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Acute Kidney Injury

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Identification of early Biomarkers for Acute Kidney Injury Following Self Poisoning with Combined Washing Powder (Mixture of Potassium permanganate and Oxalic acid) in Sri Lanka

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Background: In Sri Lanka, kidney injury (AKI) is a common clinical manifestation following self poisoning with combined washing powder (CWP) containing potassium permanganate (KMnO4) and oxalic acid (H2C2O4). We hypothesized that a panel of novel urinary biomarkers is superior to serum creatinine (sCr) and attempted to determine whether increased levels are related to mechanisms specific injury pathways.

Methods: Eighty five patients with CWP poisoning were recruited to the study. Kinetics of sCr [(based on acute kidney injury network criteria (AKIN)] and serum sCysC were compared and urinary biomarker levels were measured every 8 hours untill day 1 and then daily until discharge.

Results: Seventy four percent developed AKI while of that, 70% developed severe AKI (AKIN2/3). Grouping of patients based on sCr and serum cystatin C (sCysC) criteria was not significantly different. Percentage increment of sCr (>150%) from baseline was higher than sCys (<50%) at 24 hours post-ingestion. Urinary markers (Albumin, KIM – 1 and clusterin) demonstrated excellent to moderate diagnostic performance (AUC-ROC: Albumin 0.98, clusterin 0.86, KIM – 1 0.83) at Cmax24 (maximum biomarker concentration obtained during 24 hours).

Conclusion: Urinary albumin, clusterin and KIM – 1 diagnosed AKI following self poisoning with CWP.

Keywords: acute kidney injury, biomarker, Oxalic acid, Potassium permanganate