

Epicardial fat volume is associated with coronary endothelium-dependent vasomotor response in healthy subjects

Bénédicte Gaborit, Pierre Moro, Antonin Flavian, Frank Kober, Alexis Jacquier, Jacques Quilici, Thomas Cuisset, Umberto Simeoni, Patrick Cozzone, Monique Bernard, et al.

► **To cite this version:**

Bénédicte Gaborit, Pierre Moro, Antonin Flavian, Frank Kober, Alexis Jacquier, et al.. Epicardial fat volume is associated with coronary endothelium-dependent vasomotor response in healthy subjects. *Journal of Cardiovascular Magnetic Resonance*, BioMed Central, 2011, 13 (Suppl 1), pp.P71. inserm-00654376

HAL Id: inserm-00654376

<https://www.hal.inserm.fr/inserm-00654376>

Submitted on 21 Dec 2011

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

POSTER PRESENTATION

Open Access

Epicardial fat volume is associated with coronary endothelium-dependent vasomotor response in healthy subjects

Bénédicte Gaborit^{1*}, Pierre Julien Moro², Antonin Flavian³, Frank Kober³, Alexis Jacquier³, Jacques Quilici⁴, Thomas Cuisset⁵, Umberto Simeoni⁶, Patrick Cozzone³, Monique Bernard³, Anne Dutour¹

From 2011 SCMR/Euro CMR Joint Scientific Sessions
Nice, France. 3-6 February 2011

Introduction

Epicardial fat (E_{fat}) is an active ectopic fat depot, directly surrounding coronary arteries, and secreting high level of inflammatory adipokines; its development has been associated with coronary atherosclerosis. We investigated the relationship between E_{fat} and endothelium dependent vasoreactivity of the coronary microcirculation.

Methods

Myocardial blood flow (MBF) was determined by measuring coronary sinus flow with velocity-encoded cine magnetic resonance imaging at 3 teslas. We measured MBF at baseline and in response to sympathetic stimulation by cold pressor testing (CPT) in 17 healthy volunteers with normal left ventricular function (age 24 ± 6 years, BMI = 21.1 ± 2.6 kg/m²). E_{fat} volume was volumetrically assessed by manual delineation on short-axis views. CPT was applied by immersing one foot in ice water for 4 minutes.

Results

A significant increase in MBF was observed: 1.18 ± 0.58 vs 0.84 ± 0.47 mL.min⁻¹.g⁻¹, CPT vs rest, $p=0.002$. Mean relative MBF increase (Δ MBF) was $50 \pm 47\%$. Mean E_{fat} volume was 82 ± 31 mL and varied from 43 to 131 mL; mean LV mass and Left ventricular ejection fraction were 104 ± 31 g and $64 \pm 5\%$, respectively. CPT significantly increased heart rate (HR) by $28 \pm 13\%$, systolic blood pressure (BP) by $17 \pm 13\%$, diastolic BP by $23 \pm 19\%$ and rate-pressure

product by $52 \pm 25\%$, $p < 0.01$, indicating an increase in myocardial work load. The increase in HR, reflecting sympathetic stimulation, was not influenced by sex, age or E_{fat} volume. CPT induced a decrease in coronary vascular resistance (150 ± 93 vs 114 ± 44 mmHg.mL⁻¹.min.g) by trend ($p=0.08$). Interestingly, we found a significant negative correlation between E_{fat} volume and Δ MBF ($r = -0.51$, $p=0.03$), which remained significant after adjusting for age and sex. Δ MBF was not associated with waist circumference, BMI, CRP, lipid or glycemic parameters.

Conclusion

The increase in E_{fat} is associated with a decrease in endothelium dependent vasoreactivity response, suggesting that E_{fat} could early influence endothelial function.

Author details

¹INSERM U626, Marseille, F-13385 France, Centre de Résonance Magnétique Biologique et Médicale (CRMBM), CNRS UMR 6612, Department of Endocrinology, Metabolic Diseases and Nutrition, CHU Nord, Marseille, France, Marseille, France. ²Centre de Résonance Magnétique Biologique et Médicale, CNRS UMR N°6612, Marseille, France. ³Centre de Résonance Magnétique Biologique et Médicale (CRMBM), CNRS UMR 6612, Marseille, France. ⁴Department of Cardiology, CHU Timone, Marseille, France, Marseille, France. ⁵INSERM U626, Marseille, F-13385 France, Department of Cardiology, CHU Timone, Marseille, France, Marseille, France. ⁶Department of Neonatology, Children and Parents Pole, CHU Timone, Marseille, France, Marseille, France.

Published: 2 February 2011

doi:10.1186/1532-429X-13-S1-P71

Cite this article as: Gaborit et al.: Epicardial fat volume is associated with coronary endothelium-dependent vasomotor response in healthy subjects. *Journal of Cardiovascular Magnetic Resonance* 2011 **13**(Suppl 1):P71.

¹INSERM U626, Marseille, F-13385 France, Centre de Résonance Magnétique Biologique et Médicale (CRMBM), CNRS UMR 6612, Department of Endocrinology, Metabolic Diseases and Nutrition, CHU Nord, Marseille, France, Marseille, France

Full list of author information is available at the end of the article