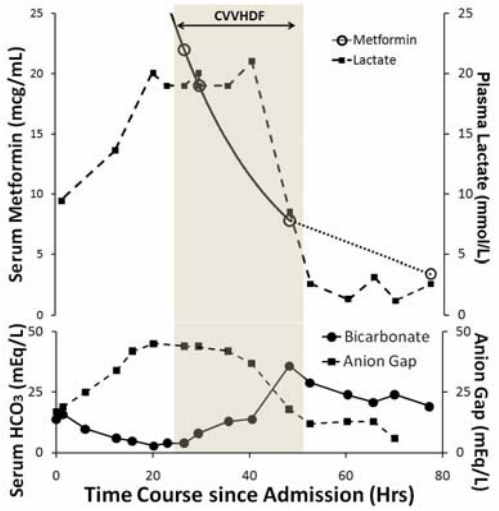
MANAGEMENT AND TOXICOKINETICS OF METFORMIN ASSOCIATED LACTIC ACIDOSIS (MALA) BY CONTINUOUS VENOVENOUS HEMODIAFILTRATION (CVVHDF).

Mujtaba M, Madhrira M, Agarwala R, Mohan S, Park C, Anderson H, Pogue V, Cheng JT. Harlem Hospital Center, Columbia University N.Y

A 71-yr-old 52kg diabetic male amputee with a baseline serum creatinine (Scr) of 1.4 mg/dL presented with nausea and vomiting. He was diagnosed with MALA [Serum metformin (Smet) 22µg/mL, blood pH 7.16, plasma lactate 21mmol/L] and acute anuric renal failure (BUN 85mg/dl, Scr 10.7mg/dl). He was managed with CVVHDF using Gambro Prisma system (Q_b=100mL/min, effluent 2L/hr). During



CVVHDF the decline in Smet followed single compartment 1st order kinetics with an elimination rate constant of 0.0418/hr and a serum half-life of 16.5 hrs. The mean dialysate side clearances for metformin, creatinine and urea were 24.2, 28.6, and 29.4 mL/min respectively. The estimated apparent volume of distribution (V_d) of metformin was 34.7L .After stopping CVVHDF, patient started producing urine with 24hr creatinine clearance of 4.5 ml/min and estimated renal metformin clearance of 17.1-22.5ml/min. The measured metformin concentration at 25 hrs post CVVHDF was 3.4µg/ml, which fell within the predicted range of 3.0-3.8 µg/ml, indicating no rebound. In conclusion, CVVHDF is an effective treatment option for MALA without metformin rebound. Additionally, the dialyzer metformin clearance was 82% and 84% of the urea and creatinine clearance respectively.