

Meeting abstract

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## 2079 Late gadolinium enhancement of the right ventricle – a substrate of different pathologies in contrast-enhanced cardiac MRI

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### Introduction

Myocardial late gadolinium enhancement (LGE) in contrast-enhanced MRI (CE-MRI) has proven reliable in the detection and characterization of different ischemic and non-ischemic diseases affecting the left ventricular myocardium. Particularly in inflammation and cardiomyopathy, LGE facilitates the differential diagnosis of the underlying pathology. Whereas LGE imaging of the left ventricle is easy, the right ventricle (RV) is difficult to assess due to its thin wall and heavy trabeculation. MRI has been referred to as the reference technique in RV function assessment. However, reliable imaging techniques are mandatory to approach and differentiate RV myocardial disease. First studies have been reported in this respect.

### Purpose

Aim of this study was to review cases of RV free wall LGE in a large collective of consecutive cardiac MRI examinations and to elucidate the possible diagnostic benefit of the LGE technique.

### Methods

Within 50 months, a total of 5676 contrast-enhanced cardiac MRI studies were performed on different 1.5 T scanners (Magnetom Sonata (2) and Avanto (1), Siemens, Germany) in two affiliated institutions for different clinical indications. In case of RV pathology/indication, the uniformly utilized MRI protocol consisted of a functional study in standard RV long axis and contiguous short axis

orientations of the entire RV using a segmented TrueFISP sequence. LGE images were acquired 8–15 min after administration of 0.2 mmol/kg BW of Gd-based, extracellular contrast agents in the same orientations using a segmented inversion-recovery TurboFLASH sequence (TR, 8 ms; TE, 4 ms; TI, 200–260 ms; slice thickness, 5 mm). All cases of non-ischemic RV LGE were retrospectively collected and reviewed. The presence and different patterns of LGE were related to the underlying pathology as stated by means of clinical and other diagnostic imaging features.

### Results

A total of 1905 (34%) patients presented with LGE of the left or right ventricular myocardium. In 10 of 1905 cases (0.5%) any kind of LGE was detected in the RV free wall: In 5 pts., the underlying pathology was arrhythmogenic RV cardiomyopathy (ARVC/D), most probably representing fibrous tissue replacement. RV myocarditis was the cause in 2 pts. Endomyocardial fibrosis was found in another 2 pts. In one patient, RV involvement in acute cardiac sarcoidosis was responsible for RV LGE. In many more cases, RV LGE might have been suggested; was, however, denied because of possible artifacts. The major difficulty in detecting RV LGE and differentiating it from artifacts corresponds to the thin wall and the heavy trabeculation.

### Conclusion

In left myocardial pathologies, late gadolinium enhancement has been established as a valuable tool in the differ-

ential diagnosis of ischemic vs. non-ischemic disease during recent years. Generally, the characterization of RV pathologies by means of imaging is more difficult due to the thin wall. Whereas MR functional assessment of the RV works well, LGE has not been widely evaluated. This study suggests an additional diagnostic value of LGE also in a variety of RV diseases.

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