Hypoxemia and Dialysate Temperature

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Dear Sir, Table I. Blood gases and dialysate temperature

Symptomatic hypotension (SH) is a common problem among hemodialysis (HD) patients. Its cause is probably multifactorial, and different procedures have been employed to diminish its incidence: high content of sodium in the bath, bicarbonate dialysis, sequential ultrafiltration, hemofiltration and oxygen administration during HD. The use of cool dialysate in HD has been reported to improve vascular stability [1,2], and recently, Raja et al. [3] have stated that this fact may be related in part to the improvement of hypoxemia lowering the bath temperature.

In a previous work [4], we have observed less incidence of HD-induced SH when employing the dialysate at 35°C. In order to investigate the relationship between temperature and hypoxemia, we analyzed 96 HD sessions performed in 8 patients (5 women and 3 men) who had frequent episodes of HD-SH and the same dialysis schedule: 4 h, 3 days per week, hollow-fiber cuprophane dialyzer and acetate bath. HD was undertaken 6 times with a dialysate temperature of 37°C and 6 times with a temperature of 35°C in each patient. The temperature was measured with a thermistor. Blood pressure was recorded at the beginning and at the end of each session and every 30 min during the procedure. Blood samples for determinations of hematocrit, urea, creatinine, electrolytes and gases were taken before and after 3 consecutive sessions with each temperature.

Values of pH, pO₂, pCO₂ and HCO₃⁻, shown in table I, were similar at 35 and 37°C. Our results did not confirm the beneficial effect of cool dialysate on HD hypoxemia; pO₂ decreased similarly with both temperatures. On the

pH   pO₂   pCO₂   HCO₃⁻

35 °C A: 7.33 ± 0.06   91.8 ± 12.6   31.1 ± 4.3   17.1 ± 3.2

B: 7.38 ± 0.04   82.2 ± 10.0   30.6 ± 3.1   18.2 ± 2.2

37 °C A: 7.33 ± 0.07   87.9 ± 13.5   32.3 ± 3.6   17.5 ± 3.2

B: 7.38 ± 0.06   79.7 ± 11.5   30.3 ± 3.4   17.7 ± 2.5

A = Before hemodialysis; B = after hemodialysis.

other hand, data published related to the influence of hypoxemia on SH are controversial.

Heneghan et al. [5] found that oxygen administration during HD decreased the incidence of SH and other HD symptoms. However, other authors [6, 7] could not find this effect, perhaps because, as it has been suggested, hypoxemia and SH have different and unrelated etiologies [7].

SH continues to be a serious problem in some patients, and new studies seem necessary to clarify its pathophysiology and potential treatment.

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