

Meeting abstract

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101 Quantifying aortic regurgitation with CMR can predict patients requiring aortic valve surgery

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Background

Patients with aortic regurgitation can present management challenges, particularly when asymptomatic, and current indications for surgery focus on left ventricular (LV) dilation or reduced function. In some cases this may be too late however, as prognosis is already reduced once significant dilation or dysfunction is present. Quantifying the aortic regurgitation itself has not been used to guide management, due to the difficulty in achieving this with echocardiography. Cardiovascular magnetic resonance (CMR) can accurately quantify both aortic regurgitation and LV volumes/function, though the clinical utility of this has not previously been demonstrated. We therefore examined whether quantifying regurgitation was superior to LV functional indices for identifying patients requiring aortic valve replacement.

Methods

We followed 49 patients with aortic regurgitation over 29 ± 20 months using serial CMR measurements of aortic regurgitation (Figure 1) and LV volumes and function. The best predictors for progression to surgery were identified.

Results

Aortic regurgitant fraction accurately identified patients requiring surgery (area under the curve on receiver operating characteristics 0.87; $p < 0.0001$), with greater predictive value than all LV volume and function indices, and was the only independent predictor on multiple logistic

regression analysis. It also correctly predicted the progression to surgery in the 32 asymptomatic patients: survival without surgery over 5 years was 100% for the 18 subjects with regurgitant fraction $< 33\%$ compared to 40% for the 14 subjects with regurgitant fraction $\geq 33\%$ ($p = 0.001$ by log rank; see Figure 2). LV end-systolic volume index > 47 ml/m² (AUC 0.72; $p = 0.004$) and LV ejection fraction (AUC 0.69; $p = 0.01$) had lower discriminatory ability and were not independent predictors.

Conclusion

Quantifying aortic regurgitation with CMR accurately identified patients requiring surgery and was superior to indices of LV volume or function. Its use in patients with aortic regurgitation should be encouraged.

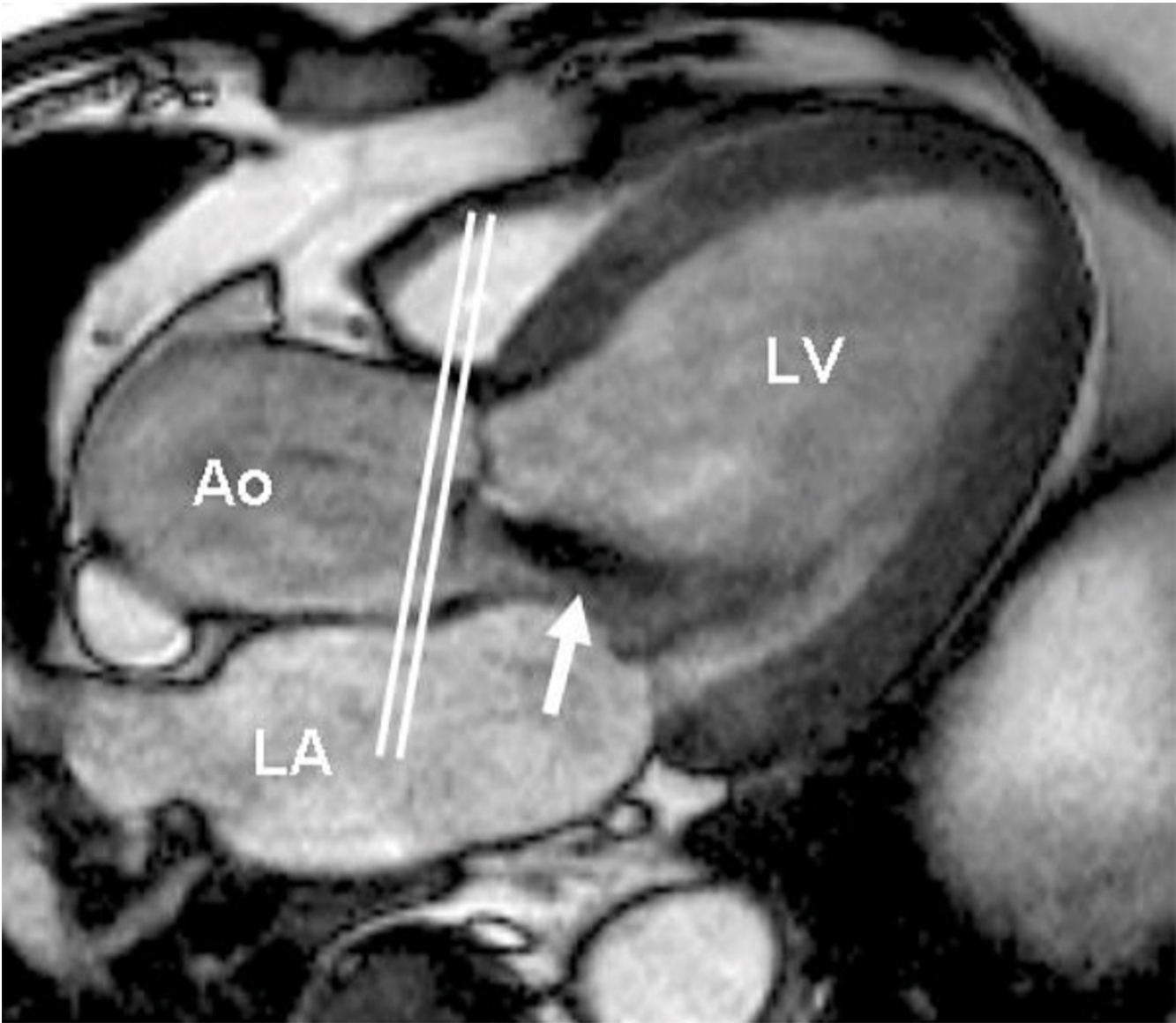


Figure 1

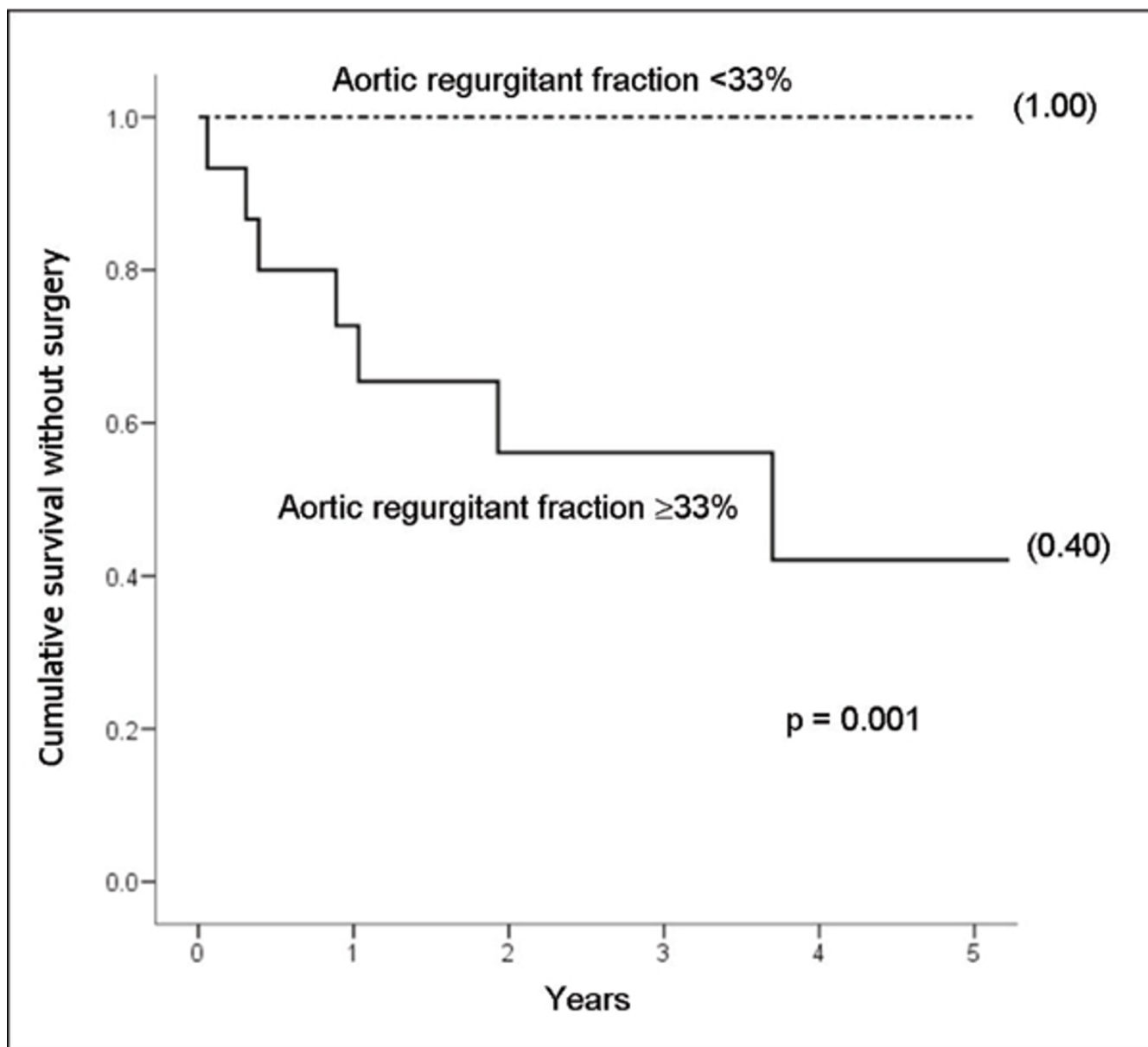


Figure 2
49 patients had their AR quantified with CMR and were followed for up to 5 years. Quantification of the AR predicted the progression to surgery with high accuracy, and was better than LV volume or function indices.

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