



Noninvasive assessment of Aortic incompetence: Flow quantification by CMR using navigator based respiratory motion compensation correlates better with left ventricular enddiastolic volume than echocardiography.



M. Hadamitzky, J. Nadjiri, E. Hendrich, C. Pankalla, A. Will, H. Schunkert, S. Martinoff, C. Sonne

Deutsches Herzzentrum München, Munich, Germany

Background

Assessment of aortic incompetence sometimes is challenging. The indication of valve replacement is solely based on imaging, but a clear gold standard is missing since every modality has limitations in certain circumstances. Novel flow quantification using navigator based respiratory motion compensation allows for high temporal resolution without motion artifacts and may improve the quantification of the regurgitation fraction.

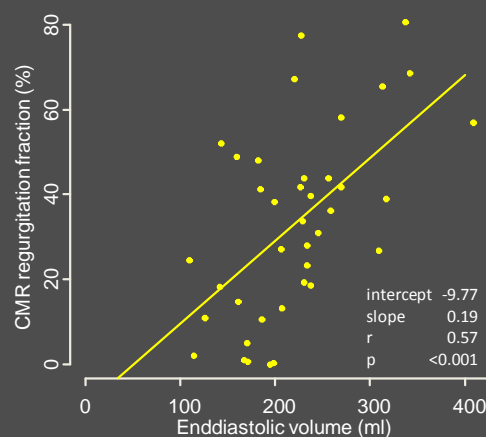
Methods

We analyzed 38 patients with various degree of aortic incompetence undergoing both standard echocardiographic assessment and CMR flow quantification using both conventional free breathing and navigator based respiratory motion compensation. Both modalities were correlated with the left ventricular enddiastolic volume assessed by CMR as a surrogate endpoint reflecting left ventricular remodeling caused by the regurgitant blood flow.

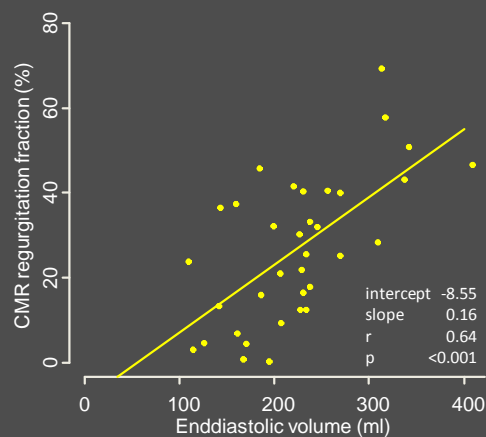
Patient characteristics

Age in years	49.0 ± 13.3
Male gender	31 (82%)
Dyspnea	
- no	20 (53%)
- NYHA I	6 (16%)
- NYHA II	8 (21%)
- NYHA III	4 (11%)
- NYHA IV	0
Bicuspid valve	19 (50%)

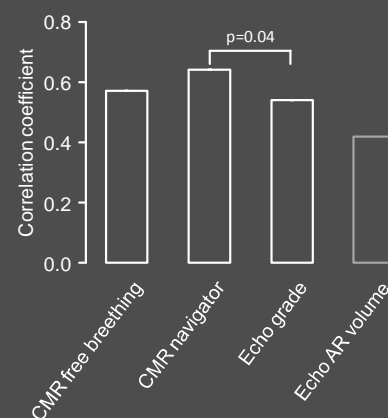
CMR - free breathing



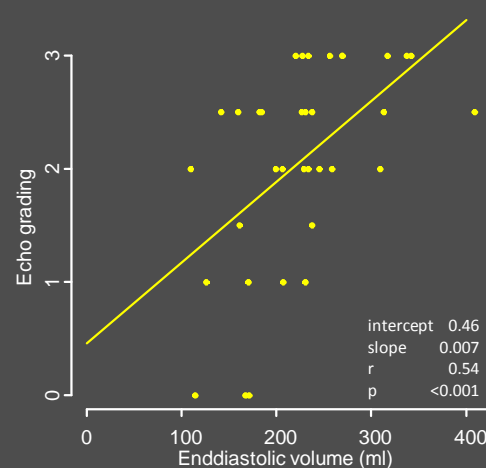
CMR – navigator based



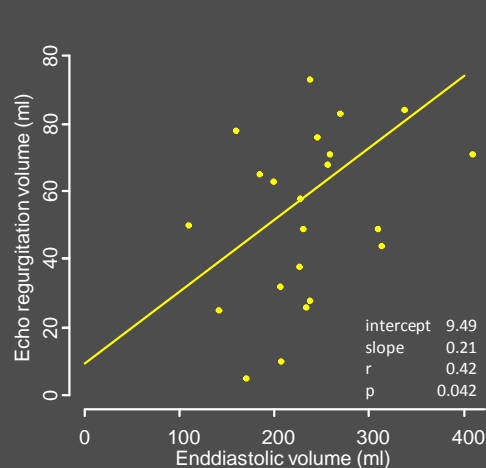
Correlation



Echo - grade



Echo – AR volume



Conclusion

Flow quantification by CMR using navigator based respiratory motion compensation has a better correlation with pathophysiological changes caused by aortic incompetence than standard assessment by Echo and may serve as an useful additional modality helping to make a decision on valve replacement.