

Carbamazepine Overdose Successfully Treated with Combined Resin Haemoperfusion and Continuous Venovenous Haemodiafiltration

Sir,

Carbamazepine (CBZ) has no specific antidote or unified treatment standards for poisoning. Common detoxification programmes include activated charcoal (AC), haemodialysis (HD),¹ haemoperfusion (HP),² and continuous renal replacement treatment (CRRT).³ Nevertheless, the success or failure of all the aforementioned treatment regimens for CBZ poisoning has been subjected to variation in the literature.

A 15-year female was discovered at home, having fallen onto the bed more than two hours earlier. The patient's family reported that 33 CBZ tablets (0.1 g / tablet) were missing. Upon admission to the paediatric intensive care unit, the patient's CBZ blood concentration was 31.2 mg/L. According to Figure 1, two hours after the initiation of resin HP, a series of continuous venovenous haemodiafiltration (CVVHDF) was initiated and maintained for 12 hours 41 minutes. Approximately 25 hours post-overdose and during the sixth hours of resin HP, CVVHDF was maintained for an additional six hours. After CRRT, CBZ blood concentration was of 8.9 mg/L, and the patient's responsiveness returned to normal.

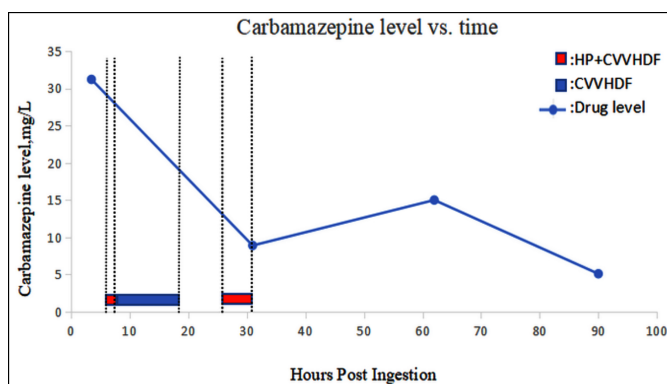


Figure 1: CBZ levels before and after extracorporeal treatments. After the combination of resin HP + CVVHDF techniques to treat CBZ toxicity, the patient's blood concentration dropped from 31.2 mg/L to 8.9 mg/L, demonstrating its high clearance efficiency and efficacy. However, the patient experienced a relapse after stopping the extracorporeal treatment.

According to the Extracorporeal Treatments in Poisoning (EXTRIP) workgroup,⁴ extracorporeal treatments should be discontinued when patients with CBZ poisoning show significantly improved clinical symptoms or when plasma concentrations fall below 10 mg/L. However, the patient relapsed 62 hours post-admission, presenting with sudden urinary incontinence and mental instability. Blood analysis revealed a CBZ

concentration of 15.0 mg/L, although the patient did not experience respiratory depression. She did not undergo any other special treatments, and her symptoms were relieved and her mental stability was restored. Further blood analysis revealed a drop in CBZ concentration (5.1 mg/L), and no other symptoms were observed. She was discharged on the eighth day of admission.

The identification of a rapid and efficient method for treating CBZ poisoning is of great clinical significance. To the best of the authors' knowledge, this patient was the first to receive a combined resin HP + CVVHDF treatment for CBZ intoxication, which was a safe and efficient regimen. CBZ may delay absorption,⁵ thereby the course of extracorporeal treatment should be extended appropriately.

COMPETING INTEREST:

The authors declared no conflict of interest.

AUTHORS' CONTRIBUTION:

WZ: Drafting, revision, and editing of the manuscript.

XY: Questionnaire survey, data analysis and interpretation.

XH: Questionnaire survey and data collection.

All authors approved the final version of the manuscript to be published.

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*Received: April 09, 2025; Revised: May 26, 2025;
Accepted: May 28, 2025*
DOI: <https://doi.org/10.29271/jcpsp.2025.11.1499>

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