Top 5 tips: Juvenile Idiopathic Arthritis

Arthritis Subcommittee



Background

- Juvenile idiopathic arthritis (JIA) is the most common type of arthritis in children, the exact cause is unknown.
- Symptoms start before the age of 16 and persist for at least six weeks.
- Most frequently affected joints are: knee, wrists and hands; ankle and tarsal joints, more rarely MTP; elbow, hip, cervical spine, and temporomandibular joints.
- Imaging plays an important role in the diagnosis and management of JIA.





Delayed bone age in a 5 year-old



Cysts and erosions in the hip joints



Growth alterations (overgrowth)

Conventional radiography should be limited to the assessment of JIA-associated damage (demineralisation, cysts, erosions, joint space narrowing, periostitis, ankylosis, cervical spine subluxations) or for alternative diagnoses, while its use, as a screening test prior to advanced imaging to identify active synovitis or enthesitis, is not recommended.





Radiocarpal and midcarpal joints synovitis

Achilles tendon bursitis

Iliotibial band enthesitis

- US has demonstrated high sensitivity for inflammatory changes and might be considered to monitor joint inflammation and detect subclinical synovitis in JIA patients in clinical remission.
- Lesions detected by US include: joint effusion, synovitis, bursitis, enthesitis, bone erosons and cysts, cartilage lesions.
- The use of US is limited to superficial joints.





Synovium in the knee before and after gadolinium (Gd) administration; Arrows indicate the enhanced synovial membrane

- MRI is the most validated imaging modality for the assessment of JIA-related imaging features, such as synovial hypertrophy and synovitis, tenosynovitis, enthesitis, bone marrow edema and osteitis, cartilage lesions, bone cysts, and erosions.
- The hallmark feature of JIA disease activity is synovitis. The use of contrast agents improves diagnosis of synovitis although it should be used with caution in children.
- The Juvenile Arthritis MRI Scoring (JAMRIS) provides a semi-quantitative evaluation of JIA activity in the knee joint.
- The OMERACT standardized Whole Body-MRI Scoring System provides the assessment of disease activity in JIA





Hip arthritis in JIA

TMJ arthritis in JIA

- Isolated hip or TMJ involvement may occur in JIA.
- As the hips are commonly affected in JSpA, they are preferably included in MRI protocols of sacroiliac joints.
- Many other diseases may present with hip effusion and synovitis, such as transient synovitis of the hip, septic arthritis, and reactive synovitis.





CRMO in 5-yr-old boy with LBP, clinical examination revealed also other painful areas and subsequent WB-MRI documented CRMO.



Normal variation: rim of subchondral high T2 signal; T1 blurring/irregularities

- Subchondral BME in the SIJ or in the metaphyses of long bones might be suggestive of other diseases such as CRMO.

- Features due to bone maturation, such as subchondral high T2 signal and blurring or irregularity of articular margins on T1 of the SIJ as well as physiological bony depressions in the wrist joints, may mimic a disease.

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Contributors

Iwona Sudoł-Szopińska

Nele Herregods

Mario Maas

Olympia Papakonstantinou

Project Coordinators

Chiara Giraudo

Winston Rennie

