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Combination of N-acetylcysteine and hemodialysis for the successful treatment of paraquat poisoning – a case report

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Objective: To present a case of paraquat poisoning resulting to severe acute kidney injury, whereby supportive therapy and a combination of N-acetylcysteine and hemodialysis were given leading to complete recovery.

Case Report: An 18-year old male student who intentionally ingested 2 hours prior to admission (PTA) approximately 180 milliliters of the herbicide Paraquat (20% w/v) experienced difficulty in breathing, epigastric pain and vomiting. External decontamination and activated charcoal lavage were done at a local hospital prior to admission. Upon admission he was immediately started with 20% N-Acetylcysteine intravenously using the Paracetamol treatment protocol (150mg/kg in 1 hour, then 50mg/kg for 8 hours, then 100mg/kg for 16 hrs; 100 mg/kg for 24 hours every day thereafter). Although frank respiratory complications or significant liver injury were not observed, severe acute kidney injury manifested by a rapidly rising serum creatinine, from 90.86 mmol/L in Day 1, to as high as 806.32 mmol/L on Day 8. Hemodialysis was started on the first day of abrupt creatinine rise and continued at 3 sessions per week thereafter. On Day 12, creatinine level was at 221 mmol/L with concomitant clinical improvement, and on Day 16, hemodialysis and N-acetylcysteine were discontinued as recovery from Acute Kidney Injury was deemed, with a serum creatinine of 106.08 mmol/L. The patient was followed-up on an outpatient basis, with no major clinical complications noted beyond the 3rd month post-exposure.

Conclusion: The patient manifested Acute Kidney Injury resulting from moderately severe Paraquat poisoning. The treatment of Paraquat poisoning proves difficult with a high fatality rate mainly due to lack of proven antidotes and no widely accepted treatment guidelines [1]. In this case supportive therapy and the combined use of the antioxidant N-acetylcysteine and hemodialysis has proven to be effective leading to this patient's complete recovery and is suggested that further studies be done to further verify its efficacy.

References: [1] Gawarammana I, Buckley, N, et al. Medical Management of Paraquat Ingestion. Br J Clin Pharmacol 2011; 72:5 p.745-757