DEPURATIVE EFFICACY AND ALBUMIN LOSS WITH DIFFERENT HIGH FLUX DIALYZERS IN ONLINE HEMODIAFILTRATION

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OBJECTIVES

To achieve high convection volumes, the elevated intra-dialyzer pressure and the increased pore size may contribute to the loss of other circulating solutes such as albumin. A wide variety of high-flux dialyzers is available, but no in vivo studies comparing solutes removal and albumin losses have been performed. The aim of this study is to evaluate depurative efficacy and albumin loss in postdilution OL_HDF with different high-flux dialyzers.

METHODS

Forty-two postdilution OL-HDF sessions were performed in order to evaluate 7 high-flux dialyzers (FXCorDiax® 1000, Polyflux-210H®, Elisio-21H®, Evodial-2.2®, TS-2.1SL®, Xevonta-Hi20® and VitaPES-210HF®) in 6 different patients with similar dialysis prescription: duration 4 hours, blood flow 400mL/min, infusion flow 100mL/min, dialysate flow 700mL/min, dialysate temperature 35.5ºC and constant ultrafiltration rate. Pre-dialysis and post-dialysis blood samples were taken to calculate the raduction rates (RR) of urea (60Da), creatinine (113Da), phosphorus (94-96Da), ß2-microglobulin (11.8KDa), myoglobin (17.2KDa) and prolactin (23KDa). Dialysate samples were collected at minutes 5,15,30,60 and 120 to estimate albumin (60KDa) loss.

RESULTS

Mean convective volume, RR and albumin losses with different dialyzers are shown in the Table. Ultrafiltration was 2 ±0.83L. Global differences between dialyzers were observed in ß2microglobuline RR (p0.001), prolactine RR (p0.0013), total albumin loss (p0.021) and albumin loss in the first two hours (p0.023). Comparing dialyzers with each other, we found several significant differences in each RR an din albumin loss. NO dialyzer significantly exceeded any of the RR achieved with FXCorDiax 1000, Xevonta-Hi20 and VitaPES-210HF, and the RR reached with Evodial-2.2 did not exceed those achieved with any other dialyzer.

Reduction Rates (RR) and albuin loss with different high-flux dialyzers

	FXCorDiax 1000® (FMC)	Polyflux-210H® (Baxter)	Elisio-21H® (Nipro)	Evodial-2.2® (Baxter)	TS-2.1SL® (Toray)	Xevonta-Hi20® (Braun)	VitaPES-210HF® (MTP)
Total convective volume (L)	26±0.79	26.6±0.29	26.1±0.7	26.3±0.5	25.7±1	26.1±0.8	25.4±1.1
Urea RR (%)	84.7±8.7	83.9±9.9	64.2±51.7	81.4±3.6	83.6±5.8	85.5±3.1	87±3.9
Creatinine RR (%)	76.1±5.2	73.8±5.1	77.8±5.7	74.9±3.3	76.4±5.7	78.7±4.3	80.8±4.1
Phosphorus RR (%)	65.2±8,4	57.9±12.1	64.9±19.1	57.1±6.8	60.9±11.9	64.8±9	66.9±5.7
Beta-2 microglobulin RR (%)	85.2±3.9	80.1±4.4	76.5±14.5	72.2±2.8	84.3±2.3	85.9±2.9	85.7±3.3
Myoglobin RR (%)	70.1±6.2	60.5±8.1	61.1±23.8	68.8±4.9	72.1±7.2	71.8±6.7	72.4±4.7
Prolactin RR (%)	71.8±3.5	55.6±6.6	57.9±23.3	64.8±8	59.6±7.2	51.3±42.5	68.1±2.5
Total albumin loss (mg/session)	1367±2421	909±404	959±1724	114±67	439±323	2621±1363	1389±1290
Albumin loss in the first 2 hours (mg)	844±1417	770±224	757±1237	114±67	439±323	1789±1006	905±811

CONCLUSSIONS

High-flux dialysis membranes and convective therapies allow the elimination of low and middle-sized molecules. Differences in the reduction of middle-sized molecules (mainly ß2-microglobulin and prolactin) and in albumin loss were observed when comparing different high-flux dialyzers. Individualized prescription of dialysis membranes may help to accomplish the highest uremic toxins elimination without an excessive albumin loss.

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