Response to: 'Correspondence on 'MRI lesions in the sacroiliac joints of patients with spondyloarthritis: an update of definitions and validation by the ASAS MRI working group" by Jibri *et al*

We thank Dr Jibri and colleagues[1] for their comments on our recently published article in the *Annals of the Rheumatic Diseases* entitled 'MRI lesions in the sacroiliac joints of patients with spondyloarthritis: an update of definitions and validation by the ASAS MRI working group'.[2] In their study, two musculoskeletal radiologists evaluated MRI scans from 94 cases selected from the department of radiology database of a tertiary care academic hospital who had dedicated sacroiliac joint (SIJ) MRI for the assessment of axial spondyloarthritis (axSpA). Information on final diagnosis in these cases, detection of bone marrow oedema (BME) considered highly suggestive of axSpA as opposed to just the presence/absence of BME and reader calibration activities prior to the reliability exercise are not reported. The electronic case report form (eCRF) for Assessment of Spondyloarthritis International Society (ASAS) readers in our report included links to consensus reference images for each lesion and calibration modules with examples of MRI lesions on Digital Imaging Communications in Medicine (DICOM) images, which were available to ASAS readers online (www.carearthritis.com). Using a different scoring methodology, reliability for detection of BME and erosions was less than reported in our article, while detection of ankylosis was rather better. However, the MRI scans assessed in our report were derived from patients presenting with undiagnosed back pain, and ankylosis was evident only in 2.5% as compared with about 20% in the cohort reported by Jibri *et al*.[1] This precludes comparisons between studies using the kappa statistic, which is influenced by the frequency of the variable that is assessed. Frequencies of the other lesions were comparable between the two cohorts. One reader detected higher frequencies of erosion and BME than the second reader, this being particularly evident for erosion. This is indeed a complex lesion, and newer 'erosion-specific' MRI sequences may help to further characterise such lesions.

The data reported by Jibri *et al*[1] raise significant issues regarding effective knowledge transfer (KT) from central readers with highly specialised expertise in the evaluation of MRI lesions related to axSpA to practising musculoskeletal (MSK) radiologists that is germane to imaging in general. Direct interaction between central and local readers can be conducted using videoteleconference platforms, but this labour-intensive approach does not even begin to address the unmet need, which requires on-demand, self-learning tools that are readily and conveniently accessible. A commonly used KT tool is an Atlas or PowerPoint module of representative images. These are unlikely to be effective for complex lesions such as erosions that require a three-dimensional imaging modality for appropriate identification of the lesion. We are not aware of any reports that have actually validated atlases for their ability to enhance reader reliability for detection of MRI lesions on imaging. Moreover, a further report from the ASAS group has emphasised the importance of evaluating consecutive slices on DICOM images, two for erosion and three for BME, when deciding if these lesions are definitely present.[3] Consequently, KT is more likely to be effective when DICOM scans with representative lesions are available. Moreover, there is an extensive body of literature that experiential learning with real-time feedback is a highly effective mechanism for KT. These principles have formed the basis for the development of web-based real-time iterative calibration (RETIC) modules for the assessment of MRI lesions in the SIJ, hip and knee, which have been shown to enhance reliability in detection of these lesions.[4–6] This tool allows readers to visually observe whether they scored a lesion in each region in agreement with expert readers by the colour-coding of each region (figure 1). Intraclass correlation coefficients between the reader and experts are displayed instantly, allowing rapid progressive learning with each new case. We anticipate that such methodologies will rapidly become widespread and will be an indispensable KT tool for researchers and clinicians alike.

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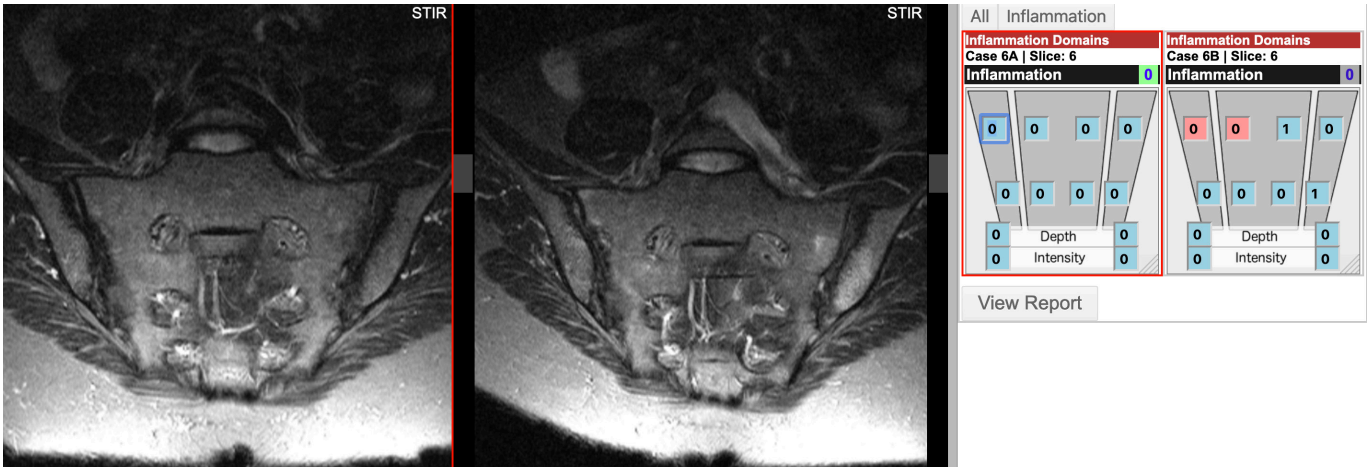

Figure 1 Real-time iterative calibration tool for Spondyloarthritis Research Consortium of Canada Sacroiliac joint MRI inflammation scoring method (www.carearthritis.com/mriportal/sparccsij/index/). Short Tau Inversion Recovery (STIR) MRI scans conducted at two time points 12 weeks apart with schematics of sacroiliac joints scored for BME on a web-based interface. BME is scored as being present (1) or absent (0) in each sacroiliac joint quadrant. Blue coding of scores indicates concordance with expert reader consensus, while red coding indicates discordance. In particular, there is BME in the right upper sacrum and ilium of the right image that has not been scored by the naïve reader but was considered as being present by expert reader consensus. BME, bone marrow oedema.

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