

POSTER PRESENTATION

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Association between early diastolic dysfunction and increased peri-/epicardial fat: A CMR based study

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Background

Previous studies have shown that increased peri- and epicardial fat volume (PFV, EFV) leads to pathological diastolic strain (DS) and thus to cardiovascular morbidity. The aim of this study was to investigate the association between diastolic strain and EFV/PFV in obese and non-obese individuals without previous history of cardiovascular disease or additional cardiovascular risk factors.

Methods

19 healthy subjects (14 men, mean age 44.18 ± 17.95) underwent a comprehensive cardiac magnetic resonance (CMR) examination (1.5 Tesla, Philips Ingenia). Patients were divided into two groups: (A) obese subjects with a body mass index (BMI) $> 25 \text{ kg/m}^2$; (B) non-obese subjects with a BMI $< 25 \text{ kg/m}^2$. EFV and PFV were assessed

using a 3D transversal ECG- and respiratory navigator gated mDixon-sequence (figure 1). FT derived systolic and diastolic circumferential strain parameters were calculated from SSFP-cine images in midventricular short axis, which were acquired prior to contrast agent injection (©TomTec, Image Arena).

Results

Mean BMI in group A was $30.66 \text{ kg/m}^2 \pm 5.71$ and in group B $22.17 \text{ kg/m}^2 \pm 1.76$ ($p < 0.05$). Mean PFV and EFV were $238.61 \text{ ml} \pm 121.14$ and $103.47 \text{ ml} \pm 37.05$ in group A whereas mean PFV and EFV in group B accounted for $116.80 \text{ ml} \pm 43.14$ and 60.71 ± 23.21 respectively ($p < 0.05$). Both groups revealed a peak circumferential systolic strain within a physiological range (group A: $-23.60\% \pm 4.77$; group B: $-24.95\% \pm 3.52$; $p > 0.05$). Group A (63.03 ± 11.83) showed significantly

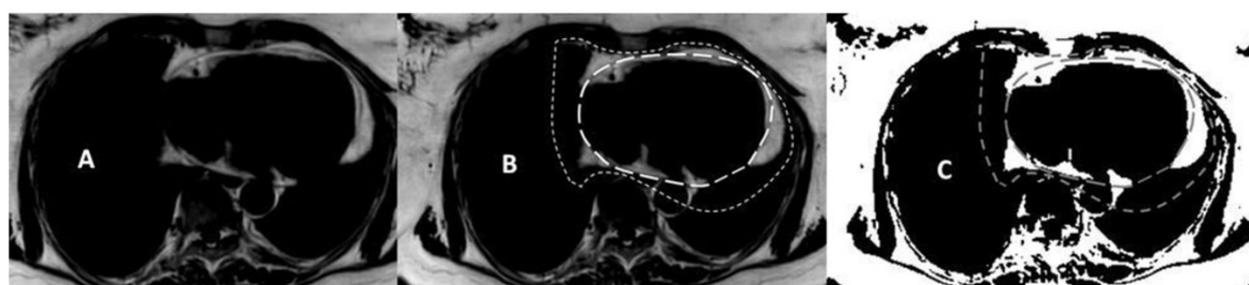


Figure 1 Dixon image analysis for measurement of pericardial and epicardial fat volume (PFV, EFV) in a 60 year old health female. **A.** Reconstructed fat only image. **B.** Reconstructed fat only image with corresponding regions of interest for EFV and PFV. **C.** Segmented fat voxels with transferred regions of interest.

reduced mean early diastolic strain rates (EDSR) in comparison to group B (82.77 ± 16.33 ; $p < 0.05$). There were no significant differences between sex or age.

Conclusions

Obese subjects with increased peri-/epicardial fat volume had a significantly reduced EDSR in comparison to the non-obese control group.

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