

CONTINUING EDUCATION PROGRAM: FOCUS...

Imaging of tumors and tumor-like lesions of the knee

A. Larbi^{a,*}, P. Viala^a, C. Cyteval^b, F. Snene^a,
J. Greffier^a, M. Faruch^c, J.-P. Beregi^a

^a EA 2415, Department of medical imaging, University Hospital of Nîmes, 4, rue du Professeur-Robert-Debré, 30029 Nîmes, France

^b Department of osteoarticular radiology, University Hospital Lapeyronie, 371, avenue du Doyen-Gaston-Giraud, 34295 Montpellier cedex 5, France

^c Radiology and medical imaging, University Hospital of Toulouse, Hôpital Pierre-Paul-Riquet, place du Docteur-Baylac, TSA 40031, 31059 Toulouse cedex 9, France

KEYWORDS

Knee;
MRI;
Tumor;
Tumor-like lesion;
Synovium

Abstract Tumors and tumor-like lesions of the knee are common conditions. Because the synovial membrane covers a large part of the knee, tumors and tumor-like lesions of the knee are mostly synovial. Magnetic resonance imaging (MRI) plays a major role in the assessment and characterization of these lesions. However, the diagnostic approach of these lesions must be performed systematically. First, the lesion must be precisely located, and then the anatomical structure involved must be determined. Finally, clinical background that includes the age of the patient, frequency of the disease and, if any, associated signs as well as MRI characteristics must be analyzed. In this review, we describe the anatomy of the knee and its compartments and provide a description of the main tumors and tumor-like lesions of the knee. We present a diagnostic approach based on the location within the knee of the lesions and the anatomical structures involved.

© 2016 Editions françaises de radiologie. Published by Elsevier Masson SAS. All rights reserved.

Tumors and tumor-like lesions of the knee are frequent. Because the synovial membrane covers a large part of the knee, the tumors and tumor-like lesions of the knee are mostly synovial. However, synovial tumors are rare and account for only a small part of the soft tissue tumors, which are also rare. Indeed, soft tissue sarcomas represent only 1% of all malignant tumors [1]. Tumors and tumor-like lesions are generally benign and arise from inflammatory or degenerative articular disease.

* Corresponding author.

E-mail address: ahmed.larbi@chu-nimes.fr (A. Larbi).

Magnetic resonance imaging (MRI) plays a major role in the assessment and characterization of tumors and tumor-like lesions of the knee. The diagnosis must be approached systematically. First, the lesion must be located in the knee. Then, the anatomical structure involved must be defined. Finally, clinical and epidemiological parameters (age of the patient, frequency, associated signs) and imaging (ultrasound and MRI) must be analyzed to accurately establish the diagnosis.

In this review, we describe the anatomy of the knee and its compartments and provide a description of the main tumors and tumor-like lesions of the knee. We present a diagnostic approach based on the location within the knee of the lesions and the anatomical structures involved.

Anatomy of the knee

The knee is a joint that has three compartments: the medial femoro-tibial joint, the lateral femoro-tibial joint and the patellofemoral joint. Like all joints, the knee is enclosed by a fibrous and synovial capsule. The articular cavity is limited anteriorly by the extensor system (quadriceps tendon, patella and patellar ligament), laterally by the lateral and medial ligaments and posteriorly by the capsule, condylar shells and gastrocnemius (Fig. 1).

In which compartment is the tumor located?

The knee may be divided into three compartments: anterior, posterior (delimited by the femoro-tibial axis), and

supra- and infrapatellar (delimited by the patella) compartments (Fig. 2). Tumors and tumor-like lesions may be intra- or extra capsular. The knee joint, enclosed by the articular capsule, is also divided into an intra- and extrasynovial compartment (Fig. 3).

On which anatomic structure is the lesion located?

The anterior compartment consists of fatty structures: infra- and suprapatellar fat pad, prefemoral fat pad. The synovium lines the deep layer of the articular capsule, the bone surfaces not covered by cartilage as well as the intra-articular ligaments and tendons. The synovium occupies thus a large area of the knee.

Tumor-like lesions may arise in the meniscal-ligament structure. They include arthrofibrosis or "cyclops lesions", a complication after rupture of the anterior cruciate ligament (ACL), meniscal cysts. Extra-articular lesions are located in muscles, fat and skin (Fig. 4).

Clinical manifestations

Because the synovial membrane covers a large part of the knee, most tumors and tumor-like lesions are synovial in origin, even if they are rare. MRI is the ideal method to provide information on these lesions, because it shows the synovial membrane directly and can help characterize lesions based on their components such as fat, cartilage, and hemosiderin.



Figure 1. Anatomy of the knee joint, limited anteriorly by the extensor system (blue arrows), laterally by the lateral and medial ligaments and posteriorly by the capsule (green line), condylar shells and gastrocnemius.

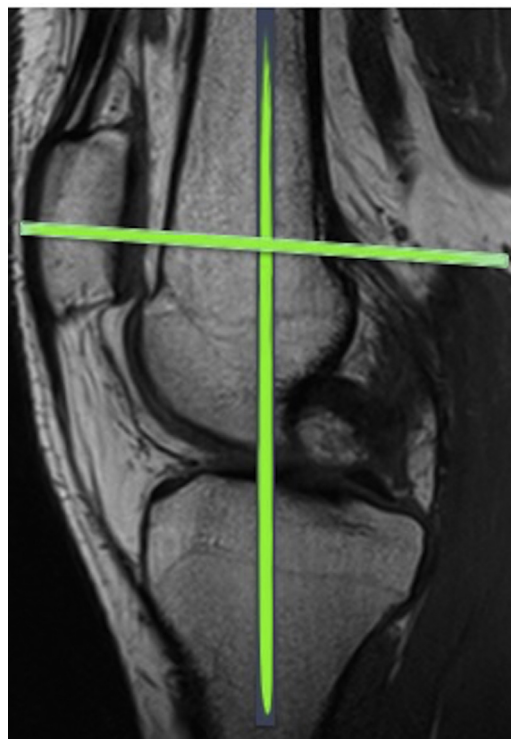


Figure 2. The different compartments of the knee: anterior and posterior (delimited by the femoro-tibial axis) and supra- and infrapatellar (delimited by the patella) (green lines).

Download English Version:

<https://daneshyari.com/en/article/5578948>

Download Persian Version:

<https://daneshyari.com/article/5578948>

[Daneshyari.com](https://daneshyari.com)