SHORT-TERM EFFECTS OF HIGH SODIUM DIALYSATE

Masatomo Chikamori [1], Kazunobu Masaki [2], Satoru Kishi [1], Tomoko Honda [1], Rika Miura [1], Mari Aoe [1], Masahiro Ichikawa [1], Yu Kurata [1], Satoshi Furuse [1], Katsunori Saito [1], Kyosuke Nishio [2], Naobumi Mise [1]
1. Division of Internal Medicine, Mitsui Memorial Hospital, Tokyo, Japan
2. Shinkoiwa Clinic, Tokyo, Japan

PURPOSE

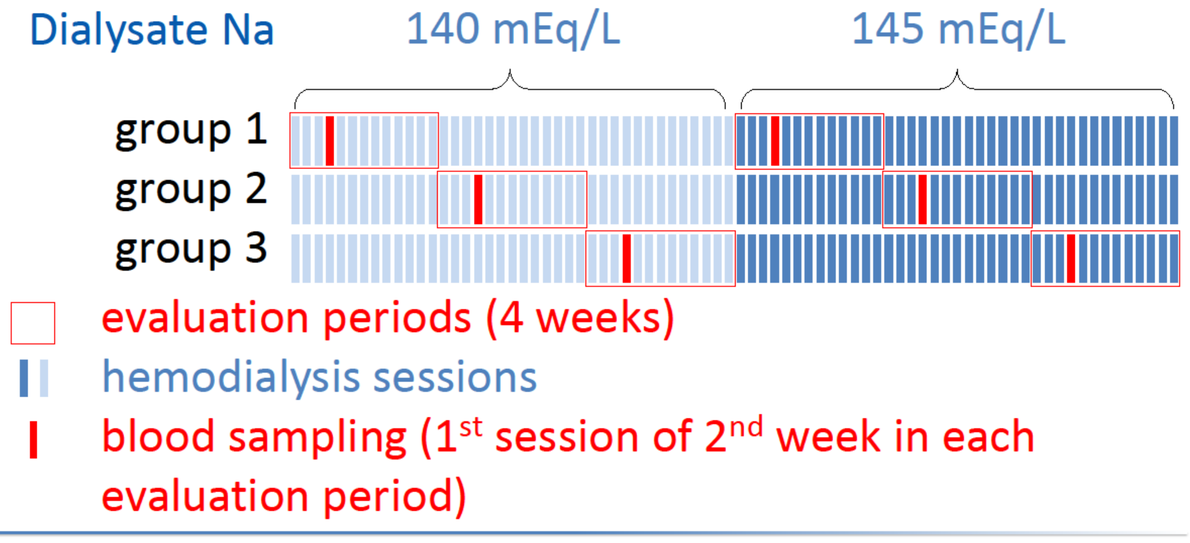
To examine the short-term effects of high sodium dialysate on hemodynamics and fluid status.

METHODS

- Dialysate sodium concentration was changed from 140 to 145 mEq/L.
- The primary outcome was the frequency of hemodialysis sessions with intradialytic hypotension (IDH*) for each of the 3 months before and after the dialysate change (Phase 1 and 2, respectively).

* a rapid symptomatic fall of systolic blood pressure by ≥ 30 mmHg or that required medical intervention [1]

Figure 1. **Study design**



RESULTS

Table 1. **Baseline characteristics (n=217)**

Male	145 (67%)
Age, year-old	66 ± 13
Dialysis vintage, month	105 ± 88
Etiology	
Diabetic Nephropathy	71 (33%)
Nephroscrerosis	34 (16%)
Chronic Glomerulonephritis	68 (31%)

mean ± SD or number of patients (%)

Table 2. **Frequency of HD sessions with IDH**

	Phase 1 (140 mEq/L)	Phase 2 (145 mEq/L)	*p* value
IDH%	15 ± 24	11 ± 22	**0.008**

IDH%, frequency of HD sessions with IDH (mean ± SD)

IDH% decreased significantly in Phase 2.

Table 3. **Comparison of fluid status**

	Phase 1 (140 mEq/L)	Phase 2 (145 mEq/L)	*p* value
DW, kg	57 ± 13	56 ± 13	**< 0.001**
IDWG/DW, %	4.6 ± 1.4	5.2 ± 1.6	**< 0.001**
Pre HD sBP, mmHg	149 ± 22	152 ± 21	**0.024**
Log hANP, pg/ml	4.1 ± 0.8	4.5 ± 0.7	**< 0.001**
ECW/TBW**	0.4 ± 0.0	0.4 ± 0.0	0.880

*DW, Dry Weight. IDWG, interdialytic weight gain. Pre HD sBP, pre-dialysis systolic blood pressure. ECW/TBW, the ratios of extracellular water to total body water at the beginning of the first weekly dialysis sessions. ** Measured in selected 62 patients. Values were expressed as mean ± SD.*

In Phase 2, DW decreased significantly, whereas IDGW/DW, pre-dialysis sBP, and pre-dialysis hANP showed significant increases.

Table 4. **Comparison of blood data**

	Phase 1 (140 mEq/L)	Phase 2 (145 mEq/L)	*p* value
Hemoglobin, g/dl	10.2 ± 0.7	10.2 ± 0.8	0.832
Albumin, g/dl	3.5 ± 0.4	3.5 ± 0.4	0.094
CRP, mg/dl	0.5 ± 1.0	0.4 ± 0.8	0.058
equilibrated Kt/V	1.1 ± 0.2	1.2 ± 0.2	**0.029**
Pre HD Na, mEq/l	139.0 ± 3.1	138.6 ± 2.9	**0.019**

Table 5. **Factors associated with reduction of IDH (multiple linear regression analysis)**

	β (95% CI)	*p* value
IDH%	0.69 (0.52, 0.71)	**< 0.001**
Diabetic Nephropathy	-0.27 (-17.50, -7.45)	**< 0.001**
Pre HD sBP	-0.17 (-0.27, -0.06)	**0.002**
Oldest old (≥ 85 year-old)	-0.12 (-21.2, -1.22)	**0.028**
Log hANP	-0.11 (-5.82, -0.26)	**0.035**
IDWG/DW	-0.09 (-2.91, 0.25)	0.098
Male	0.06 (-1.86, 7.14)	0.249
Log vintage	-0.02 (-2.36, 1.75)	0.770

The reduction of the IDH frequency was independently associated with more frequent sessions with IDH in phase 1, non-diabetic nephropathy, lower pre-dialysis sBP, non-oldest old, and lower hANP.

CONCLUSIONS

- With high sodium dialysate, IDH was reduced and lower dry weight was achieved. However, IDWG and pre-dialysis blood pressure showed significant increases.
- Reduction of IDH was predominantly observed in patients with more frequent IDH, non-diabetic nephropathy, lower pre-dialysis sBP, non-oldest old, and lower pre-dialysis blood pressure at baseline.

Reference

[1] Francesco L. et al. JASN October 1, 2010 vol. 21 no. 10 1798-1807

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