Contribution of Imaging in the Diagnosis of Osteochondritis Dissecans of the Knee: A Case Report

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Abstract **Case Report**

Osteochondritis dissecans of the knee is an acquired joint disease, characterized by focal ischemic necrosis of the subchondral bone and can progress to a partial or complete separation of an osteochondral fragment (unstable flap) [1]. This joint pathology most often affects young patients. Imaging plays a crucial role in the diagnosis of osteochondritis dissecans of the knee and also helps to rule out certain differential diagnoses, notably insertional tendinopathies and osteonecroses [1]. We report the case of a 31-year-old patient who consulted for chronic knee pain with limitation of knee flexion and extension. Standard knee radiography showed subchondral lucency of the inferomedial part of the left femur, and the knee MRI was consistent with stage III osteochondritis dissecans of the knee. The patient underwent surgical refixation, and the postoperative course was uncomplicated.

Keywords : Osteochondritis dissecans of the knee, Diagnosis, Radiological characteristic, Case repport.

INTRODUCTION

Osteochondritis dissecans of the knee (OCD) is an acquired joint lesion, characterized by focal ischemic necrosis of the subchondral bone, which can progress to partial or complete separation of an osteochondral fragment (unstable flap) [1]. It primarily affects adolescent athletes (juvenile OCD) but also young adults (adult OCD, which remains more severe) [2]. The etiology of this joint pathology remains multifactorial, mainly involving repetitive microtraumas [3]. Knee MRI remains the key examination for confirming and staging this clinical entity [3].

In this work, we will discuss, through a clinical case, the contribution of medical imaging in the diagnosis of osteochondritis dissecans of the knee (OCD).

CASE REPORT

This is a 31-year-old patient, an athlete, with no pathological history and no history of trauma. The patient consulted for chronic pain with locking in the left knee. Clinical examination found a limitation of flexion and extension of the left knee, tenderness on palpation, and no inflammatory signs in the area.

The standard X-ray of the left knee showed a subchondral lucency of the inferomedial part of the left femur (figure 1). An additional MRI of the knee was performed, which revealed the presence of a non-displaced osteochondral fragment on the inferomedial surface measuring: (13 x 4 x 6 mm) with well-defined contours in T1 and T2 hypointense signal, partially surrounded by a linear hypersignal rim. Associated with bone edema of the medial femoral condyle and a small amount of femorotibial joint effusion (figure 2). The MRI favored a diagnosis of stage III osteochondritis dissecans of the knee.

The patient underwent a surgical refixation of the cartilage. The postoperative course was uncomplicated.

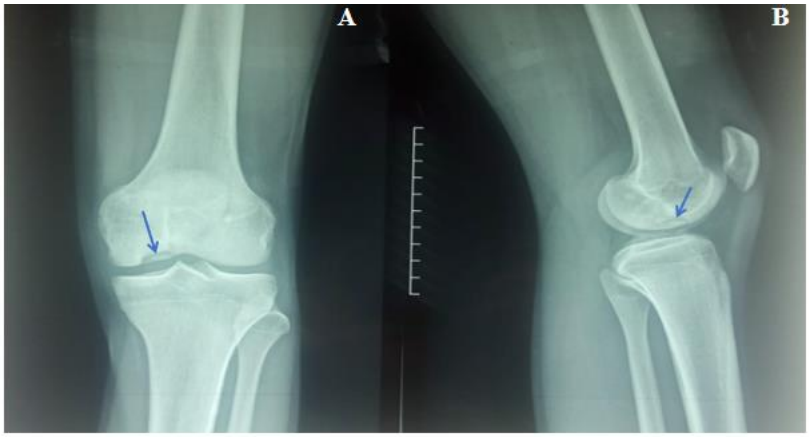

Figure 1 : standard X-ray of the left knee (A : front view & B : side view) showing a subchondral lucency (blue arrow)

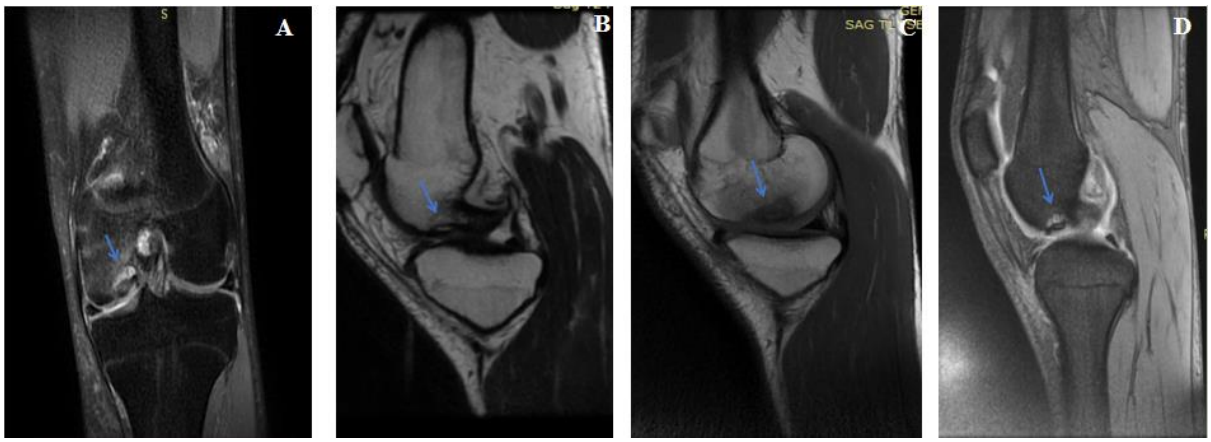

Figure 2 : The MRI of the left knee showing the lesion of stage III osteochondritis dissecans (blue arrow) A : coronal view, B : sagittal slice in T2, C : sagittal slice in T1, D : merged sagittal slice

DISCUSSION

Osteochondritis dissecans of the knee is a rare joint lesion of the subchondral unit characterized by delamination and sequestration of the subchondral bone which can be complicated by instability of the articular cartilage [4]. Its incidence varies between 2.3 and 31.6 cases per 100,000 [3]. It is observed mainly in young people between 10 and 20 years old [5]. The medial femoral condyle remains the most affected anatomical site (70–75%) followed by the lateral femoral condyle, the patella, and trochlea (rare) [6]. Several causes have been implicated in the explanation of the pathophysiology of this disease, notably we find the concepts of repetitive microtraumas, local ischemia, endocrine disorders, and lower limb alignment abnormalities [4].

The clinical presentation is variable and ranges from the absence of symptoms to significant pain and joint blockages (suggesting the presence of intra-articular foreign bodies). Joint effusion and synovitis are often present [3.7].

Medical imaging plays an important role in the diagnostic approach of osteochondritis dissecans of the knee. First of all, standard radiography allows for guiding the diagnosis; it shows the presence of a subchondral radiolucent area, a more or less detached bone fragment, margin-centered sclerosis, and in the late stage, the presence of an intra-articular foreign body. Joint instability is difficult to assess on standard radiography, and MRI remains the technique of choice [3.8]. The scanner remains very useful for a detailed analysis of the bone fragment, but also for measuring the gap between the bed and fragment, visualizing sequestration, geodes, sclerosis, and pre-operative planning.

However, knee MRI remains the reference examination; it allows confirming the osteochondral lesion, assessing the stability of the fragment (the most important criterion), describing the cartilage and subchondral bone, and looking for associated bone edema. Among the signs of stability on MRI, we note the observation of the fragment in place, well attached, minimal underlying T2 hypersignal, continuous cartilage above the lesion. However, the signs of instability on MRI include the hyperintense T2 line between the fragment and the bone (fluid-like), cartilage fissuring, the presence of subchondral cysts (>5 mm or multiple), and detachment/translation of the fragment [9.10]. At the end of this radiological investigation, knee

osteochondritis dissecans will be classified into 4 stages depending on its severity and prognosis [11].

The treatment of osteochondritis dissecans of the knee depends on the age and the stability of the lesion. In adolescents (open growth), for stable forms, the treatment remains conservative (offloading, MRI follow-up), and for unstable forms, the treatment is based on fixation or drilling. In adults, the risk of unfavorable progression is higher. Instability requires surgical treatment [12].

CONCLUSION

Osteochondritis dissecans of the knee is a joint pathology, the origin of which is multifactorial, dominated by repetitive microtraumas. The role of the radiologist is crucial in the diagnostic process, and must precisely characterize the stability, size, and location of the lesion. Information is necessary for the therapeutic decision and approach.

Conflicts of Interest: The authors declare no conflictsof interest.

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