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Effect of Varying Dialysate Bicarbonate Concentration on Acid- Base Balance in Haemodialysis Patients

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Objectives: Metabolic acidosis has deleterious effects in patients with chronic kidney disease (CKD), including, but not limited to, impairment in nutritional status, worsened mineral and bone disorder and an association with increased mortality. It thus seems plausible that correction of acidosis by administration of bicarbonate during hemodialysis can reduce the severity of metabolic acidosis and thus its ill-effects. Our objective is To assess the Effect of Varying Dialysate Bicarbonate Concentration on Acid- Base Balance in Haemodialysis Patients of a tertiary care hospital.

Methods: This single blind crossover clinical trial comprised of 80 hemodialysis patients of a tertiary care hospital from Jan 2019 to Jun 2019, who would be dialysed with either a bicarbonate bath of 30mmol/l, or a bicarbonate bath of 35mmol/l. Primary endpoint was to ascertain the effect of varying dialysate bicarbonate concentrations on Ph, PCO₂ and HCO₃. Correlation between predialysis and post dialysis various parameters (bicarbonate and ph) was also being assessed. Arterial blood gases and electrolytes were taken before and after dialysis.

Results: Mean values of pH and pCO₂ remained almost same pre- and post dialysis in both groups with no statistically significant difference between them. Post dialysis bicarbonate values also remained the same, however, mean predialysis bicarbonate values with bicarbonate bath of 30 was little acidic as compared to bicarbonate bath 35. Difference between the mean values of (pre and post dialysis) ph, pco₂, and HCO₃ with bicarbonate dialysate concentration 35 and with 30 is also not statistically significant (Ph p value-0.690, Pco₂ 0.759, HCO₃-p value 0.093). Also pH and HCO₃ values seen before and after dialysis showed a positive relationship in all patients (r=0.420, p=0.000), HCO₃- (r=0.515, p=0.001).

Conclusions: Our study accentuates that multitude of factors and not only base supply involved in acid base perturbations in hemodialysis patients and researchers should be steered to conduct trials grappling all those factors in order to establish a better dialysis regimen

Fig-1 Effects of Varying Dialysate Bicarbonate Concentrations (30 mEq/L, 35 mEq/L) on Arterial pH and HCO₃- Immediately before and after Hemodialysis


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FULLY VIRTUAL MEETING
 September 02 (Thu) - 05 (Sun)

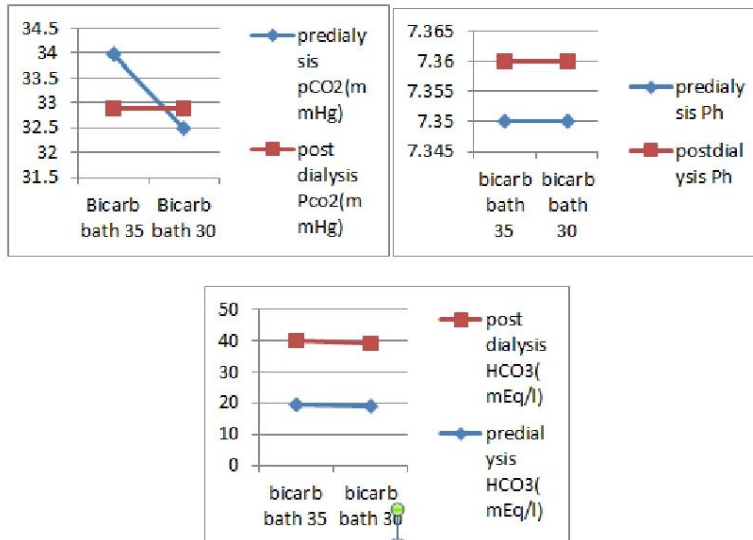


Fig-1 Effects of Varying Dialysate Bicarbonate Concentrations (30 mEq/L, 35 mEq/L) on Arterial pH and HCO₃⁻ Immediately before and after Hemodialysis

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TABLE- Effects of Varying Dialysate Bicarbonate Concentrations (30 mEq/L, 35 mEq/L) on Arterial pH and HCO₃⁻ Immediately before and after Hemodialysis



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	Dialysate Bicarbonate Bath 35	Dialysate Bicarbonate Bath 30
Arterial pH		
Predialysis	7.35±0.084	7.35±0.069
Post dialysis	7.36± 0.07	7.36±0.055
Difference between pre and post dialysis	0.0124± 0.049	0.0092±0.0752
Arterial HCO₃		
Predialysis	19.45±3.85	18.74±3.82
Post dialysis	20.44±3.69	20.31±3.81
Difference between pre and post dialysis	0.865±3.261	1.56±1.76
Arterial Pco₂		
Predialysis	33.97±5.4	32.48±5.68
Post dialysis	32.90±6.30	32.906.30
Difference between pre and post dialysis	0.413±4.22	0.19±5.007