



Highlights of the special scientific sessions of the 45th Annual Scientific Meeting of the International Skeletal Society (ISS) 2018, Berlin, Germany

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Introduction

The 45th Annual Meeting of the International Skeletal Society (ISS) was held in Berlin, Germany, from September 23 to September 28, 2018. The meeting consisted of a 3-day closed meeting for ISS members and a 4-day refresher course, which included a 1-day dedicated musculoskeletal ultrasound course. This article will review the highlights of the Scientific Sessions, which are part of the closed meeting.

Scientific program

This year, 109 scientific abstract submissions were received, of which 20 were selected for a 10-min oral presentation in the Special Scientific Session. The winners of the best scientific paper of the European Society of Musculoskeletal Radiology (ESSR), the Asian Musculoskeletal Society (AMS), and the Society of Skeletal Radiology (SSR) also presented their winning papers during the Special Scientific Session. For the Scientific Breakout Session, ten abstracts were selected for a 6-min oral presentation. The abstracts for the Special Scientific Session and the Breakout Session were published in *Skeletal Radiology* [1].

Highlights of the Special Scientific Session

Highlights of the Special Scientific Session included presentations on the use of multiparametric MR imaging in assessing neoplasms. Lim et al. from Seoul, Republic of Korea, showed

that multiparametric MR imaging may help to predict early response of bone metastases to target therapy in patients with non-small cell lung cancer [2] and Shannon et al. from Baltimore, MD, showed the use of dynamic contrast-enhanced MRI to distinguish liposarcomas from atypical lipomatous tumors [3].

Louza et al. from Sao Paulo, Brazil, characterized the anterolateral ligament (ALL) in normal knees of pediatric and adolescent patients by MRI. Visualization of the normal ALL increased with age and only after age 13 in females and age 15 in males the visualization of the ALL was close to 70% [4]. Khanna et al. from London, UK, focused on the MRI appearance of the capsulo-osseous layer and femoral attachments (CITB) of the iliotibial band (ITB) in the normal and pivot shift ACL injured knee. Injury of the CITB and femoral attachments of the ITB are good markers for ACL injury even in the absence of a Segond fracture and should be evaluated on all MRIs [5]. Guimaraes et al. from San Francisco, CA, showed that patients with acute ACL tears frequently have isolated meniscal ramp lesions and that these patients have accelerated cartilage degeneration [6].

Mckean et al. from Aylesbury, UK, reported good outcomes following targeted ultrasound-guided injection of the rotator interval and manipulation of the shoulder under local anesthetic block in patients with adhesive capsulitis [7]. Boutin et al. from Sacramento, CA, established a PACS-based system that could be used to screen for sarcopenia on abdominal CTs [8]. Rehwald et al. from Seattle, WA, presented novel advanced reconstruction methods for digital tomosynthesis in MSK imaging [9].

Several scientific presentations focused on machine learning. Kijowski et al. from Madison, WI, presented a fully automated deep-learning prediction model that detected cartilage lesions within the knee joint with comparable diagnostic performance as human readers [10]. Chhabra from Dallas, TX, showed radiomic predictive models that were promising in characterizing musculoskeletal tumors [11]. Huber et al. from Zurich, Switzerland, reported high sensitivity on the detection

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and grading of central lumbar spinal stenosis using machine learning [12]. Wang et al. from Boston, MA, created a highly accurate model for automated classification of orthopedic hardware in the hip area [13], while Mutasa et al. from New York, NY, showed that deep-learning techniques can be used for accurate diagnosis of femoral neck fractures [14].

Two technical innovations focused on dynamic cervical spine imaging: Walter et al. from New York, NY, were able to use rapid MR sequences for kinematic cervical flexion-extension, which could be used for assessment of dynamic canal stenosis, cord impingement, and spondylolisthesis [15]. Zishan et al. from Stoke Mandeville, UK, presented their initial experience of dynamic 4D CT for the investigation of cervical instability. Dynamic 4D CT was a valuable problem-solving tool in specific cases of cervical trauma to exclude spinal instability [16].

ISS Special Scientific Session Excellence Award

The winner of the ISS Special Scientific Session Excellence Award is selected by the members of the Ad Hoc Scientific Session Committee taking into consideration the data as delivered at the time of presentation. The winners of this year's ISS Special Scientific Session Excellence Award were Dr. Richard Kijowski from Madison, WI, for his presentation "Fully-Automated Knee Cartilage Lesion Detection Using Deep Learning" [10] and Dr. Martin Torriani from Boston, MA, who presented "Automatic Classification of Orthopedic Hardware Using a Deep Learning Algorithm" [13].

Highlights of the Breakout Session

Highlights of the Breakout Session included a study by Pattampaspong et al. from Chiang Mai, Thailand, using cinematic volume rendering 3D-CT of the pubic symphysis for age estimation in cadavers [17]. Tornow et al. from Dallas, TX, showed that standardized reporting with recommendations from radiologists can help referring clinicians to streamline patient care and decrease the burden on the system from unnecessary MRI orders [18]. Lapègue et al. from Toulouse, France, demonstrated the feasibility of US-guided release of the A1 pulley/retinaculum of the fist extensor compartment using a 21-G needle [19]. Lala et al. from New York, NY, showed that volar intercalated segmental instability (VISI) deformity, classically taught to be the result of lunotriquetral ligament injury, was rarely associated with isolated lunotriquetral pathology [20]. Albano et al. from Milan, Italy, demonstrated that MRI and CT could be useful tools for analysis of the resection margins and identification of residual disease of surgical specimens of malignant bone tumors [21]. Bousson et al. from Paris, France, presented results from a prospective observational study on the efficacy of bisphosphonate therapy for osteoid osteomas. In 74% of patients with

painful osteoid osteoma managed conservatively with bisphosphonates, long-term pain relief was achieved [22]. Del Grande et al. from Lugano, Switzerland, showed that an automated 10-min multi-contrast 3D MRI protocol of the knee was at least equivalent to a 20-min 2D TSE MRI for the diagnosis of internal derangement [23].

Summary

The ISS Scientific Meetings during the Annual Meeting of the ISS included scientific presentations focusing on machine learning to assess bone and joints, novel imaging techniques and treatments of musculoskeletal disorders, and the use of MRI in sports medicine and oncology.

Compliance with ethical standards

Conflict of interest None.

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