

IMPROVEMENT OF THE CLINICAL, NUTRITIONAL AND INFLAMMATORY PARAMETERS DURING HIGH FLUX HEMODIALYSIS

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OBJECTIVES

To investigate the beneficial effect of high-flux (HFHD) vs. low-flux (LFHD) dialysis on clinical findings in dialysis patients.

METHODS

Comparative analysis on dialysis and laboratory data was done in one arm crossover study. 65 patients were dialyzed 2 years on Low Flux and then crossed on High Flux dialysis for 2 years.

RESULTS

Study group characteristics

N=65	Mean ± St.Dev / (%)	Comparative analysis -Dialysis variables-			
		N=65	Low Flux Mean ± St.Dev	High Flux Mean ± St.Dev	Sig.(p)
Age (years)	53.86 ± 11.49				
Vintage (months)	87.00 ± 72.82				
men	30 (46%)				
DM	7 (11%)				
		Dialyzer surface (m ²)	1.66 ± 0.53	1.61 ± 0.13	0.418
		Time (hours)	4.12 ± 0.25	4.15 ± 0.13	0.885
		spKt/V	1.55 ± 0.61	1.63 ± 0.46	0.389
		URR	69.68 ± 0.80	73.36 ± 5.61	0.009
		AVF (%)	89	88	0.321

Nutritional Indices

N=65	Low Flux Mean ± St.Dev	High Flux Mean ± St.Dev	Sig.(p)
Appetite score (1-5)	3.66 ± 0.98	4.17 ± 0.98	0.0001
Body weight post HD (Kg)	63.49 ± 13.73	62.67 ± 13.18	0.079
BMI (Kg/m ²)	25.00 ± 6.26	24.68 ± 6.069	0.088
IDWG (Kg)	3.09 ± 0.76	3.23 ± 0.92	0.144
Total Proteins (g/L)	69.87 ± 3.98	68.9 ± 5.33	0.092
Albumin(g/L)	38.72 ± 2.94	38.50 ± 3.99	0.586
s.Creatinine (µmol/L)	957.18 ± 374.06	976.55 ± 261.85	0.623

Anemia management

N=65	Low Flux Mean ± St.Dev	High Flux Mean ± St.Dev	Sig.(p)
Hb (g/L)	115.80 ± 11.29	118.6 ± 9.11	0.040
Htc	0.34 ± 0.03	0.36 ± 0.03	0.002
Mean Weekly EPO Dosage (IU/week)	2687.76 ± 2314.97	2513.75 ± 2223.74	0.105*
Mean Weekly EPO Dosage per Body Weight (IU/week/Kg)	44.65 ± 40.86	43.39 ± 40.50	0.197*
Mean Weekly EPO Dosage per Body Weight per gram Hb (IU/week/Kg/g)	0.41 ± 0.37	0.38 ± 0.37	0.057*

Iron metabolism

N=65	Low Flux Mean ± St.Dev	High Flux Mean ± St.Dev	Sig.(p)
Iron (µmol/L)	11.82 ± 4.10	12.90 ± 4.50	0.027
TIBC (µmol/L)	39.21 ± 6.36	41.11 ± 7.23	0.006
Transferin (g/dL)	30.82 ± 11.216	34.85 ± 25.08	0.396
Ferritin (mg/L)	443.12 ± 200.01	500.84 ± 271.75	0.200

Lipids and glycaemia

N=65	Low Flux Mean ± St.Dev	High Flux Mean ± St.Dev	Sig.(p)
Total Lipids (g/L)	7.92 ± 2.40	7.43 ± 1.44	0.031
Cholesterol (mmol/L)	4.47 ± 1.07	4.32 ± 0.93	0.109
HDL (mmol/L)	0.96 ± 0.41	1.16 ± 0.61	0.026
LDL (mmol/L)	2.61 ± 0.95	2.38 ± 0.75	0.03
Glicemia (mmol/L)	5.12 ± 1.17	5.61 ± 2.17	0.058

- Urea Reduction ratio rose significantly (p= 0.02). In the HFHD the mean appetite score improved significantly from 3.66 to 4.17.
- The Hemoglobin level significantly rose from 115 to 118 g per liter in the HFHD.
- The level of total lipids significantly declined in the HFHD period from 7.92 to 7.43 g/L. The protective High-Density Lipids significantly rose from 0.96 to 1.16 and the Low-Density Lipids significantly declined from 2.61 to 2.38 mmol/L (p<0.05).
- The total calcium level significantly improved from 2.11 to 2.17 mmol /L. The phosphorous level did not change in spite the better appetite.
- We observed significant improvement in the leucocyte number and CRP level (6.82 ± 1.63 vs. 6.24 ± 1.62, p=0.0001; 5.60 ± 5.14 vs. 4.40 ± 3.96, p=0.014), respectively.

Mineral Bone Metabolism Indices, electrolytes and enzymes

N=65	Low Flux Mean ± St.Dev	High Flux Mean ± St.Dev	Sig.(p)
Ca (mmol/L)	2.11 ± 0.20	2.17 ± 0.25	0.005
Phosphorous (mmol/L)	1.54 ± 0.42	1.59 ± 0.46	0.259
PTH	548.49 ± 562.15	544.58 ± 528.62	0.957*
AP (U/L)	170.84 ± 261.54	218.82 ± 296.32	0.002*
Na (mmol/L)	142.50 ± 41.5	135.91 ± 17.1	0.208
K (mmol/L)	5.38 ± 0.61	5.24 ± 0.62	0.06
ALT (U/L)	22.58 ± 13.79	19.87 ± 10.98	0.029
AST (U/L)	19.64 ± 12.72	19.68 ± 14.30	0.971
Le (x10 ⁹ /L)	6.82 ± 1.63	6.24 ± 1.62	0.0001
CRP (mg/L)	5.60 ± 5.14	4.40 ± 3.96	0.014*

Inflamatory markers

CONCLUSIONS

High Flux Dialysis had beneficial effects on the nutritional, clinical and inflammatory parameters in dialysis patients.

References

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