THE SPONDYLOARTHRITIS RESEARCH CONSORTIUM OF CANADA: MAGNETIC RESONANCE IMAGING INDEX FOR SCORING INFLAMMATION IN THE SPINE

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Our scoring method for active inflammatory lesions in both spine and sacroiliac joints relies on the use of a T2-weighted sequence that incorporates suppression of normal marrow fat signal. We have opted for the STIR sequence which offers greater reliability when using large fields of view compared to T2 spin echo with spectral pre-saturation. All scores are based on abnormal increased signal on the STIR sequence representing increased concentration of "free water" otherwise referred to as "bone marrow edema". The scoring method described below assumes that images have been acquired according to our MRI acquisition protocol described in this website (MRI of the Spine-SPARCC MRI methodology).

SCORING METHODOLOGY - TEN STEPS

1. All scores are dichotomous – present or absent.
2. After scanning the entire spine, 6 discovertebral levels are selected for scoring. These levels are chosen as representing the 6 most abnormal levels on the STIR sequence. Levels scored at a second time point are the same as those on the first.
3. After selecting levels, three consecutive sagittal slices are chosen for scoring at each level representing the most abnormal slices for that level.
4. Only abnormalities on the STIR sequence are scored. T1 SE images are included for anatomical reference.
5. Bone marrow signal in the centre of each vertebra constitutes the reference normal signal. If the entire vertebra is abnormal, closest normal level is used for reference. Do not score disc lesions.
6. Each discovertebral level is divided into four quadrants: 1 upper anterior endplate, 2 upper posterior endplate, 3 lower anterior endplate, 4 lower posterior endplate. The presence of increased signal in each quadrant is recorded for each of the 3 sagittal slices. Maximum score is 12 per discovertebral level. Maximum score for 6 levels = 72
7. A score for "intense" may be assigned to each level on each slice. High signal from cerebrospinal fluid acts as a reference for assigning an "intense" reading score to a bone lesion. A score of 1 is assigned if "intense" signal is seen in any quadrant on a single slice. Therefore maximum score per slice is 1, per level is 3 and for 6 levels = 18.
8. A score for "deep" may be assigned to each level on each slice. A lesion is graded as "deep" if there is homogeneous and unequivocal increase in signal extending over a depth of at least 1 cm from the surface of the endplate. A score of 1 is assigned if "deep" signal is seen in any quadrant on a single slice. Therefore maximum score per slice is 1, per level is 3 and for 6 levels = 18.
9. Pre- and post-treatment MR images are scored together with observer blinded to time sequence.
10. Non-Spondyloarthritis control images and reference Spondyloarthritis cases are available at this website to attain familiarity with the scoring method.

Total maximum score is 108:

Presence of "bone marrow edema"	= 72
Presence of "intense edema"	= 18
Presence of "deep edema"	= 18
	108