Meeting abstract

# 2072 Rapid evaluation of left atrial volumes using CMR and its relation with left ventricular diastolic dysfunction

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## Introduction
Left atrial volume indexed to body surface area (LAVI) is related with the severity and duration of left ventricular diastolic dysfunction (LVDD). The ellipsoidal method using a bi-plane view of the left atrium (LA) has been validated as a good, and fast method for evaluating LAVI, although, there is a trend to underestimate the volume.

## Purpose
The aim of this study is to establish the correlation between LAVI, and its function with the LVDD in a cohort of patients with first diagnosis of heart failure using CMR.

## Methods
33 patients with a first episode of heart failure were evaluated using CMR. Patients with a severe valvular disease, atrial fibrillation or antecedent of coronary artery disease were excluded. Short and long-axis cines were performed to acquire the entire left ventricle and LA. LA end-systolic and end-diastolic volumes were estimated using the ellipsoidal formula from a bi-plane view. Mitral inflow velocity images were assessed using a phase-contrast velocity sequence. LVDD was classified into four categories: normal (E/A = 1–2 and deceleration time (DT) > 200 ms), impaired relaxation (E/A < 1), pseudonormal (E/A = 1–2 and DT < 200 ms), and restrictive (E/A > 2 and DT < 160 ms).

## Results
The evaluation of LVDD was as follows: 54% patients had a normal pattern or impaired relaxation, 25% pseudonormal, and 21% restrictive. Table 1 shows that LA volumes

and ejection fraction discriminates the severity of LVDD more than left ventricle volumes and ejection fraction. In order to estimate the accuracy of LA measurements, LA stroke volume was compared with quantified mitral blood inflow by phase-contrast velocity sequence (r = 0.7, p < 0.001).

## Conclusion
Using CMR, the ellipsoidal method from a bi-plane view of the left ventricle allows a fast and accurate estimation of LA function. Moreover, in the setting of patients with acute heart failure with diastolic dysfunction, LAVI and LA function highly express the severity of LVDD.

**Table 1: LA = left atrium LV = left ventricle EDVI = end-diastolic volume index ESVI = end-systolic volume index**

|  | Normal or impaired relaxation | Pseudonormal | Restrictive | P value |
|---|---|---|---|---|
| LAEDVI | 36 ± 16 ml | 42 ± 11 ml | 71 ± 46 ml | P = 0.02 |
| LAESVI | 14 ± 10 ml | 22 ± 9 ml | 36 ± 29 ml | P = 0.02 |
| LAEF | 48 ± 13% | 38 ± 11% | 31 ± 10% | P = 0.03 |
| LVEDV | 173 ± 30 ml | 213 ± 56 ml | 246 ± 53 ml | P = 0.09 |
| LVESV | 97 ± 48 ml | 153 ± 58 ml | 191 ± 65 ml | P = 0.04 |
| LVEF | 45 ± 21% | 28 ± 16% | 23 ± 11% | P = 0.1 |