

Poster presentation

Normal values for T2 imaging of acute myocarditis

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from 13th Annual SCMR Scientific Sessions
Phoenix, AZ, USA. 21-24 January 2010

Published: 21 January 2010

Journal of Cardiovascular Magnetic Resonance 2010, **12**(Suppl 1):P256 doi:10.1186/1532-429X-12-S1-P256

This abstract is available from: <http://jcmr-online.com/content/12/S1/P256>

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Introduction

The current guidelines for assessing acute myocarditis (Lake Louise criteria) recommend a twofold increase of myocardial T2 signal over skeletal muscle as a cutoff for detection of cell edema. Nevertheless, T2 signals vary considerably depending on the sequence used.

Purpose

The aim of this study was, to assess the robustness of different T2 sequences for assessment of cell edema in acute myocarditis and establish normal values.

Methods

6 different T2 weighted sequences were tested on 12 healthy individuals using a 1.5 T scanner (Siemens Avanto): turbospinecho with fat saturation using a surface coil, TE 60 ms (tse60) and 100 ms (tse100), turbospinecho with fat saturation using the body coil, TE 60 (tseBC), turbospinecho with inversion recovery, TE 60 (tseIR), turbospinecho with both fat saturation and inversion recovery, TE 100 (tseSPAIR) and steady state free precession (SSFP). For comparison 12 scans using tse100 on patients with proven myocarditis were analyzed. The quotient between the signal in the cardiac septum and the pectoral skeletal muscle, both corrected for background (air) signal, was calculated in three (basal, midcardiac, apical) slices. The range for normal T2 signal was defined as the mean signal plus two standard deviations.

Results

T2 signals in healthy subjects varied markedly between the different sequences, as can be seen in Table 1. Whereas

the mean value is quite constant, there is a marked difference in the standard deviations. This difference is caused both by variations between different individuals and a different robustness against surface attenuation.

For the turbospinecho with fat saturation showing the lowest variability the upper range of normal values calculates to 2.5. For comparison, the T2 quotient in patients with proven myocarditis was 3.4 ± 0.6 .

Conclusion

The myocardial T2 signal on healthy subjects depends highly on the sequence used. Therefore every site using T2 imaging for the assessment of myocarditis should establish its own normal values for the sequence used. To assess the robustness against surface attenuation, both basal and apical scans should be acquired.