INTRODUCTION AND OBJECTIVE

Complex variable volume single pool (VVSP) urea kinetic model (UKM) remains the recommended method for evaluation of hemodialysis (HD) in children with higher target doses of delivered Kt/V. Daugirdas’ natural logarithm formula (D) has been accepted as its simple alternative for use in adults. It has been found to be sufficiently accurate in clinical settings in adults. In order to enable a quicker and more simple bedside evaluation of HD therapy in children, we tested the accuracy of D when used in children on chronic HD.

RESULTS

Table 1 and Table 2: Comparison of Kt/V values calculated by VVSP and Natural Logarithm formula in three different ranges of Kt/V values representing inadequate dialysis (<1.2), adequate dialysis (1.2-1.6) and very high Kt/V (>1.6). VVSP resulted in Kt/V of 1.68±0.42, while Kt/V calculated by D was 1.70±0.36. Generally, the results were not significantly different (p>0.05) and were highly correlated (r=0.978). In the range of adequate Kt/V (VVSP=1.2-1.6; n=13), the difference was smaller (r=0.978). In the range of inadequate Kt/V (VVSP<1.2; n=6), D significantly overestimated VVSP by 13.4% (1.94; p<0.05; r=0.978). In the range of more than adequate Kt/V (VVSP>1.6; n=4), the difference between D and VVSP was not significant (1.94 vs. 1.96; p=0.05; r=0.978), but the correlation coefficient was lowest (r=0.651).

DISCUSSION:

- Natural logarithm formula is recommended as a simple alternative method for calculating Kt/V in adults (DOQI 1997).
- Its accuracy has not been investigated in children.
- According to its author, the natural logarithm formula should be accurate (error within 2%) in the Kt/V range of 0.7-2.0 (Daugirdas JT, J Am Soc Nephrol 1993;4:1205-13).
- Our results show that the Natural Logarithm Formula significantly overestimates Kt/V in the clinically most sensitive range of Kt/V which denotes inadequate HD, while very high Kt/V (>1.6) values are underestimated.
- The formula is sufficiently accurate in the range of Kt/V of 1.4-2.0.

CONCLUSION:

If the possible overestimation of low values of Kt/V (which are clinically most important) is always thought of, then the natural logarithm formula can be used as a simple bedside technique for Kt/V in children.