

## Cardiac sarcoidosis evaluation and characterization with cardiac magnetic resonance

Caldeira Da Rocha R.<sup>1</sup>; Picarra B.<sup>2</sup>; Santos AR.<sup>2</sup>; Pais J.<sup>2</sup>; Carrington M.<sup>2</sup>; Dias Claudio F.<sup>2</sup>; Fernandes R.<sup>2</sup>; Trinca M.<sup>2</sup>

<sup>1</sup>Hospital Espirito Santo de Evora, Evora, Portugal

<sup>2</sup>Hospital Espirito Santo de Evora, Cardiology, Evora, Portugal

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**Introduction:** Sarcoidosis is a multisystemic inflammatory disease, which accounts for substantial morbimortality. Cardiac involvement portends a worse prognosis. A major limitation in the evaluation of cardiac sarcoidosis is that no gold standard clinical diagnostic criteria exists. Cardiac magnetic resonance (CMR) may be indicated in patients with suspected cardiac involvement as a diagnostic and prognostic tool.

**Purpose:** The aim of this study was to characterize the features of cardiac involvement of sarcoidosis in patients with established diagnosis of the systemic disease, as well as to describe changes observed.

**Methods:** A multicenter, 6-years prospective study of all patients with sarcoidosis who performed CMR to evaluate possible cardiac involvement. We followed a protocol to evaluate the left and right ventricles (VE; RV) both anatomically and functionally, T2- weighted STIR sequences to evaluate myocardial edema and presence of late gadolinium enhancement(LGE).

**Results:** A total of 20 patients were included. Female patients accounted for 75% of the cases, and the mean age was  $53 \pm 15$  years old. A majority of the patients (90%) had preserved LV (mean LV ejection fraction(EF) $63 \pm 6\%$ ) and RV ejection fraction (mean RV EF  $62 \pm 7\%$ ). Patients observed presented with mean LV end diastolic indexed volume(EDIV) of  $72 \pm 19$  mL/m<sup>2</sup> and mean RV EDIV of  $63 \pm 18$  mL/m<sup>2</sup>, with only one patient presenting with LV dilation(LV EDIV 138mL/m<sup>2</sup>) and two with RV dilation (mean RV EDIV  $107 \pm 6$  mL/m<sup>2</sup>). Possible features of cardiac sarcoidosis were present in 10% (n = 2) of patients. One of them presented with biventricular dilation and severe ejection fraction depression(LV EF 22% and RV EF 28%). LGE was observed in these two patients, with one presenting with an intramyocardial lesion with nodular appearance on the apical inferior segment and the other patient having its distribution characterized with two different patterns: linear appearance on the septal intramyocardium and subepicardial on the basal and mid segments of the inferior wall. On STIR sequences none of the patients presented with hypersignal suggestive of edema. None of them presented with left atrium dilation.

**Conclusion:** CMR provides a noninvasive and multidimensional assessment of the heart for evaluation of cardiac sarcoidosis. In our population of patients with sarcoidosis but without established cardiac involvement diagnosis, CMR allowed a 10% increase in the diagnosis of cardiac sarcoidosis. CMR myocardial fibrosis detection allowed a better stratification of patients with sarcoidosis.