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Radial MR screen of the sacroiliac joints in the lumbar spine of patients with chronic lower back pain

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Objective: Magnetic resonance imaging (MRI) can reliably detect inflammation and structural changes in sacroiliac joints (SIJs) in patients suffering from lower back pain (LBP). However, patients with lower back pain usually are referred for MRI of the Lower back - lumbar spine (LS) - with SIJs rarely requested for these same patients. MRI generally, requires long scanning times compared to Computed Tomography, or X-rays, and as a result, clinical data, and time mostly direct MRI examinations. Thus, we have proposed Radial MRI, which is an imaging technique that could help provide true anatomical cross-section in a fraction of the time. The aim of this work is to use radial MRI as an additional screening technique for SIJ pathology presenting in lumbar spine patients suffering from chronic LBP.

Materials and Methods: One hundred one (54 males / 47 females) patients complaining primarily of LBP were screened using a 1.5-T MRI system. MRI scanning was performed using sagittal and axial T2-weighted sequences for the lumbar spine (LS) (12 min) and the radial T2-weighted-fat saturated sequence for the SIJs (1.20 min). Two radiologists specializing in Musculoskeletal MRI individually evaluated the SIJs images for anatomical accuracy and pathology.

Results: Almost all radial SIJ images (95%) were diagnostically acceptable for reporting; 73.3% showed LS pathology only, whereas 26.7% displayed a combination of LS and SIJ pathology. Secondary findings indicate a significant correlation with gender ($p = 0.014$), whereby females were more prone to SIJ

disease than males.

Conclusion: Radial images were able to detect the presence and size of the anatomical deformity in LBP patients. Patient with detected pathology were then recommended for further follow up and full diagnostic examination.

Recent Publication

1. Al-Mulla M, Babu V, Abdullah A, Mohammed W (2018) Radial MR Screen of the Sacroiliac Joints in the Lumbar Spine of Patients with Chronic Lower Back Pain. Clin Arch Bone Joint Dis 1:005.
2. Al-Mulla M, McGee A, Kenny P, Rainford L (2019) Quality Assurance Phantom Testing of an Echo-Planar Diffusion-Weighted Sequence on a 3T Scanner. Adv Res Foot Ankle: ARFA-110.
3. Al Mulla M, McGee A, Eustace S, Rainford L (2019) Diffusion Weighted Magnetic Resonance Imaging of the Achilles tendon and Related Pathology: Qualitative & Quantitative Investigation. Int J Foot Ankle 3:025.

Biography

Muna Al Mulla has done her PHD. MRI Clinical Reporting in General MSK from the University Of CCCU in Kent, UK in Sep. 2019, Phd. in Magnetic Resonance Imaging From The University College Dublin (UCD), Ireland in 2014. She has her MSc. in Magnetic Resonance Imaging from the University College, Dublin (UCD) / Ireland in 2011 and her BSc. in Diagnostic Imaging from Kuwait University in 2007. At present, she is a Clinical instructor at Kuwait University, Faculty of Allied Health Sciences, Radiologic Sciences Department, since January 2018.

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