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Dialysis in the Hospital Setting: Comparison of Kt/V (ID) versus spKt/V (URR)

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Purpose

The purpose of this study was to determine the feasibility of estimating adequacy of dialysis using online Ionic Dialysance as compared to use of urea kinetic modeling in hospitalized patients. New technology now provides a direct online quantification of urea clearance without dialysate and blood sampling.

Background

In recent years, there has been a growing effort to measure dialysis adequacy in patients with acute renal failure using urea kinetic modeling. Ionic dialysance, a parameter calculated automatically from the dialysate conductivity, has been correlated to the effective urea clearance during hemodialysis in chronic renal failure but no research in patients with acute renal failure was identified.

Methods

Subjects were recruited by either the PI or co-PI. Subjects who met the inclusion criteria were asked, on a face to face basis, to participate in the study. Patients enrolled in the study had a pre and post dialysis BUN labs drawn. The results were then used to calculate the spKt/V using urea kinetics, Kt/V_Daugirdas and Kt/V Lowrie formulas. During the same dialysis treatment, Kt/V (ID) was calculated by the Fresenius Dialysis machine using the Watson (V) Volume. These two values were then compared statistically.

Results

The TOST analysis revealed that Kt/V_ID was not equivalent to Kt/V_Daugirdas (p-value = 0.68, CI of the difference = (-0.23, -0.058)) but was equivalent to Kt/V_Lowrie (p-value = 0.0034, CI of the difference = (-0.086, 0.079)). Plots of agreement showed that Kt/V_ID was predominantly lower than Kt/V_Daugirdas, while revealing close agreement between Kt/V_ID and Kt/V_Lowrie.

The correlation coefficient between Kt/V_ID and both Daugirdas and Lowrie was 0.69 (p-value <0.01).

Discussion

Although spKt/V ID is a tool that can be utilized to assess adequacy of dialysis and to minimize hospital laboratory costs, supplies and human resources, it should be recognized that additional research is needed to establish equivalency with standard measures.

Abstract selected for presentation at ANNA's 45th National Symposium, Anaheim, CA, 2014

Figure 1:

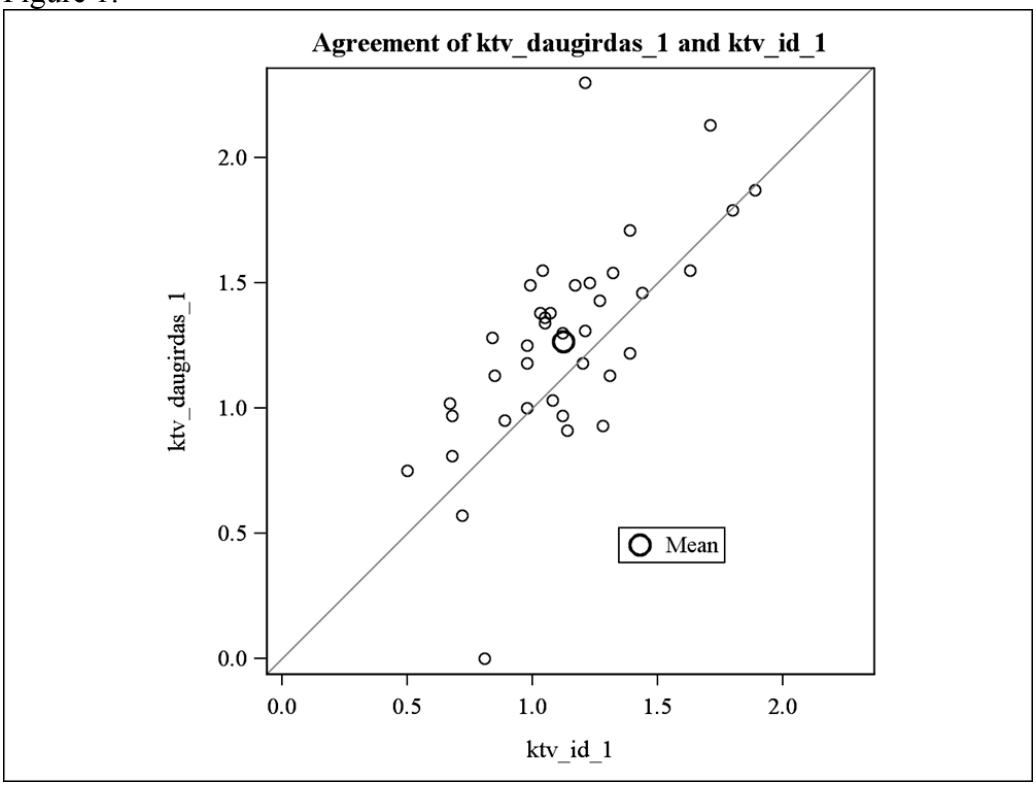

Figure 2: