



Editorial

# Pediatric Musculoskeletal Imaging: Beginning of a New Journey

Narendra Kumar Bagri<sup>1</sup> Manisha Jana<sup>2</sup>

<sup>1</sup>Division of Rheumatology, Department of Pediatrics, All India Institute of Medical Sciences, New Delhi, India

<sup>2</sup>Department of Radiodiagnosis & Interventional Radiology, All India Institute of Medical Sciences, New Delhi, India

Indian J Radiol Imaging

The field of pediatric radiology is expanding in parallel with development of various pediatric subspecialties. The knowledge of pediatric musculoskeletal (MSK) radiology is particularly pertinent to the field of pediatric rheumatology.

Pediatric MSK imaging includes a plethora of clinical situations, ranging from trauma, skeletal dysplasia to soft tissue and joint diseases. While the former two are often discussed; the rheumatologic conditions often remain overlooked. The present and the forthcoming issues of *Indian Journal of Radiology and Imaging* (IJRI) shall cover the key topics relevant in pediatric MSK radiology, with focus on rheumatology.

The present symposium on pediatric MSK radiology is focused to cover the key topics like imaging modalities in childhood arthritis, chronic noninfectious osteomyelitis, skeletal tuberculosis, and other infections. Trauma and neoplastic pathologies will not be covered in this symposium.

Our journey in this naïve field began nearly half a decade ago and over the time we are strongly convinced that the MSK imaging has a pivotal role in impeccable clinical practice of pediatric rheumatology. It has an undoubted diagnostic value in evaluation of a child with arthritis in general and monoarticular arthritis in particular. It is clinically challenging to decipher the exact etiology of monoarticular arthritis, even to an experienced MSK radiologist.<sup>1</sup> In the section on arthritis, the authors would cover the mimicker of juvenile idiopathic arthritis (JIA) and role of imaging in unfolding the underlying diagnosis. Simple radiological tools such as radiographs can help in identifying JIA, assessing disease damage, and excluding other mimickers.

In JIA, ultrasound plays an important role in supporting the diagnosis of arthritis, excluding alternative pathologies, and performing diagnostic aspiration and synovial biopsies

and therapeutic injections. In addition to delineating arthritis, it can assess the presence and degree of synovial hypertrophy without administration of contrast.

Enthesitis-related arthritis is the most common subtype of JIA in Southeast Asia. Enthesitis is a key component and the diagnosis is usually based on clinical examination. High-resolution ultrasound along with Doppler signals can add confidence to the clinical diagnosis of enthesitis.<sup>2</sup> With time, ultrasound has become an integral part of rheumatology practice<sup>3</sup> and has additive potential into diagnosis of active synovitis.

Magnetic resonance imaging (MRI) is an indispensable tool in MSK imaging. Its utility in management of JIA is well established. Contrast-enhanced MRI can detect the synovial pathology in JIA, and cartilage-sensitive sequences can assess disease severity. Whole-body MRI (WB-MRI) is a new imaging modality that provides unique insight into the disease burden. Use of WB-MRI in nononcologic indications such as JIA and dermatomyositis is an evolving field. With initial encouraging results in few studies, this may become important tools in the management of childhood arthritis.<sup>4-6</sup> Chronic nonbacterial osteomyelitis (CNO) is an autoinflammatory bone disease with a wide range of clinical presentations. WB-MRI has an important role in disease quantification, follow-up assessment, and guiding therapeutic guidance in CNO.<sup>7</sup> We believe that use of WB-MRI would add more objectivity to assess the results of drug trials, which are presently reporting outcomes based on instruments chiefly comprising of clinical and laboratory domains.

With the expanding scope of radiology practice and teaching, pediatric radiology has established itself as a specialty. However, in India there are only a few institutes offering dedicated pediatric radiology fellowship with an exposure to pediatric MSK imaging. Therefore, there is an

**Address for correspondence**  
Manisha Jana, MD, DNB, FRCR,  
Department of Radiodiagnosis &  
Interventional Radiology, All India  
Institute of Medical Sciences, New  
Delhi 110023, India  
(e-mail: manishajana@gmail.com).

**DOI** <https://doi.org/10.1055/s-0044-1782625>.  
**ISSN** 0971-3026.

© 2024. Indian Radiological Association. All rights reserved.  
This is an open access article published by Thieme under the terms of the Creative Commons Attribution-NonDerivative-NonCommercial-License, permitting copying and reproduction so long as the original work is given appropriate credit. Contents may not be used for commercial purposes, or adapted, remixed, transformed or built upon. (<https://creativecommons.org/licenses/by-nc-nd/4.0/>)  
Thieme Medical and Scientific Publishers Pvt. Ltd., A-12, 2nd Floor, Sector 2, Noida-201301 UP, India

unmet need for spreading the awareness about pediatric rheumatologic imaging.

Given the above facts, it is apt that this special symposium of the IJRI journal on pediatric MSK radiology is being brought under a conjoint editorship of a pediatric rheumatologist and radiologist. We sincerely hope that this symposium would be an asset for trainees of pediatrics and radiology and help strengthen the naïve field of pediatric MSK in India.

### Conflict of Interest

None declared.

### References

- 1 Netaji A, Jana M, Tripathy SK, Bagri NK. Mimickers of juvenile idiopathic arthritis: getting clues from imaging. *J Clin Rheumatol* 2021;27(03):e113–e115
- 2 Rossi-Semerano L, Ravagnani V, Collado P, et al. Validity of ultrasonography in detecting enthesitis in children: a systematic literature review. *Joint Bone Spine* 2023;90(04):105538
- 3 Collado P, Martire MV, Lanni S, et al; OMERACT Ultrasound Group. OMERACT International Consensus for Ultrasound Definitions of Tenosynovitis in Juvenile Idiopathic Arthritis: systematic literature review and Delphi process. *Arthritis Care Res (Hoboken)* 2023;75(11):2277–2284
- 4 Panwar J, Patel H, Tolend M, et al. Toward developing a semiquantitative whole body-MRI scoring for juvenile idiopathic arthritis: critical appraisal of the state of the art, challenges, and opportunities. *Acad Radiol* 2021;28(02):271–286
- 5 Leite DFC, Costa ALF, Appenzeller S, et al. Magnetic resonance imaging assessment of juvenile idiopathic arthritis using OMERACT and EuroTMjoint classifications. *Int J Oral Maxillofac Implants* 2022;51(11):1473–1481
- 6 Bhalla D, Bagri N, Jana M, Upadhyay AD. Can whole-body magnetic resonance imaging predict relapse in juvenile idiopathic arthritis? A longitudinal pilot study. *J Clin Rheumatol* 2023;29(08):402–407
- 7 Wu EY, Oliver M, Scheck J, et al. Feasibility of conducting comparative effectiveness research and validation of a clinical disease activity score for chronic nonbacterial osteomyelitis. *J Rheumatol* 2023;50(10):1333–1340