Diagnostic accuracy and prognostic value of ^{123}I-labeled serum amyloid P component body retention in patients with amyloidosis

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INTRODUCTION

Serum amyloid P component (SAP) binds to amyloid. ^{123}I-SAP scintigraphy is used to evaluate the extent and distribution of amyloid in systemic amyloidosis.

OBJECTIVE

To study the diagnostic performance and prognostic value of a simple parameter describing extravascular ^{123}I-SAP retention in systemic amyloidosis.

METHODS

200 MBq ^{123}I-labeled human SAP was injected intravenously in 20 controls and in 189 consecutive patients with systemic and localized amyloidosis. Extravascular retention (EVR) of ^{123}I-SAP was quantified from serum and urine measurements after 24 and 48 hours. Sensitivity and specificity were assessed and retention was correlated with kidney, heart, liver, and nerve involvement and with survival.

RESULTS

The cut-off value representing a desired specificity of 90% of EVR after 24 hours (EVR_{24}) was 50%. The associated sensitivity of EVR_{24} for detecting AA, AL, and ATTR amyloidosis was 65%, 61%, and 22% respectively, using a cut-off point of 50%.

In AL amyloidosis the EVR_{24} increased with the number of organs involved (from median 42% to 83%) and the EVR_{24} correlated with serum Alkaline Phosphatase (R=0.63) (figure 1) and with creatinine clearance (R=-0.36) (figure 2).

In AL amyloidosis both cardiac involvement (hazard ratio 3.9, 95% CI 2.0-7.9) and EVR_{24} (hazard ratio 2.0, 95% CI 1.1-3.8) were independent predictors of survival (figure 3).

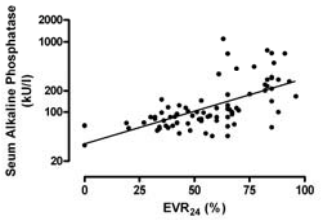


Figure 1. EVR_{24} vs. serum Alkaline Phosphatase in patients with AL amyloidosis. Solid line is linear regression line.

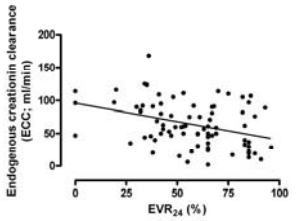
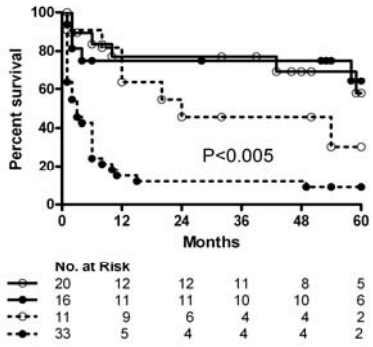


Figure 2. EVR_{24} vs. endogenous creatinine clearance in patients with AL amyloidosis. Solid line is linear regression line.

Figure 3.
5-year survival of patients with AL amyloidosis; patients with high (>50%; ●) and low (<50%; ○) EVR_{24} and with presence (dotted line) or absence (solid line) of heart involvement.



CONCLUSIONS

- **In AL amyloidosis the EVR_{24} is strongly associated with organ involvement as well as with prognosis**
- **Quantification of SAP retention using the EVR_{24} has no additional value to ^{123}I-SAP scintigraphy in the detection of systemic amyloidosis**

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