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Course Name: Commonly Missed Diagnoses in Shoulder & Knee MR

Title of Talk: Commonly Missed Diagnoses in the Knee

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Abstract

MR imaging of the knee joint is a very frequent imaging examinations. Usually, there is good knowledge among radiologists with regard to the most common abnormal findings in the knee which include complete tears of anterior cruciate ligament, medial and lateral collateral ligaments injuries, as well as lesions of the meniscus (1). However, there are some typical diagnoses which are challenging and thus often not exactly described or even missed.

Anterior cruciate ligament (ACL) tears are the most common complete ligamentous injury in the knee (2). The presence of partial ACL tears however is usually controversy discussed and interpretation of MR signal abnormalities within an otherwise intact looking ACL is difficult (3). This review lecture will provide some arguments why partial tears of the ACL should be considered in some patients with ACL injury. Posterior cruciate ligament tears are less frequent than ACL tears, however sometimes also challenging (4).

Meniscal root tears, displaced meniscal tears as well as tears in the posterior horn of the lateral meniscus are also commonly missed diagnoses in the knee (5). Radiologists should be aware of these abnormalities since they may are clinically relevant and treatment may be altered. Radiology reports should also specifically emphasize on radial, vertical, complex, or displaced meniscal tears since they appear more clinically relevant compared to horizontal and oblique meniscal tears. The latter are also frequently encountered in asymptomatic patients (6).

In the knee, radiologists often report on ligamentous structures and meniscus in detail, but often they report only little on the cartilage i.e. in the femoro-tibial compartment. Since the cartilage can be relatively thin compared to the patellar cartilage, it is crucial to use state-of-the-art MR imaging technique to allow proper cartilage evaluation. In this lecture, current techniques for cartilage MR imaging will be reviewed. Dedicated cartilage MR imaging techniques such as dGEMRIC and T2 mapping will briefly be discussed as they may allow detection of cartilage abnormalities in a pre-clinical stage where the surface of the cartilage still remains intact.

Periarticular abnormalities such as traumatic injury to the myotendinous junctions or to the posterolateral corner are frequent - however often missed (7). Radiologists should recognize

chronic abnormalities of the Hoffa fat pad, the iliotibial band or the tuberositas tibiae. Synovial processes such as the pigmented villonodular synovitis (PVNS) needs to be clearly described, although differentiation from hemophilia, rheumatoid arthritis, or amyloid arthritis is challenging (8). Dysplasia of the femoral trochlea or patellar maltracking may contribute to acute dislocation of the patellar and should always be reported.

References:

1. Stevens KJ, Dragoo JL. Anterior cruciate ligament tears and associated injuries. Top Magn Reson Imaging 2006; 17:347-362.
2. Klass D, Toms AP, Greenwood R, Hopgood P. MR imaging of acute anterior cruciate ligament injuries. Knee 2007; 14:339-347.
3. Petersen W, Zantop T. Partial rupture of the anterior cruciate ligament. Arthroscopy 2006; 22:1143-1145.
4. Roberts CC, Towers JD, Spangehl MJ, Carrino JA, Morrison WB. Advanced MR imaging of the cruciate ligaments. Magn Reson Imaging Clin N Am 2007; 15:73-86.
5. Koenig JH, Ranawat AS, Umans HR, Difelice GS. Meniscal root tears: diagnosis and treatment. Arthroscopy 2009; 25:1025-1032.
6. Zanetti M, Pfirrmann CW, Schmid MR, Romero J, Seifert B, Hodler J. Patients with suspected meniscal tears: prevalence of abnormalities seen on MRI of 100 symptomatic and 100 contralateral asymptomatic knees. AJR Am J Roentgenol 2003; 181:635-641.
7. Boutry N, Bourges M, Dupont S, Budzik J, Demondion X, Cotten A. [Value of imaging in posterolateral corner injuries of the knee]. J Radiol 2009; 90:681-691.
8. Masih S, Antebi A. Imaging of pigmented villonodular synovitis. Semin Musculoskelet Radiol 2003; 7:205-216.