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T1 mapping in asymptomatic patients with extracardiac sarcoidosis

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Introduction: Sarcoidosis is a systemic granulomatous disease affecting in particular the respiratory tract. Estimated 5% of these patients have clinical symptoms of heart involvement. Real number of patients with cardiac sarcoidosis is thought to be higher (around 20-30%), because the granulomatous process is sometimes asymptomatic. Cardiac magnetic resonance (CMR) including T1 relaxation time measurement could potentially detect early asymptomatic stadia of sarcoidosis of the heart.

Purpose: The aim of this study was to assess T1 mapping in detection of early cardiac involvement in asymptomatic patients with sarcoidosis.

Methods: One hundred twenty patients with sarcoidosis of the respiratory tract and/or extrapulmonary sarcoidosis and without any heart disease history were included. One hundred thirteen of them underwent CMR examination at 3,0 MR scanner. Cine images for assessment of left ventricular (LV) volumetric and functional parameters, and pre- and post-contrast Saturation method using adaptive recovery times for cardiac T1 mapping (SMART1map) and Modified Look-Locker Inversion recovery (MOLLI) images were acquired for assessment of native T1 relaxation time and extracellular volume (ECV). The measured parameters were compared between sarcoidosis patients and 22 healthy controls.

Results: Sarcoidosis patients had not enlarged LV (end-diastolic volume 119 ± 24ml vs 97 ± 20ml, p = NS) and normal global and regional systolic LV function – LV ejection fraction (EF) 65 ± 5% vs 66 ± 7% (p = NS). Mean native T1 relaxation time was not prolonged - 1464 ± 93 msec vs 1482 ± 88msec (p = NS) measured by SMART1map and 1317 ± 60 msec vs 1313 ± 83msec (p = NS) measured using MOLLI sequence. Similarly, mean ECV value was not increased - 16,3 ± 3,4% vs 17,9 ± 3,7% (p = NS) measured by SMART1map and 30,9 ± 2,9msec vs 30,7 ± 5,0% (p = NS) measured using MOLLI sequence.

Conclusion: Myocardial native T1 relaxation time was not prolonged and ECV was not increased in asymptomatic patients with extracardiac sarcoidosis.