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EULAR recommendations reflect advances in imaging

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Abstract

Substantial advances have been made in the field of imaging in spondyloarthritis, with respect to both the techniques themselves and their applications, but how should clinicians and radiologists make the most of these developments? New recommendations from EULAR could provide valuable guidance.

A task force comprising 21 experts in rheumatology, radiology and methodology from 11 European countries under the auspices of EULAR has developed evidence-based recommendations for the use of imaging in the diagnosis, staging, monitoring of disease activity and treatment responsiveness, and assessment of spinal fractures and osteoporosis in peripheral and axial spondyloarthritis (SpA).¹ This commentary discusses the critical need for such recommendations, the methodology employed in their development, and their potential impact on patients with SpA not only in Europe, but also worldwide.

Since the modified New York Classification Criteria for ankylosing spondylitis (AS) were proposed in 1984,² our concept of the disease spectrum, natural history and treatment of SpA has advanced considerably. Inflammatory back pain (IBP) is now recognized to be far more common than previously realized,³ and can be present, along with other symptoms of SpA, up to 10 years prior to the appearance of radiographic sacroiliitis.⁴ These findings led to the concept of axial SpA, which is present in up to 1.5% of Americans according to a recent nationwide survey.³ In the opinion of many investigators, and for the purposes of the EULAR imaging recommendations, AS is included under the label axial SpA. Reflecting this conceptual evolution, terms such as Reiter syndrome and undifferentiated SpA have largely disappeared, and a distinction between ‘axial’ or ‘peripheral’ disease has emerged; in fact, classification criteria have been formulated for both axial SpA and peripheral SpA.⁵

Advances in imaging have aided this progress considerably. Radiographic scoring systems have been established to enable the quantitation of structural damage.⁶ MRI facilitates earlier diagnosis and has, in fact, been included in current SpA classification criteria.⁵ In addition, CT has higher specificity than radiography (but raises concerns about radiation exposure), and ultrasonography (greyscale and/or power Doppler) has come into widespread clinical use. However, numerous problems have been encountered with the use of imaging

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in SpA. Interobserver agreement in the interpretation of standard sacroiliac radiographs is moderate, at best,⁷ which has complicated at least one clinical trial of biologic therapy in AS. A great deal of progress has been made in the ability to define bone marrow oedema of the sacroiliac joints in the assessment of early disease and/or active inflammation, and in assessing the predictive value of fatty marrow deposition for subsequent syndesmophyte formation. However, spinal MRI lacks specificity compared with pelvic MRI,⁸ and ultrasonography assessment is complicated by interobserver variability and lower specificity.⁹ The detection of osteoporosis in AS has been a particular problem, and extensive spinal syndesmophyte formation can complicate this assessment by falsely elevating estimates of bone mass on dual-energy X-ray absorptiometry (DXA).

A consensus document detailing how imaging can best be employed by clinicians and radiologists in the management of SpA has been particularly lacking in light of the numerous advances in the assessment of standard radiographs, in MRI, in ultrasonography and in other imaging modalities. The article by Mandl *et al.*¹ provides such a consensus document, with recommendations for the use of current imaging techniques in the management of SpA.

The formulation of these recommendations began with an initial task force meeting of an expert group of 21 rheumatologists, radiologists and methodologists in which 12 key clinical questions relating to the role of imaging in SpA were identified by consensus. Subsequently, three junior members of the taskforce searched the literature to identify articles on the use of imaging in adults with a suspected or confirmed clinical diagnosis of SpA (including those with IBP), axial SpA or peripheral SpA, as well as possible spinal (vertebral) fracture. Currently available imaging modalities were reviewed, including standard radiography, ultrasonography, MRI, CT, PET, single-photon emission CT, quantitative sacroiliac joint scintigraphy and DXA. Randomized controlled trials, systematic reviews, controlled clinical trials, and cohort, case-control and diagnostic studies published in English up to January 2013 were all reviewed. The quality of all included studies was assessed using the QUADAS-2 tool,¹⁰ which minimizes the bias and applicability of primary diagnostic accuracy studies. For each research question, data extraction was reviewed by at least two other taskforce members, mostly not in the literature review group. Expert opinion was used only when available research evidence was lacking. Through a process of discussion and consensus, the experts formulated 10 recommendations, which were scored for strength using a 0–10 visual analogue scale, with 0 meaning ‘not recommended at all’ and 10 ‘fully recommended’. The 10 recommendations outline several roles for imaging in the clinical management of SpA (summarized in Box 1; the full recommendations are available in Supplementary Table 1 online).

These recommendations are not without limitations. As acknowledged in the article, patient selection bias was a factor in a large proportion of the studies reviewed. Seventeen of the 22 authors relate extensive ties with industry; thus, one cannot exclude possible industry influence. The bulk of the literature review process was conducted by a small number of junior members of the team, which could have affected the quality of the reporting to the overall task force. For one of the recommendations, concerning imaging of spinal fracture, no study met the inclusion criteria and the recommendation had to be based on the opinion

of respected authorities. Perhaps in response to this shortcoming, the task force proposed a “future research agenda” focused on further investigation of which imaging findings are most useful for early and accurate diagnosis of SpA, monitoring disease activity and structural damage, predicting disease outcome, and monitoring specific SpA-related features (such as enthesitis, dactylitis, synovitis and tenosynovitis). In addition, the significance of subclinical (that is, detected only on imaging) axial and peripheral inflammation needs to be assessed. New imaging modalities of potential use in axial and peripheral SpA also need further assessment. Given the lack of studies in the area, evidence is needed in order to determine how to best image spinal fractures. Finally, how to best utilize imaging in the diagnosis and monitoring of osteoporosis in SpA requires additional study.

These minor concerns aside, the document and the recommendations within represent an important advance that should aid the clinician and radiologist to best utilize imaging measures in the clinical management of patients with SpA.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Box 1**Roles of clinical imaging in SpA****Axial SpA**

- Diagnosis
- Monitoring disease activity
- Monitoring structural changes
- Predicting outcome and/or disease severity
- Predicting response to treatment
- Detecting spinal fractures
- Assessing osteoporosis

Peripheral SpA

- Diagnosis
- Monitoring disease activity
- Monitoring structural changes

Abbreviation: SpA, spondyloarthritis.