

Correlation between invasive and non-invasive quantification of myocardial amyloid load in cardiac transthyretin amyloidosis

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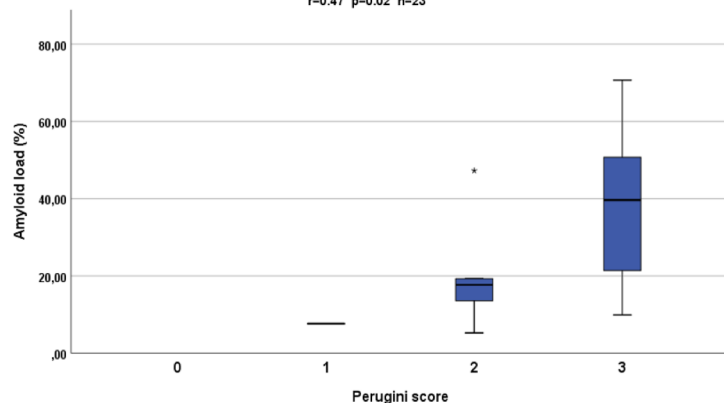
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Background

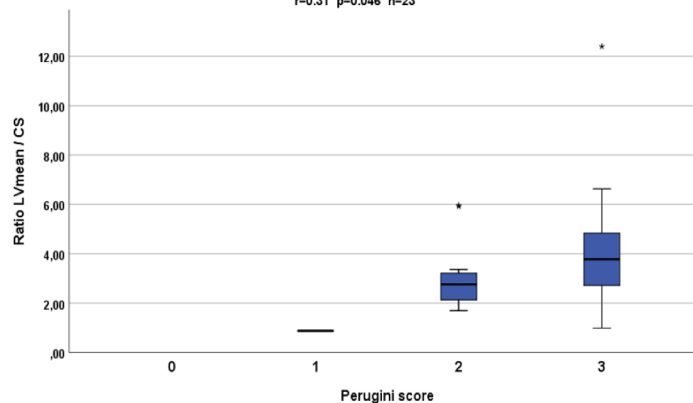
Cardiac transthyretin (ATTR) amyloidosis is an infiltrative disease associated with high morbidity and mortality caused by the extracellular deposition of misfolded ATTR protein in the myocardium. Early disease recognition and accurate description of cardiac involvement are important as new therapies are rapidly emerging. Although endomyocardial biopsy (EMB) is the gold standard in amyloid detection and typing, bone scintigraphy enables early disease detection with high accuracy. This study aimed to determine whether the degree of cardiac tracer uptake on bone scintigraphy correlates with the extent of histologic amyloid burden in EMB.

Methods and Results

Correlation between Perugini score by 99mTc-DPD-scintigraphy and histological amyloid load in ATTR CA
 $r=0.47$ $p=0.02$ $n=23$



Correlation between LV / CS ratio and Perugini score by 99mTc-DPD-scintigraphy in ATTR CA
 $r=0.31$ $p=0.046$ $n=23$



23 patients with cardiac ATTR amyloidosis were enrolled in this single center observational study. Measurements by 99mTechnetium-3,3-diphosphono-1,2-propanodicarboxylic acid (99mTc-DPD) scintigraphy, such as Perugini score, left ventricular tracer uptake (LV uptake), left ventricular to corpus sterni uptake ratio (LV/CS ratio) and endomyocardial biopsies (histological amyloid load) were obtained at the time of diagnosis. Bivariate correlation and Pearson correlation coefficient were used to study the relationship between EMB and 99mTc-DPD scintigraphy findings.

Statistically significant correlations were found between histological amyloid load and Perugini score ($r=0.47$, $p=0.02$), as well as between Perugini score and LV/CS ratio ($r=0.31$, $p=0.046$). There was a trend for correlation between LV tracer uptake and histological amyloid load ($r=0.37$, $p=0.08$).

Conclusion

Data from this study underline the reliability of 99mTc-DPD scintigraphy as a surrogate of histological amyloid load in the diagnosis of cardiac ATTR amyloidosis. Possible implications for the assessment of prognosis are subject to future studies with a larger number of patients.