[ID-P#074] Successful Treatment of Poisoning by Multiple Drug Ingestion (Phenobarbital, Divalproex Sodium, Clonazepam and Escitalopram) using Resin Hemoperfusion: A Case Report

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Background and Objective: Extracorporeal blood purification therapy using hemoperfusion (HP) for the removal of exogenous and endogenous toxins is a rapidly evolving area. Recently, the successful treatment by HP using polystyrene resin cartridges has been described in the literature for paraquat, organophosphates, carbamazepine and amlodipine plus risperidone. We report a case of successful treatment and immediate reversal of coma in a patient ingesting multiple drugs (phenobarbital, divalproex sodium, clonazepam, and escitalopram) with long-acting and synergistic toxic effects using hemoperfusion.

Case Report: This is a case of a 24-year-old male with epilepsy (focal versus generalized) and manic depressive disorder who deliberately ingested phenobarbital, divalproex sodium, clonazepam, and escitalopram (see Table 1 for amount ingested and toxic dose). The patient presented at the Emergency Department (ED) unresponsive with a Glasgow Coma Scale (GCS) of 3, normotensive, and a decreased oxygen saturation of 88%. He was immediately intubated, stabilized, and immediately started onmultiple dose activated charcoal (MDAC) and urine alkalinization therapy using sodium bicarbonate. Serum phenobarbital and valproate levels at the 5th hour post-ingestion were obtained and revealed the following values, respectively: 71.18 µg/mL and 254.62µg/mL. He was appraised for emergent intermittent hemodialysis (IHD). However, despite two doses of MDAC and one session of IHD, patient remained GCS 3. Concurrent session of IHD plus HP done on the 2nd hospital day improved the sensorium to at best GCS 11 (E4V1M6). Continued doses of MDAC for 5 sessions improved the overall sensorium of the patients and decreased the levels of phenobarbital and divalproex (Figure 2). He was then extubated and discharged on the 30th hospital day after successive treatments for nosocomial pneumonia.

Discussion: We described the temporal relationship between hemoperfusion and the time of recovery of the patient brought about by synergistic toxic effects on the sensorium of the patient. Previous case reports described successful removal of phenobarbital and valproic acid with charcoal hemoperfusion6,7. Due to the lack of diagnostic tests for escitalopram and clonazepam, we are uncertain if these drugs are removed by hemoperfusion, although urine qualitative benzodiazepine tests remain positive even after sessions of IHD and HP. Although phenobarbital and valproic acid are dialyzable8,9, enhanced removal of the xenobiotic is greater with resin HP, as seen in our patient. Mizushima et al.6 and Tank and Palmer10 demonstrated in their case reports a statistically significant improvement of sensorium with concurrent IHD plus HP or HP alone for phenobarbital and valproic acid, respectively. This case highlights the utility of hemoperfusion as a method of enhanced elimination with immediate reversal of symptoms.