

INTRODUCTION:

A case of baclofen overdose is presented in a patient who was chronically taking the medication for muscle spasms and suffered acute kidney injury (AKI) while hospitalized, resulting in a prolonged and complicated hospital course. Restoration of the patient's baseline mental status was achieved with hemodialysis (HD). Baclofen is commonly used in patients with muscle spasms and caution should be applied when using the medication in patients with AKI given extensive kidney clearance.

Case Description :

A 57-year-old female with a past medical history of tetraplegia, neurogenic bladder with a suprapubic catheter, diverting ileostomy presented to the hospital with fever, nausea, vomiting, and abdominal discomfort. She was found to have cholecystitis and underwent percutaneous cholecystostomy. Following the procedure, there was increased drainage from the cholecystostomy tube, and her kidney function declined with serum creatinine reaching 3.6 from a baseline of 1.16 mg/dL. On the fifth day of admission, the patient was found to be unresponsive and was transferred to the intensive care unit (ICU). On transfer to the ICU, the patient developed anuria, shock requiring vasopressors, and worsening mental status with subsequent intubation.

Case Description :

Baclofen was discontinued on transfer to the ICU, and HD was performed on hospital day #7. Following a single session of HD, mental status notably improved allowing extubation. The patient continued to have a complicated hospital course involving reintubation for respiratory failure, emergent tracheostomy, prolonged mechanical ventilation, and percutaneous gastrostomy tube placement. An attempt was made to reinstitute baclofen, which resulted in lethargy and possible seizures, prompting discontinuation. Her mental status slowly improved and the patient was discharged after a 21-day stay.

Physical Exam:

General: Obese, somnolent, does not follow commands, no blink to threat, only responds to deep sternal rub.

HENT: Oral secretion suctioned

Respiratory: Diminished breath sounds, 2L NC

Cardiovascular: Normal rate, +pedal/radial pulses, gen edema.

Gastrointestinal: Soft, ostomy noted, chole tube noted, hypoactive bowel sounds

Genitourinary: Foley Catheter in place

Neurologic: Somnolent, does not follow commands, responds to pain only, exam limited due to mental status

Labs:

144	118	31	81
3.2	12	3.6	
		10.4	
		14	291
		35	

ABG:

pH: 6.9 pCO₂: 98 pO₂: 147 HCO₃: 20

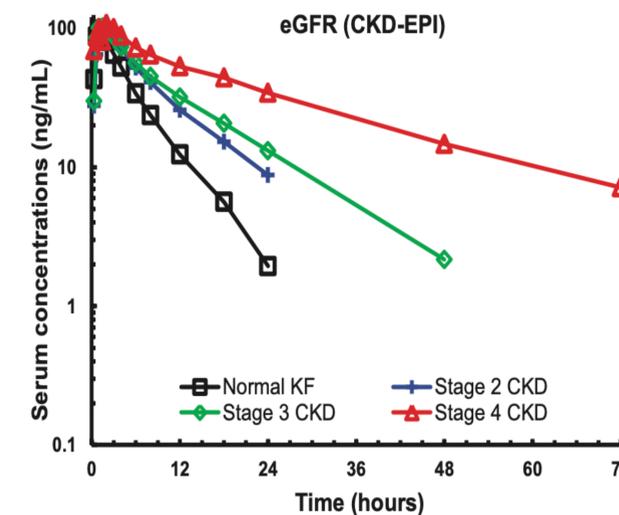


Figure 1: Mean baclofen concentration-time profiles for subjects with normal kidney function and patients with CKD

Discussion:

Baclofen is a GABA-B receptor agonist used primarily for spasticity. While it has a half-life of 2-6 hours in normal kidney function, baclofen is 70-85% eliminated unchanged in the urine and may accumulate in patients with reduced kidney function. Baclofen poisoning can result in severe neurotoxicity including confusion, somnolence, coma, seizures, and autonomic dysfunction. Prompt recognition of baclofen toxicity is essential in the management of baclofen overdose, HD may be necessary for patients with impaired kidney function as the estimated half-life in overdose can exceed 30 hours.

References:

- Romanova OL, Blagonravov ML, Kislov MA. Baclofen: Therapeutic and toxic mechanisms of action (review). *Obshchaya Reanimatologiya*. 2020;16(4). doi:10.15360/1813-9779-2020-4-60-71
- Porter LM, Merrick SS, Katz KD. Baclofen Toxicity in a Patient with Hemodialysis-Dependent End-Stage Renal Disease. *Journal of Emergency Medicine*. 2017;52(4). doi:10.1016/j.jemermed.2016.09.025
- Smith C, Fahy B, Cibula J. Baclofen Toxicity - The Importance of Medication Reconciliation (2400). *Neurology*. 2020;94(15 Supplement):2400. http://n.neurology.org/content/94/15_Supplement/2400.abstract
- Salim SA, Thomas L, Achanti A, et al. Baclofen-induced neurotoxicity in patients with compromised renal function: Review. *International Journal of Clinical Pharmacology and Therapeutics*. 2018;56(10). doi:10.5414/CP203243
- Ijaz M, Tariq H, Kashif M, Marquez JG. Encephalopathy and hypotonia due to baclofen toxicity in a patient with end-stage renal disease. *American Journal of Case Reports*. 2015;16. doi:10.12659/AJCR.893222
- Wolf E, Kothari NR, Roberts JK, Sparks MA. Baclofen Toxicity in Kidney Disease. *American Journal of Kidney Diseases*. 2018;71(2). doi:10.1053/j.ajkd.2017.07.005
- Ghannoum M, Berling I, Lavergne V, et al. Recommendations from the EXTRIP workgroup on extracorporeal treatment for baclofen poisoning. *Kidney International*. 2021;100(4). doi:10.1016/j.kint.2021.07.014
- Vlavanou, R., Perreault, M.M., Barrière, O., Shink, E., Tremblay, P.-O., Larouche, R., Pichette, V. and Tanguay, M. (2014), Pharmacokinetic characterization of baclofen in patients with chronic kidney disease: dose adjustment recommendations. *The Journal of Clinical Pharmacology*, 54: 584-592. <https://doi.org/10.1002/jcph.247>