Contents lists available at ScienceDirect

Journal of Clinical Orthopaedics and Trauma

journal homepage: www.elsevier.com/locate/jcot

Editorial

Musculoskeletal radiology: A true companion of the orthopaedic surgeons

Advancements in imaging technology have genuinely transformed the way healthcare is delivered in recent times and Musculoskeletal (MSK) imaging is indeed no exception to it. The growing emphasis on evidence-based medicine (EBM) and the need for the precise pre-operative diagnostic workup of the patients has further propelled the utilization of increased imaging in Orthopaedic practice. The musculoskeletal ailments can result from a variety of various circumstances, ranging from work accidents and sports injuries to genetics and even lifestyle choices and the common ailments like Knee Osteoarthritis and Osteoporosis. MSK radiology, as a subspecialty, provides immense help to the treating Orthopaedic surgeons in disease diagnosis as well as treatment in the wide range of conditions right from infective and inflammatory arthritis, trauma (including sports injuries), bone tumors, and metabolic bone diseases.

Imaging of bones, joints and the soft tissues using conventional radiography/fluoroscopy and computed tomography (CT) was in routine practice since the last several decades. Radiography and CT offered precise delineation of osseous details, but the soft tissues and bone marrow remained areas of concern. Magnetic Resonance Imaging (MRI) has, however, revolutionized the field of MSK Imaging owing to its excellent soft tissue resolution and superior ability to delineate soft tissue structures including the muscles, tendons, ligaments and the bone marrow, as well. Transition to 3-T MR systems, parallel imaging techniques, motion compensation-techniques, MRI contrast agents, meal-reduction sequences, dedicated sequences for cartilage imaging, Diffusion-weighted imaging, MR Arthrography, and 3-D MRI sequences have further improved the depth and details of information in MSK Imaging. Newer MRI-sequences extend beyond the morphological evaluation of cartilage. It allows assessment of the biochemical ultrastructure of cartilage and may thus aid in the evaluation of cartilage tissue maturation after repair. Whole-body MRI has proved to be a boon for the staging of multiple myeloma, as it is the most sensitive and specific imaging investigation. It is vital to diagnose fractures related to osteoporosis promptly, as pre-existing osteoporotic fractures increase the risk of future fractures significantly, which may lead to increased morbidity and mortality. Recent advancements in the Ultrasound (US) technology and improvement in the probe designs have brought High-frequency US to the forefront of MSK Imaging with widespread usage in sports injuries. The future is likely to see an increasing role of PET/CT and other forms of molecular imaging and the introduction of whole-body MRI into our daily clinical practice. We also look forward to ongoing research about the role of novel imaging techniques and the clarification of the role of vertebroplasty in the treatment of osteoporotic fractures.

Rapid technological advancements in MSK Imaging have also ushered proportionate demand for the dedicated Imaging experts to ensure that the imaging studies are utilized optimally, for the prompt and precise diagnosis. Therefore, MSK Radiology is now emerging as a separate sub-specialty to attain this objective.¹ The present era of rapid innovations in MSK radiology is marked by the integration of diverse disciplines and technologies that are further narrowing the gap between machine and man. Artificial intelligence and Radiomics allow extraction of a large number of quantitative features from medical images using specific algorithms which is likely to make image interpretation more efficient and accurate. Advancements in bioengineering and life sciences are creating newer treatment options in musculoskeletal disease in the form of image-guided therapy and targeted radionuclide therapy.² We believe that the sub-specialty of MSK radiology would continue to advance further, explore new potentials and play an increasingly important role in disease diagnosis and image-guided treatment. The training curriculum for Orthopaedic surgeons should therefore further integrate disease pathology and imaging for a comprehensive approach to disease management.³ A multi-disciplinary approach to patient management is the need of time to ensure the best treatment results and patient satisfaction.

This special issue of Journal of Clinical Orthopaedics and Trauma (JCOT) include several novel and exciting review and research articles on MSK Radiology and address the current practice and future trends in this exciting emerging sub-specialty of MSK imaging. We hope that this special issue of JCOT would be useful for the clinical practice and would add to the knowledge of current trends and concepts in the field of MSK Radiology. Apart from the contents of MSK Radiology, we have included several interesting case reports related to the Paediatric Orthopaedics, some original research papers related to the Basic science and Traumatology. In the special sections of new technology and clinical pearls, the articles related to 3D printing and the myths and facts of low back pain should find interesting and useful reading to our readers and followers.

References

1. Douis H, James SJ, Davies AM. Musculoskeletal imaging: current and future trends. *Eur Radiol.* 2011;21:478.
2. Hricak H. RSNA-2016 new horizons lecture: beyond imaging—radiology of tomorrow. *Radiology.* 2018;286(3):764–775. <https://doi.org/10.1148/radiol.2017171503>.
3. Atta I, Habbash, AlQahtani Fahd Nasser. Integrated pathology and radiology learning for a musculoskeletal system module: an example of an interdisciplinary, integrated form. *Adv Med Educ Pract.* 2018;9:527–533.

Nitin Ghonge, Senior Consultant*

Dept of Radiology, Indraprastha Apollo Hospitals, New Delhi, India

Raju Vaishya, Senior Consultant

Dept of Orthopedics, Indraprastha Apollo Hospitals, New Delhi, India

* Corresponding author.

E-mail address: drnitinpghong@gmail.com (N. Ghonge).

Available online 21 May 2019