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Case of the week 41/2022

# Hemadsorption: A New Therapeutic Option for Selected Cases of Bromazepam Intoxication

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*This case reports on an a 67-year-old woman with CHILD-C liver cirrhosis, who was admitted to the tertiary intensive care unit (ICU) after intoxication with bromazepam.*

## Case presentation

- The initial plasma concentration was 874 µg/L (upper limit of normal 170 µg/L)
- The patient developed respiratory failure due to decreased consciousness
- Given the expected slow decrease in plasma levels of bromazepam due to cirrhosis and the inherent risk of a prolonged need for mechanical ventilation, an infusion of flumazenil was initiated to avoid intubation
- The patient regained consciousness and remained stable, but the flumazenil infusion rate could not be decreased due to a relapse in stupor following this intervention
- As expected, only a very slow decrease in bromazepam titer was observed
- Based on the decline in titer, the half-life of bromazepam was calculated to be 10 days rather than the expected 10 h. This implied that a reduction of the bromazepam titer to 170 µg/L could only be expected after 23 days of ICU admission, warranting a search for further therapeutic options
- Hence hemadsorption was initiated in combination with continuous renal replacement therapy (CRRT)

## Treatment

- CytoSorb was used in conjunction with CRRT run in continuous veno-venous hemofiltration (CVVHF) mode using the Prismax® (Baxter, IL, USA) system

## Measurements

- Sequential quantifications of bromazepam levels from blood taken pre and post CytoSorb adsorber

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## Results

- Application of CytoSorb resulted in the quick and efficient elimination of bromazepam (−31% after 1 h, −56% after 11 h). There was no rebound in plasma titer after cessation of the hemadsorption therapy and the patient attained the target level of bromazepam 13 days earlier than predicted without the hemoadsorber

## Patient Follow-Up

- After the first 11 hrs there was a quick decline in adsorbing capacity suggesting saturation. However, by this time the patient was in the upper therapeutic limit for bromazepam, so no second hemoadsorber was needed
- The flumazenil infusion could be quickly tapered off within 1 day

## Conclusions

- The application of CytoSorb proved to be effective in eliminating bromazepam in a patient with CHILD-C cirrhosis
- The authors conclude that hemoadsorption is a viable option to reduce length of ICU stay or need for intubation in slow metabolizers
- They state that the cost of a prolonged stay in the intensive care unit is significantly higher than the cost of an adsorber