SEBIA FLC: A NEW SERUM FLC ELISA-BASED ASSAY THAT BRINGS COHERENCE WITH SERUM PROTEIN ELECTROPHORESIS RESULTS

R.G. van der Molen[1], C.M. de Kat Angelino[1], H.M.L.M. Brouwers[1], S.A. Croockewit[2], I. Joosten, J.F.M. Jacobs[1]

[1]Department of Laboratory Medicine, Laboratory of Medical Immunology, [2]Department of Hematology, Radboud University Medical Center, Nijmegen, The Netherlands

Introduction

Since the availability of the serum Free Light Chain (sFLC) assay, diagnosis, monitoring and prognosis has greatly improved for plasma cell dyscrasias. In parallel, many publications appeared on the analytical limitations, pitfalls and technical difficulties of nephelometric techniques.

Strong discrepancies between Freelite (The Binding Site, Birmingham) sFLC concentrations and the FLC monoclonal band on Serum Protein Electrophoresis (SPE) have been reported. Freelite overestimation can be greater than 10-fold and has been attributed to sFLC polymerization leading to larger immune complexes and greater scatter by nephelometry. We have previously published sFLC concentrations within close range of the values obtained with SPE using our home-made ELISA sFLC assay.[1] Here we present data of a large scale validation of this observation using the industrialized version of our ELISA assay: the Sebia FLC assay (Sebia, Lisses, France).

Materials and Methods

Sera obtained from 53 patients with measurable FLC peaks on SPE (Capillarys 2, Sebia) were analyzed using both the Freelite and Sebia FLC assays. The SPE FLC peak concentration was compared to Freelite and Sebia FLC concentrations.

Results

SPE concentrations of the iFLC in the 53 serum samples ranged from 50 to 8400 mg/L. As shown in Figure 1, the Freelite iFLC concentrations were consistently higher in all 53 sera tested, with a mean 12-fold overestimation compared to SPE. Sebia iFLC concentrations fluctuated around the SPE iFLC peak concentrations, with a mean 0.8-fold underestimation compared to SPE.

Conclusions

Significant quantitative differences were observed between Sebia FLC and Freelite, mainly in sera with high FLC concentrations. The Sebia monoclonal FLC concentrations were coherent with those obtained by SPE.

Figures

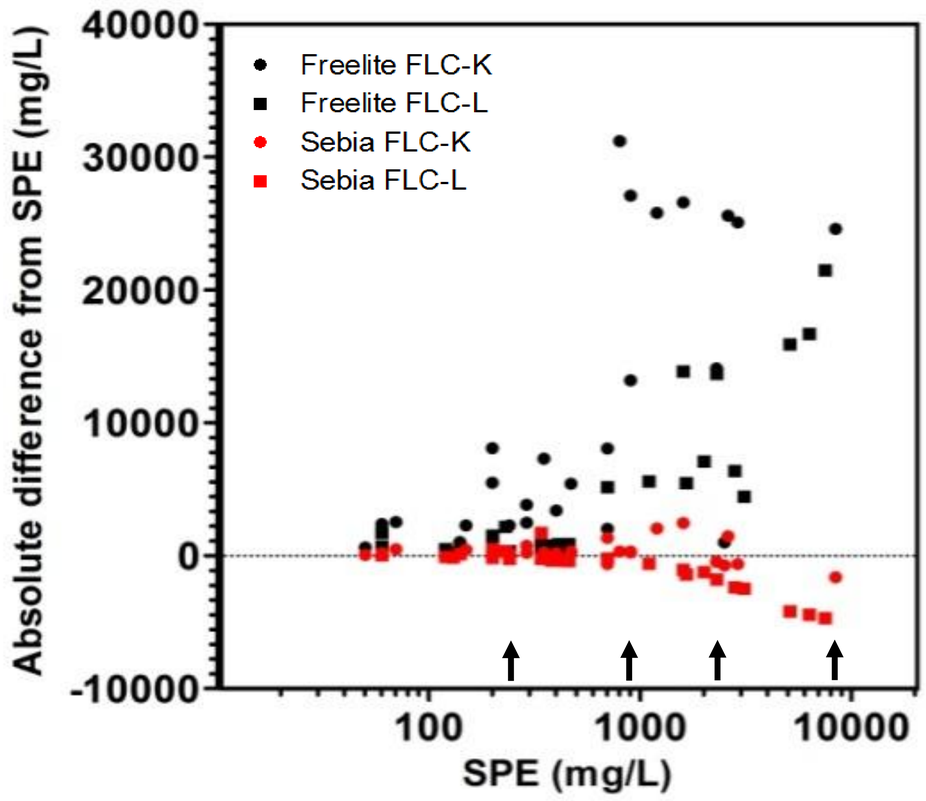

Figure 1. Method comparison to electrophoresis. Quantification of 53 monoclonal FLC samples measured both by Sebia FLC (red symbols) and Freelite (black symbols) was compared to quantification by serum protein electrophoresis (SPE). The black dotted line indicates perfect agreement between FLC quantification with SPE. Arrows represent four patients shown in more detail in figure 2. *

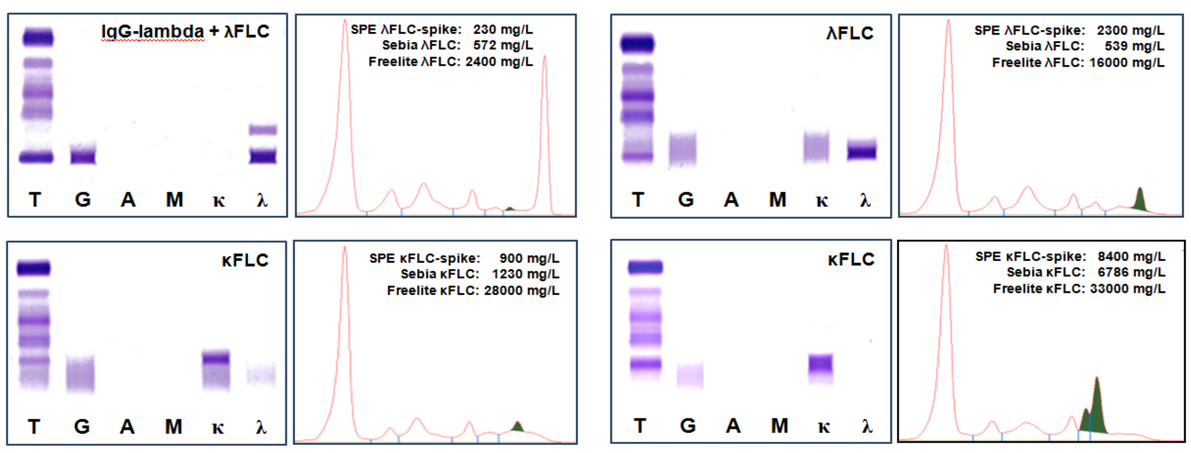

Figure 2. Method comparison to electrophoresis. Four representative samples (see arrows in figure 1). Shown are IFE, the SPE densitogram with the FLC clone illustrated in green, and the FLC-concentrations obtained with M-spike, Sebia FLC and Freelite. *

[1]. De Kat Angelino et al. Clin. Chem. 2010.

* Unpublished data.

Contact:
renate.vandermolen@radboudumc.nl
or
h.jacobs@radboudumc.nl

Institute for Molecular Life Sciences

Radboudumc