

Diagnostic value of free kappa and lambda light chains in fat tissue of patients with systemic AL amyloidosis

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INTRODUCTION

Congo red stained fat tissue is used to diagnose systemic amyloidosis. A recently described immunoassay quantifies free immunoglobulin light chains in serum and urine.

OBJECTIVE

To study the value of free light chain concentrations in fat tissue for diagnosing systemic AL amyloidosis.

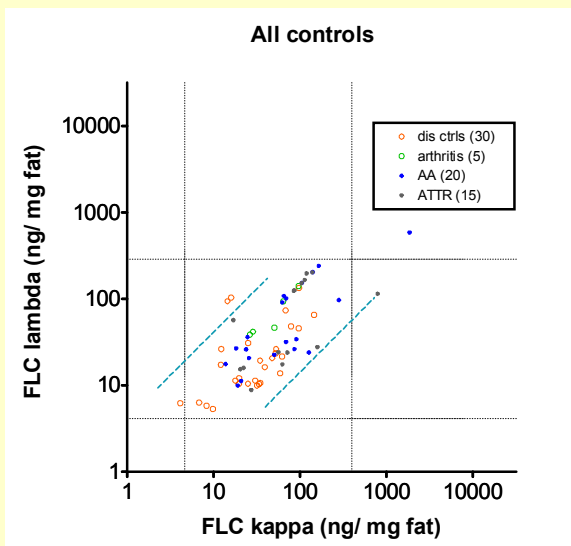


Figure 1. Control lower and upper 95% confidence limits for free light kappa, lambda, and kappa/lambda ratio in fat tissue.

RESULTS

Control lower and upper 95% confidence limits were for kappa 4.73 and 402 ng/mg fat, for lambda 4.06 and 286 ng/mg fat, and for the K/L ratio 0.24 and 6.89 (see figure 1).

Seven (50%) of the kappa values of AL-L and 20 (48%) of the lambda values of AL-K patients were above the normal ranges. Eight (57%) AL-K and 30 (71%) AL-L patients were outside the normal K/L ratio range (see figure 2).

Thirty-six (88%) of 41 AL specimens with Congo red score 2+ or 3+ were outside the normal K/L ratio range (see figure 2, filled dots).

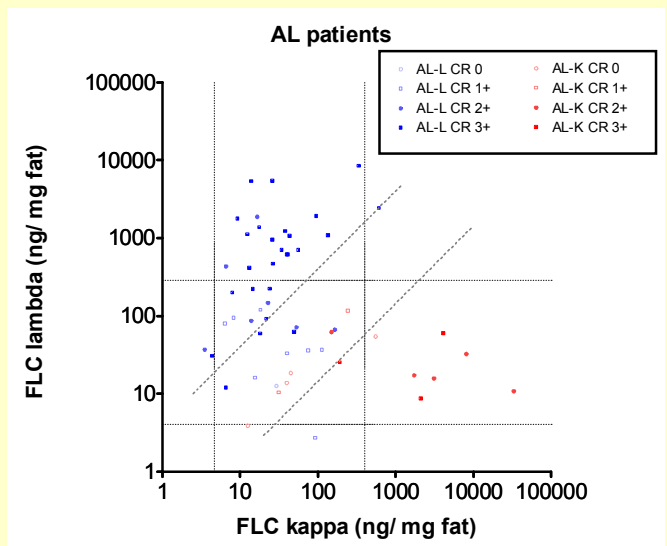


Figure 2. Fat tissue values of free light kappa, lambda, and kappa/lambda ratio of 42 AL-lambda and 14 AL-kappa patients.

PATIENTS AND METHODS

Subcutaneous abdominal fat tissue specimens of 56 patients with AL amyloidosis (14 AL-K and 42 AL-L) were studied. Control specimens were from 35 patients without amyloid, 20 with AA amyloidosis, and 15 with ATTR amyloidosis.

Free kappa and lambda light chains in fat tissue supernatants were quantified with a nephelometric immunoassay (FreeLite™) with specific antibodies against hidden epitopes. The 95% confidence limits of controls were calculated for kappa, lambda, and the ratio of both light chains.

Congo red stained slides were scored semi-quantitatively ranging from 0 to 3+.

CONCLUSION

- Free kappa and lambda light chains in fat tissue, and especially the ratio of both, are valuable to diagnose AL type of amyloid in 50-70% of cases, increasing to 88% of cases with 2+ or 3+ amyloid present in the Congo red stain.