

Presence of Bone Marrow Edema and Structural Lesions on Magnetic Resonance Imaging of the Sacroiliac Joints in Young Military Recruits before and after 6 Weeks of Intensive Physical Training

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Session Type: ACR Poster Session A

Session Time: 9:00AM-11:00AM

Background/Purpose:

While MRI of the sacroiliac is a sensitive method for detection of bone marrow edema (BME) and structural lesions in axial spondyloarthritis (axSpA), there is only limited data regarding the specificity in a non-SpA population. Mechanical stress is considered to be an important factor in the pathogenesis of SpA. However, currently there are no data on the effect of intensive physical activity on the sacroiliac joints and how this could impact MRI findings of the sacroiliac joints (MRI-SIJ).

Methods:

Twenty-two military recruits underwent an MRI-SIJ before and after 6 weeks of intense and uniform physical training. Bone marrow edema (BME) and structural lesions were scored by 3 trained readers, blinded for time sequence and clinical findings. The Spondyloarthritis Research Consortium of Canada (SPARCC) score was used to assess BME and an adjusted method derived from the SPARCC scoring method was used to assess structural lesions: sclerosis, erosions, fatty lesions and ankylosis were scored per quadrant on 6 consecutive slices representing the cartilaginous part of the joint. Additionally, the agreement with the definition of a positive MRI defined by ASAS was evaluated.

Results:

At baseline, 40.9% (9/22) of recruits already presented with at least one BME lesion, whereas this number increased to 50.0% (11/22) at week 6 ($p=0.625$). In subjects displaying BME, the mean number of BME lesions was 2.4 (± 0.4) at baseline, compared to 3.7 (± 1.3) at week 6. Overall, the

mean change in BME lesions over time in all 22 individuals was 0.9 (± 0.6) ($p=0.109$). A positive MRI according to ASAS was present in 22.7% (5/22) of recruits at baseline, which increased to 36.4% at follow up ($p=0.375$). Structural lesions were present in 36.4% (8/22) of subjects at baseline, which increased to 50% subjects (11/22) after 6 weeks of intense physical training ($p=0.453$). There was a significant increase of MRI lesions over time when combining both structural and inflammatory lesions ($p=0.038$).

Conclusion:

We found a markedly high prevalence of BME and structural lesions in young, active, healthy volunteers, with almost 23% of them fulfilling the ASAS definition of a positive MRI. Overall, MRI lesions seem to increase after 6 weeks of intense physical training. Thus, our study underscores the necessity to interpret MRI findings of the sacroiliac joints in the appropriate clinical context, even in a young active population.

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