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A case of vancomycin-induced nephrotoxicity successfully treated with hemodiafiltration

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Case Study: A 77-year-old Korean woman were sented to the emergency department from a skilled nursing facility with anuria. She had been discharged from the hospital to the nursing facility 2 months earlier for long-term antibiotic treatment with oral rifampicin and intravenous vancomycin for infective spondylitis, L1 with prosthesis. She had decreased urination over the past week and was anuric since the day prior to presentation. The patient was sent to the emergency department for acutely elevated creatinine of 4.2 mg/dL. She had been receiving scheduled intravenous vancomycin infusion without having her vancomycin through levels monitored at the nursing facility. On arrival, her blood pressure was 96/50 mmHg; pulse, 87 beats/minute; and respiratory rate, 19 breaths/minute. Initial arterial blood gas analysis showed metabolic acidosis (pH = 7.110, pCO_2 = 38.0 mmHg, pO_2 = 91.0 mmHg, and HCO_3^- = 12.1 mmol/L). Her creatinine was 5.3 mg/dL, and the vancomycin through level was 160.4 ug/mL. Her creatinine during the previous hospitalization was 0.7 mg/dL.
Her antibiotics was discontinued. We started continuous veno-venous hemodiafiltration (CVVHDF) on the first day of admission. The patient's metabolic acidosis was corrected 90 hours after the initiation of CVVHDF. On the second day of dialysis, the urine output was more than 0.5 mL/kg/h and the bicarbonate level was higher than 20 mmol/L with a stabilization of the blood pressure and her therapy was changed to intermittent dialysis. On day 3, FMC 5008S hemodialysis machine was used with a FMC FX 600. The vancomycin through level was 30.7 ug/mL on day 8, and we stopped dialysis. After supportive care, the patient was discharged from the ICU on day 8 and we restarted antibiotics. Here, we report a case of vancomycin-induced nephrotoxicity that was successfully treated with hemodiafiltration that allows for improved elimination of vancomycin.