Sir,

We appreciate the interest of Tidman et al. in our study [1]. Their first point of concern is the narrow GFR interval of the patients investigated in this study. The residual GFR (rGFR) interval between 0.3 and 6.2 ml/min/1.73 m² is the reflection of the criteria for starting haemodialysis or CAPD. Inclusion criteria for the study population were rGFR below 6.5 ml/min/1.73 m² and a daily urine production of at least 200 ml.

Then they ask what cystatin C concentration anuric patients have. However, the formula presented by us for the estimation of rGFR in dialysis patients is an empirical formula, which of course cannot be used without reservations in a population different from the one for which it was developed. Furthermore, the determination of an rGFR in anuric patients, who do not have any residual function and no urine production, is meaningless and irrelevant.

In addition, the plasma cystatin C concentration observed in anuric patients does not give unequivocal information about the synthesis rate of cystatin C or its extra-renal clearance. As long as the ratio of synthesis rate and extra-renal clearance remains the same, the plasma cystatin C concentration will not change.

We conclude from the constants in the formula which gives the relationship between cystatin C and rGFR that the production rate of cystatin C is reduced in dialysis patients. The fact that after acute renal failure a new steady state is reached much earlier for cystatin C than for creatinine was not used as a supportive argument by us. Bökenkamp et al. [2] showed that after bilateral nephrectomy in rats, the rise in cystatin C was much smaller than for creatinine. They concluded that these and additional human data strongly suggested a change in cystatin C production or extra-renal clearance. Their conclusion is strongly supported by our data.

In their letter, Tidman et al. draw attention to the new formula they have derived using the Gentian turbidimetric cystatin C assay (Tidman et al., Nephrol Dial Transplant, accepted for publication). They claim that it fits all CKD stages, with a GFR range of the study population from 12 to 125 ml/min/1.73 m²; however, the new formula has not been validated in dialysis patients. The linear formula presented in this new study is derived with the assumption that cystatin C production and extra-renal clearance are constant, just like the Sjöström formula published previously by the same authors [3]. The main difference between the new formula and the previous one is the standardization of the assay and a different patient cohort. When they used the DAKO assay in this new patient cohort to derive a formula, it differed only slightly from the previous Sjöström one.

Even though it is derived in a completely different patient cohort with the use of a different gold standard, the general formula for GFR estimation published by us [4] performed at least as well as this new Tidman formula. Nevertheless, our general formula cannot be used in dialysis patients. Nor is the formula of Tidman et al. useful for dialysis patients, because it results in a negative rGFR in 20–30% of the patients, and gives for a cystatin C concentration below 4.16 mg/L abnormally high rGFR values above 10 mL/min/1.73 m².

Only longitudinal follow-up of patients with our new formula for estimation of GFR [1] can show if the estimates adequately reflect the course of rGFR decline. This is independent of the issue as to whether the constants in our formula do or do not represent the production rate and extra-renal clearance of cystatin C.

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