

Cardiovascular Magnetic Resonance in Clinically Suspected Cardiac Amyloidosis Noninvasive Imaging Compared to Endomyocardial Biopsy

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Review

This month's "ASCI's Choice" chose Vogelsberg et al's study, which extends our knowledge of non-invasive imaging of patients with suspected cardiac amyloidosis by contrast enhanced cardiovascular magnetic resonance (CMR). They report their findings from a study of 33 consecutive heart failure patients with restrictive filling pattern in combination with myocardial hypertrophy and/or clinical conditions often associated with cardiac amyloidosis. The study found that late gadolinium enhancement (LGE) CMR achieves good sensitivity and excellent specificity in the diagnosis of amyloidosis compared with gold standard of endomyocardial biopsy (EMB).

Previous investigations have shown that several ECG, echocardiographic, scintigraphic findings suggest presence of cardiac amyloid infiltration but most are nonspecific (1, 2, 3, 4). Their diagnostic performances have not been determined in a cohort of patients with endomyocardial biopsy-proven amyloidosis. The study by Vogelsberg and colleagues points to several important issues. Firstly, they confirm the difficulties of diagnosing cardiac amyloidosis based on morphological or functional features. There are no significant differences in left ventricular ejection fraction, end-diastolic volume or myocardial mass except the thickness of the interventricular septum which is significantly increased in patients with cardiac amyloidosis. Secondly, they describe a characteristic amyloid LGE pattern in patients with biopsy-proven cardiac amyloidosis. Amyloid LGE pattern is typically distributed over the entire subendocardial circumference, extending in various degrees into the neighboring myocardium. The sensitivity, specificity, positive predictive value and negative predictive value of using the amyloid LGE pattern as a diagnostic criterion of cardiac amyloid was 80%, 94%, 92%, 85% respectively. The incidence of LGE located within the papillary muscles is significantly higher in patients with cardiac amyloidosis and its role for the diagnosis of cardiac amyloidosis needs to be further investigated. Thirdly, their data also suggest that cardiac amyloidosis can frequently occur without systemic amyloidosis. Early recognition of cardiac amyloidosis non-

invasively by LGE CMR before progressing to systolic dysfunction and frank symptomatic heart failure may provide a “golden window” for early treatment which may translate into better clinical outcome. They also propose to limit the role of EMB to patients with suspected cardiac amyloidosis without amyloid LGE pattern by CMR because of its invasiveness and limitations. Further studies to assess the potential prognostic value of LGE CMR in determining disease progression and response to treatment are warranted.

References

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