sensitive to joint space alterations (T1: SE 40%, SP 94%; SWI: SE 80%, SP 100%).

Conclusion: While T1 weighted MRI provides sufficient diagnostic accuracy for the detection of erosions, the CT-like images derived from SWI allow for a more accurate depiction of structural lesion of the SI-joint. SWI provides additional information identifying sclerosis. However, it is not suited to replace T1-weighted imaging because fatty metaplasia of the bone marrow or inside an erosion cavity cannot be detected.

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MUSCLES IN MYOSITIS PATIENTS WITH NORMAL MRI APPEARANCE HAVE HIGHER QUANTITATIVE T2 COMPARED TO THOSE IN HEALTHY CONTROLS

Matt Farrow^{1,2}, John Biglands², Paul Emery^{1,2}, Steven Tanner², Andrew Grainger², Andreas Ladas², Philip O'Connor², Ai Lyn Tan^{1,2}, ¹Leeds Institute of Rheumatic and Musculoskeletal Medicine, University of Leeds, Leeds, United Kingdom; ²NIHR Leeds Biomedical Research Centre, Chapel Allerton Hospital, Leeds, United Kingdom

Background: Myositis is an autoimmune disease which can cause a decrease in quality of life and increased mortality. Clinical presentation includes muscle weakness, myosteatosis, raised muscle enzymes and myalgia. Currently, diagnosis is reliant on subjective clinical examinations, blood tests, conventional MRI and invasive muscle biopsies. Quantitative T2 imaging offers a non-invasive measurement of muscle oedema which could help improve the understanding of muscle pathology and potentially inform diagnosis ⁽¹⁾.

Objectives: To evaluate whether quantitative T2 MRI of muscles is sensitive enough to be able to detect differences in myositis patients compared to healthy controls, and how it compares with current radiologist scoring methods.

Methods: 19 active myositis patients (12 female, mean age 55 ± 18) diagnosed according to the Bohan and Peter myositis criteria (Mean CK 1511 ± 11291) and 19 age and gender matched healthy controls had an MRI scan of their dominant thigh. Imaging was performed using a fat-suppressed turbo-spin echo (TSE) sequence with 16 echo times, evenly spaced from 9.9ms to 153.4ms. Quantitative T2 measurements were obtained from regions of interest (ROI) drawn manually within the individual muscles that make up the quadriceps and hamstrings with no distinction made between affected and unaffected muscles. A mono-exponential fit was used to obtain an estimate of the T2 from each ROI. Two radiologists semi-quantitatively scored by consensus the muscles on a 4-point visual scale as either no oedema (0), mild oedema (1), moderate oedema (2) or severe oedema (3). In addition to MRI, all participants had knee extension and flexion measured as power and torque on an

isokinetic dynamometer. Differences were assessed using independent T-tests.

Results: Quantitative T2 values were significantly higher (P=0.001) in myositis patients compared to healthy controls with mean measurements in the hamstrings (figure 1) of 47ms in patients and 40ms in healthy controls, and in the quadriceps 52ms in patients and 41ms in healthy controls, whilst muscle strength and power were significantly reduced (P=0.001). Interestingly, 8 myositis patients scored as having no oedema in the muscles by the radiologists (score = 0) still had significantly higher T2 values than 8 age and gender matched healthy controls (P=0.003 in hamstrings and P=0.001 in quadriceps) with mean T2 measurements in the hamstrings (figure 2) of 43ms in patients with no oedema and 37ms in healthy controls and in the quadriceps 43ms in patients with no oedema and 40ms in healthy controls. These results were consistent across both muscle groups and the individual muscles.

Conclusion: Quantitative T2 measurements can detect muscle differences between myositis patients and healthy control groups. They are also sensitive to differences between the muscles of myositis patients which are assessed to have no oedema by radiologist scoring, and healthy controls. This suggests that subtle systemic changes in muscle in myositis patients, which go undetected in semi-quantitative scoring, can be detected using quantitative T2 measurements. This shows the potential for T2 measurements to be a diagnostic measure in the diagnosis and management of myositis.

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Figure 1. T2 measurements in myositis patients compared with healthy controls in the hamstrings

Figure 2. T2 measurements compared to semi-quantitative scores in myositis patients and healthy controls

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