

A CASE OF EXTREME METABOLIC ALKALOSIS IN HEMODIALYSIS PATIENT

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A 69 year-old female with end-stage renal disease, hypertension, diabetes, aortic stenosis and peripheral vascular disease, became acutely ill and short of breath during hemodialysis. Treatment was terminated and the patient sent for emergent medical evaluation. Vital signs: blood pressure 80/40 mmHg, respiratory rate 22/min, heart rate 122/min. She was alert and awake, following simple commands. In the ER, she quickly deteriorated with worsening dyspnea and hypotension, necessitating endotracheal intubation and norepinephrine administration. Initial ABG: pH 7.46, PCO₂ 94 mmHg, HCO₃ 69 mMol/l. ABG after intubation: pH 7.72, PCO₂ 60 mmHg, HCO₃ 58 mMol/l. Serum electrolyte panel: bicarbonate unmeasurable (> 40 mMol/l), potassium 2.7 mMol/L, chloride 63 mMol/L and calcium 5.5 mg/dl. Toxicology screen was negative. Pulmonary embolism and CNS event were excluded. Supportive treatment with intravenous fluid, electrolyte repletion and vasopressive support was continued. Four hours after presentation, her course was complicated by ventricular fibrillation, leading to cardiac arrest. She was successfully resuscitated and intravenous hydrochloric acid was initiated. After hemodynamic stability was achieved, she was successfully dialyzed with low bicarbonate bath. Her electrolyte abnormalities resolved. She was discharged to home ten days later with no long-term damages from the event. Review of monthly chemistries revealed no significant metabolic abnormalities before or after the event.

Discussion: This case demonstrates that metabolic alkalosis due to mechanical malfunction can result in severe hemodynamic instability during hemodialysis. Should patient become acutely ill during hemodialysis, immediate termination of dialysis and evaluation with ABG and serum electrolytes is warranted. Survival is possible even in the extremes of pH as long as treatment is begun in a timely manner. Hydrochloric acid infusion and/ or low bicarbonate dialysis can both be useful treatment options.