

## SUCCESSFUL MANAGEMENT OF A CAT WITH ACUTE KIDNEY INJURY DUE TO SUSPECTED ETHYLENE GLYCOL INTOXICATION

### Background

Ethylene glycol (EG) intoxication can lead to acute kidney injury (AKI) in dogs and cats. After absorption, the main metabolite, oxalic acid, binds to calcium and forms calcium oxalate crystals, which accumulate in the kidneys. After development of azotemia the prognosis is usually guarded to poor.

### Case description

A 6-year-old, 5.6 kg, male neutered domestic shorthair cat was referred for hemodialysis with oliguria and increasing creatinine levels despite intravenous fluid therapy. The cat had confirmed access to antifreeze within a suitable time frame, but ingestion had not been witnessed. Initial examination revealed hypothermia (37.8°C), moderate overhydration, painful kidneys, urine production of 1 mL/Kg/h, and severe azotemia (creatinine 2,034 µmol/L [0–169 µmol/L]; urea 98 mmol/L [5–11 mmol/L]). Diagnosis of EG-induced AKI was based on history, calcium oxalate monohydrate crystals in the urine and a hyperechoic inner cortex and medulla. Intermittent hemodialysis (IHD) was initiated and continued for 10 sessions over a 16-day period with a Fresenius 4008 platform equipped with pediatric tubing, FXpaed dialyzer and heparin anticoagulation.

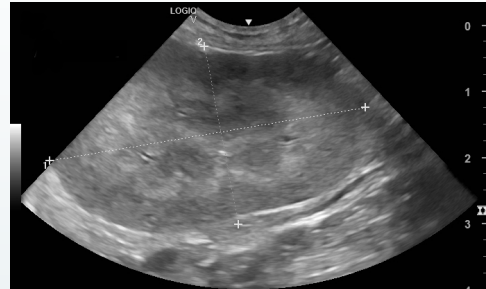


Figure 1: Ultrasound of left kidney on the day of presentation. Notice the hyperechoic inner cortex and medulla.

IHD sessions lasted 4-5 hours and resulted in a processed blood volume of 2.7-6.2 L. Monitoring consisted of non-invasive blood pressure, ECG and pulse oximetry. During 7 IHD sessions, bradycardia, mydriasis, panting and vocalization as signs of dialysis disequilibrium (DD) were observed and controlled with mannitol, hypertonic saline and reduction of blood flow.



Figure 2: The cat with suspected ethylene glycol intoxication relaxing after dialysis.

Thus, hypertonic saline was administered every 30 minutes to reduce the risk of DD. Additionally, a total of 4 blood transfusions were necessary, due to decreasing hematocrit despite darbepoetin therapy. When urine production started to increase on day 18, fluid therapy was initiated. The cat was discharged after 42 days with a creatinine of 340 µmol/L. Ten weeks after discharge, serum creatinine had further decreased to 196 µmol/L.

### Clinical relevance

Despite a generally poor prognosis, cats can survive EG intoxication even with severe azotemia, if urine production is still present. This requires highly motivated owners and intensive treatment including IHD and blood transfusions over a period of several weeks.

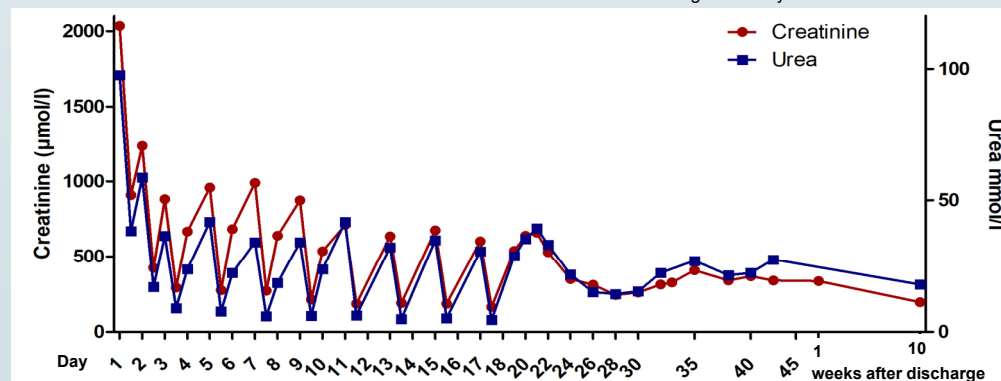


Figure 3: Serum creatinine concentrations (µmol/L) over the course of time.

