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014. Treatment of Phenytoin Poisoning by Medical Toxicologists

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Background: In 2015, the Extracorporeal Treatments in Poisoning (EXTRIP) workgroup published guidelines indicating hemodialysis can be used in certain patients with severe phenytoin poisoning. It is unknown how medical toxicologists have since implemented these recommendations.

Research Question: We sought to characterize the key features of phenytoin poisoning cases submitted to the Toxicology Investigator's Consortium (ToxIC) database and to identify factors associated with hemodialysis use.

Methods: This is a descriptive study of phenytoin poisoned patients and their treatment by medical toxicologists from January 2016 to October 2022 using the ToxIC database. Cases were excluded if there were no signs/symptoms or if symptoms were deemed unlikely to be related to a toxicologic exposure. Pearson Chi-Square and Fisher's Exact tests were used where appropriate to assess for significant associations.

Results: We analyzed 178 cases. Phenytoin was the primary agent in 92.1% of patients. Most ingestions involved therapeutic use (41.0%) or were unintentional (27.0%), as compared to attempted self-harm (18.5%). Common symptoms were coma/central nervous system (CNS) depression (33.1%), ataxia (30.3%), nystagmus (14.0%), and seizures (9.6%). Toxicological treatment such as decontamination, elimination therapy, or nonpharmacologic support (including intubation) was given in 47.8% of cases. In total, five patients (2.8%) received hemodialysis for toxin removal. Overall mortality was low at 1.1% (n = two). Patients with CNS depression ($p = 0.004$), who were intubated ($p < 0.001$), and/or required ICU admission ($p < 0.001$) were all significantly more likely to be treated with hemodialysis. Report of phenytoin as a primary agent was associated with higher rates of ICU admission ($p = 0.014$) but not with more frequent CNS depression, intubation, or hemodialysis use.

Conclusion: Phenytoin-poisoned patients are rarely treated with hemodialysis. Factors suggestive of more clinically severe toxicity such as CNS depression, intubation, and ICU admission are associated with hemodialysis.