

Effect of Calcium Concentrations in The Dialysate on Echo Cardiology Findings in Regular Hemodialysis Patients

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ABSTRACT

BACKGROUND

Calcium Concentrations in the dialysate can be customized depending on the current and targeted serum Ca levels as well as the desire to maintain hemodynamic stability during dialysis and prevent the progression of secondary hyperparathyroidism

OBJECTIVE

to investigate the relative role of Different Dialysate Calcium Concentrations on Parathyroid Hormone Levels and Cardiovascular stability in end stage renal disease (ESRD) patients on regular hemodialysis

METHODS

A total number of 80 patients with ESRD on regular hemodialysis (HD) for more than 1 year, were divided into 2 groups: Group (A): consists of 40 Patients who were dialyzed with low calcium dialysate (LdCa, 1.25 mmol/L) and Group (B): consists of other 40 Patients who were dialyzed with high calcium dialysate (HdCa, 1.75 mmol/L). Dialysate composition was otherwise the same, all routine labs were done together with ECG and transthoracic echocardiography

RESULTS

The mean value \pm SD of: Total serum Calcium of Group A (7.93 ± 1.008) mg/dl and Group B (8.518 ± 1.01) mg/dl. ($p < 0.05$). Ionized Calcium of Group A (1.08 ± 0.09) and Group B (1.139 ± 0.1) mmol/l. ($p <$

0.05). Serum Parathyroid Hormone of Group A (492.75 ± 282.57) pg/ml and Group B (389.33 ± 223.240) pg/ml. (P value:0.073).

Intradialytic Hypotension was observed in 22.5 % of Group A patients while observed in 15 % in Group B (P: 0.39). Aortic valve calcification was present in 22.5% in Group A patients while present in 42.5 % in Group B (P:0.065) while Mitral valve calcification was present in 25 % patients in Group A patients while present in 42.5 % in Group B (P:0.09), Both valve calcification were present in 7.5 % of Group A and 17.5% of Group B (P:0.176) while No valve calcification was observed in 60% of Group A and 32.5 % of Group B (P: 0.014)

CONCLUSION

A lower dialysate Ca concentration of 1.25 mmol/L will offer much less risk of Ca loading and resultant hypercalcemia and calcification However, may predispose to cardiac arrhythmias and hemodynamic unstable dialysis sessions with intradialytic hypotension while A Higher dialysate Ca concentration of 1.75 mmol/L is effective in Suppression of hyperparathyroidism, however may predispose to hypercalcemia, valvular calcification, and over suppression of parathyroid hormone

KEYWORDS

Parathyroid Hormone - Dialysate Calcium - Valvular Calcification

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