Ethylene glycol (EG) toxicity
Condensed Version

Presentation: ALL animals susceptible, CATS most fatal, DOGS most common

Clinical signs: Ataxia, PU/PD, depression, vomiting, tachycardia, lethargy, oliguria, dehydration, seizures

Test of choice:
- **REACT**™ ethylene glycol test kit
- Serum osmolality: Requires colloid osmometer
  - > 20 mOsm/kg strongly suggestive
- Azotemia, hyperglycemia, hypo- or hypercalcemia, hyperphosphatemia, high anion gap (> 25 mEq/L) metabolic acidosis
- Monohydrate calcium oxalate crystaluria
- **Ultrasonography** – increased renal cortical echogenicity at 4-6 hours. If anuria, halo effect = grave prognosis

Rx of choice:
- Supportive care (IV fluids, NaBicarb CRI)
- Decontaminate - Induce vomiting, give activated charcoal
- **Prevent metabolism of ethylene glycol** into toxic metabolites
  - Give **Fomepizole** (inhibits alcohol dehydrogenase)
  - Or **Ethanol** (competes with ethylene glycol for alcohol dehydrogenase)
- Hemodialysis or peritoneal dialysis – only option for pregnant animals

Pearls: “…any patient suspected of consuming EG should be tested and decontaminated unless/until exposure has been ruled out; empirical treatment with fomepizole or ethanol is indicated if the index of suspicion is high and a confirmatory test is not available in time.”
  
  Cote, Clin Vet Advisor, Dog and Cat. 2<sup>nd</sup> ed. pp. 369-71

Classic Question(s)

You suspect EG toxicity in a very sick cat but do not have a REACT™ test kit or the means to measure serum osmolality. What are the most appropriate next steps?

Describe the treatment of ethylene glycol toxicity in dogs and cats. What specific mechanisms are used to prevent metabolism of ethylene glycol?

What type of urinary crystals are observed in dogs & cats with ethylene glycol toxicity?

Name the hepatic enzyme responsible for converting ethylene glycol to its toxic metabolites?