LATE GADOLINIUM ENHANCED MR IMAGES OF ACUTE ABLATION LESIONS SIGNIFICANTLY OVERESTIMATES THE CHRONIC SCAR VOLUME

Poster Contributions
Hall C
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Background: Late gadolinium enhanced MRI (LGE-MRI) has been used to acutely visualize ablation related tissue changes but its correlation with chronic scar volume is unknown. Here we acquired LGE-MRI acutely after ablation and compared it to chronic scar volume.

Methods: RF lesions were created in the left ventricle in a chronic canine model (n=8) using a 4 mm tip irrigated catheter. Acutely post ablation, high resolution, 3D LGE-MRI images were acquired in a 3T (Verio, Siemens) MR scanner at multiple time points after contrast injection (Multihance, 0.15 mmol/Kg) using a inversion recovery prepared ECG-gated, respiration navigated gradient echo pulse sequence. These LGE-MRIs were repeated after 1, 4, 8 and 12 weeks. The animal was euthanized after three months. The lesion volume in MRI was compared to the histological volume.

Results: Acute LGE-MRIs showed a dark region of no-reflow in the center of the ablation lesion (top row) which took almost an hour to enhance. In scans done in subsequent weeks this region enhanced more rapidly (middle row). The volume of the acute no-reflow region over-estimated the chronic lesion volume in pathology by a factor of 4. No-reflow volume in images acquired 23.3±7.9 mins after contrast injection better estimated the chronic scar volume.

Conclusion: Acute LGE-MRIs images significantly overestimate the chronic scar volume. No-reflow regions in acute scans acquired 23±7.9 mins after contrast inject better estimates scar volume.