Determining Optimal non-invasive Parameters for the Prediction of Left Ventricular morphologic and functional Remodeling in Chronic Ischemic Patients

Jan D’hooge

on behalf of the DOPPLER-CIP consortium
DECLARATION OF INTEREST

- Research contracts
  Philips Healthcare
  GE Healthcare
  MedViso
Cardiac morphologic remodelling

Ischemia
Infarction
Loading
Valve disease
Myopathies...

Irreversible process → Early detection of remodelling process critically important to start treatment early

Coronary Heart Disease: ~2 million deaths/year in Europe (~25% of all deaths)

Better treatment primary disease → Increasing incidence of heart failure

Amplified by aging population
Detection of remodelling

Which parameter and which modality has the best predictive power?
Study design

- 676 patients with stable coronary artery disease (i.e., one positive test for ongoing ischemia) in 6 clinical centres across Europe
- Clinical data, quality of life
- As many imaging exams as logistically possible (Echo, SPECT, MRI)
- Blood samples, clinical data, exercise testing, quality of life questionnaire

All data analysed in a blinded, anonymized manner by core-labs
Results

The logistic regression analyses include PCA scores that explain up to 80% of the total variability of the data in the relevant parameter group. PCA scores were included in the model using restricted cubic splines.
Predicted Probability of Remodelling

Small ventricles with thick walls more likely remodel
Conclusion

In this group of stable CAD patients

- Morphologic remodeling is best predicted by morphologic characteristics of the LV, in particular EDV

- EDV measured by MRI showed to be the most prognostic. A future cost-benefit analysis will need to demonstrate if this continues to hold when cost for the exam is taken into account.

- Remodeling is frequently observed
- Occurs often in normally sized ventricles!
- Goes against the well-established hypothesis that the cause of remodeling is increased wall stress
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