



Shaping Tomorrow's Nephrology: Insight-Driven Kidney Care

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Body Metric Adjusted Dialyzer Surface Area Improves 2-Microglobulin Reduction in High volume hemodiafiltration.

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Objectives : Despite the enhanced middle-molecule removal achieved with high-volume hemodiafiltration (HV-HDF), many patients do not reach sufficiently high β 2-microglobulin (β 2MG) reduction ratios (RR) up to 80%. In routine clinical practice, further increasing arteriovenous access blood flow or extending dialysis treatment time is often not feasible in real practice. Therefore, we investigated whether individualizing dialyzer surface area (DSA) to patients body metrics could optimize β 2MG RR in Asian patients undergoing post-dilution online HDF (OL-HDF).

Methods : We analyzed 80 patients undergoing post-dilution HV-HDF. We calculated DSA-to-body metric ratios such as DSA/dry body weight (DBW), DSA/body mass index (BMI), and DSA/body surface area (BSA). Receiver operating characteristic (ROC) curve analyses were performed to identify optimal cut-off values for predicting achievement of β 2MG RR $\geq$ 80%.

Results : The mean patient age was 65.6 ± 13.0 years; mean dialysis vintage was 70.8 ± 68.6 months, and mean vascular access blood flow rate (Q_b) was 301.2 ± 13.4 ml/min. Mean DBW was 62.1 ± 15.4 kg, BMI 23.3 ± 4.9 kg/m², and BSA 1.7 ± 0.2 m². The mean convection volume was 23.5 ± 1.5 L/session, and mean β 2MG RR was 74.2 ± 6.0 %. In ROC analyses for predicting β 2MG RR $\geq$ 80%, DSA/BSA (AUC 0.81; cut-off 1.27; sensitivity 100.0%; specificity 62.5%) and DSA/DBW (AUC 0.81; cut-off 0.03 m²/kg; sensitivity 100.0%; specificity 51.39%) demonstrated excellent performance. DSA/BMI showed an AUC of 0.76 with a cut-off of 0.10 (sensitivity 62.5%; specificity 84.72%).

Conclusions : Adjusting DSA to patient body metrics, such as using DSA/BSA $\geq$ 1.27 or DSA/DBW $\geq$ 0.03 m²/kg, may provide a practical strategy to optimize β 2MG clearance in HV-HDF in Asian patients. These body metric-adjusted DSA indices also serve as clinically to identify and guide dialyzer selection for patients who require greater middle -molecule clearance.