Background

In multiple myeloma (MM), detection and quantification of monoclonal component (M-spike) by urine protein electrophoresis (UPE) and immunofixation are essential for diagnosis and response evaluation according to the International Myeloma Working Group (IMWG) criteria. Up to now, quantification of urine M-spike was only possible on electrophoretic profile with Hydragel High Resolution (HR) (Sebia). Recently, Sebia has developed the possibility to quantify M-spike from the electrophoretic track on urine agarose gel immunofixations (Urine Profile [UP] and Bence Jones [BJ]) with the Phoresis software 8.63. The purpose of this study was to evaluate these two methods of quantification and to determine if they could be used alternatively from HR.

Methods

We included 90 urine samples in this study, with several profiles: Bence Jones proteinuria only, Bence Jones with glomerular or tubular proteinuria or both, Bence Jones with several degrees of polymerization (see the table beside). Each sample was tested within 2 days on HR, UP and BJ. Urine M-spike was measured with the Phoresis software 8.63 with the orthogonal method. Finally, 67 of the 90 samples exhibited a measurable M-spike. Concordance of UP and BJ quantification with the referent method HR was evaluated, using a correlation graph and a Bland and Altman diagram with deviants analysis (using SFBC recommendations). 3 operators made the M-spike quantification on HR, UP and BJ for each sample exhibiting a measurable monoclonal component, to determine the intra-operator CV for each method.

Results

Concordance of M-spike quantification between UP and HR, and BJ and HR respectively was excellent (correlation coefficients 0.98 for both).

Only one deviant was observed for BJ-HR comparison and two for UP-HR comparison. Differences were due to the resolution characteristics in proteins separation (degrees of polymerization for Bence Jones proteinuria, association of Bence Jones with tubular microproteins) according to each gel. Inter-operator CV was quite low for HR, similar with BJ but higher for UP.

Conclusion

This study shows that UP, BJ and HR are overall comparable for urine M-spike quantification. The availability of a quantification tool with UP and BJ gels provides the opportunity for many laboratories to measure urine M-spike with accuracy methods as long as the MM follow-up. For only a few samples, profiles can be slightly different between HR and UP/BJ leading to the classical recommendation in clinical biology, to mostly follow-up disease with the same method.