Sampling and analyses

Blood was collected in serum or plasma tubes allowed to stand for 30 minutes, and then centrifuged for 10 minutes at 2500 G at room temperature within 1 hour. Aliquots were taken; serum samples were shipped at ambient temperature to a central lab. Plasma aliquots were frozen, shipped on dry ice to central lab and stored at -70°C prior to analysis of κFLC, λFLC, β_2-microglobulin, myoglobin, α_1-microglobulin, complement factor D (CFD) and chitinase-3-like protein 1 (YKL-40).

Spent dialysate was continuously collected at 10 mL/min via a sampling device installed in the dialysate drain line. Aliquots of the collected dialysate were frozen at -20°C overnight, and then stored at -80°C until analysis of κFLC, λFLC, β_2-microglobulin, myoglobin, α_1-microglobulin and CFD at a central lab.

Immuno-turbidometric assays were used for measurements of κFLC, λFLC, β_2-microglobulin, myoglobin and albumin concentrations. ELISAs were used for measurements of α1-microglobulin and CFD concentrations in plasma or dialysate and for YKL-40 in plasma. Enzymatic colorimetric assays were used for measurements of creatinine and urea concentrations in plasma and dialysate. Chemical colorimetric assays were used for measurements of phosphate concentrations in plasma and dialysate.

Hollow fiber inner diameter and wall thickness were measured on samples of fibers extracted from dialyzers using a light microscope and image recognition software (Axiotech 100HD-3D with Epiplan 10x/0.20 HD objective; AxioVision 4.6.3 SP1, Zeiss, Oberkochen, Germany).

Dialysis water quality was checked at regular intervals according to local standards (Study 1: yearly interval; study 2: three month interval).