Time points may also count in assessment of the difference between prescribed and delivered dose

Sir,
I read with great interest the article by Lyndon et al. [1]. They analyzed data of a prospective trial [2] to investigate the difference between prescribed and delivered continuous renal replacement therapy (CRRT) doses and concluded that there was a large gap between the delivered and prescribed dose. This is important for interventional studies comparing intensive versus less intensive dose CRRT on the patients’ clinical outcome, because it is the actual delivered dose that determines the clinical outcome.

However, one factor that the article did not take into account was the time point in which the comparison between prescribed and delivered dose was made. The rationale of this consideration is that the filter will become clogged over time, and the sieving coefficient of solute may be compromised; namely, the ratio of concentration of effluent urea nitrogen to blood urea nitrogen (BUN) is <1, resulting in a much more reduced delivered dose. Another phenomenon known as concentration polarization may also develop on the filter membrane during CRRT. It is a layer of protein fouling on the membrane that will lead to diffusive transport of solutes back into the blood pool, thereby further compromising the efficacy of solute clearance [3]. However, the impact of time on the delivered dose might be more pronounced in medium or large-sized molecules, and its impact on small-sized solutes, such as creatinine and BUN as used in the present study, is unknown.

In the study, enrolled patients had their creatinine and urea nitrogen in blood and effluent fluid measured on a daily basis, and there would be several measurements of both urea nitrogen and creatinine for each filter, allowing calculation of delivered solute clearance at different time points. I do not know which set of measurements is used for the estimation of solute clearance. One strength of the study is the large sample size (165 patients) as compared with the study by Granado et al. [4] (52 patients). If time points can also be incorporated into the analysis, more information can be obtained with regard to the difference between the prescribed and delivered dose over time.

By the way, there is a small error in Table 1 and Table 2, the unit of dose should be ‘mL/kg/h’, instead of ‘mg/kg/h’.

Editorial Note: Lyndon et al. had been invited to reply to this letter but we did not receive a response.

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