

Near Fatal Intentional Ibuprofen Ingestion in a Pediatric Patient Treated with Renal Replacement Therapy

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INTRODUCTION

- Ibuprofen is a common household medication and accounts for 53,000 single agent pediatric overdoses annually.
- Life-threatening toxicity can occur with ingestions greater than 400 mg/kg
- We highlight a case of an 11-year-old patient who presented to the ED after a massive intentional Ibuprofen overdose with severe encephalopathy, anion gap metabolic acidosis, hypothermia, and acute kidney injury (AKI).



CASE PRESENTATION

- An 11-year old female with a history of depression presented by EMS with a chief complaint of altered mental status, nausea, and vomiting.
- Approximately 45 min prior to arrival, parents noticed patient stumbling to the bathroom.
- An empty bottle of ibuprofen was found near the patient's bed and was reported to be "half full" prior. The estimated amount of ibuprofen ingested was approximately 25,000 mg.
- The patient's initial GCS was 8, she was unable to follow commands, with tachycardia into the 140s-160s, hypothermia (35.5) but normotensive.
- While obtaining IV access and laboratory studies, the patient had a large amount of pink, frothy emesis and she was intubated to protect her airway.
- After successful intubation, labs revealed a pH of 7.27, pCO₂ 51 mm Hg, HCO₃ 23.6 mEq/L, and potassium of 5.4 mEq/L.
- CXR was without significant evidence of aspiration and EKG revealed a sinus tachycardia (Figure).
- Patient was placed on Versed drip for sedation as well as seizure prophylaxis and she was admitted to the PICU for further treatment.

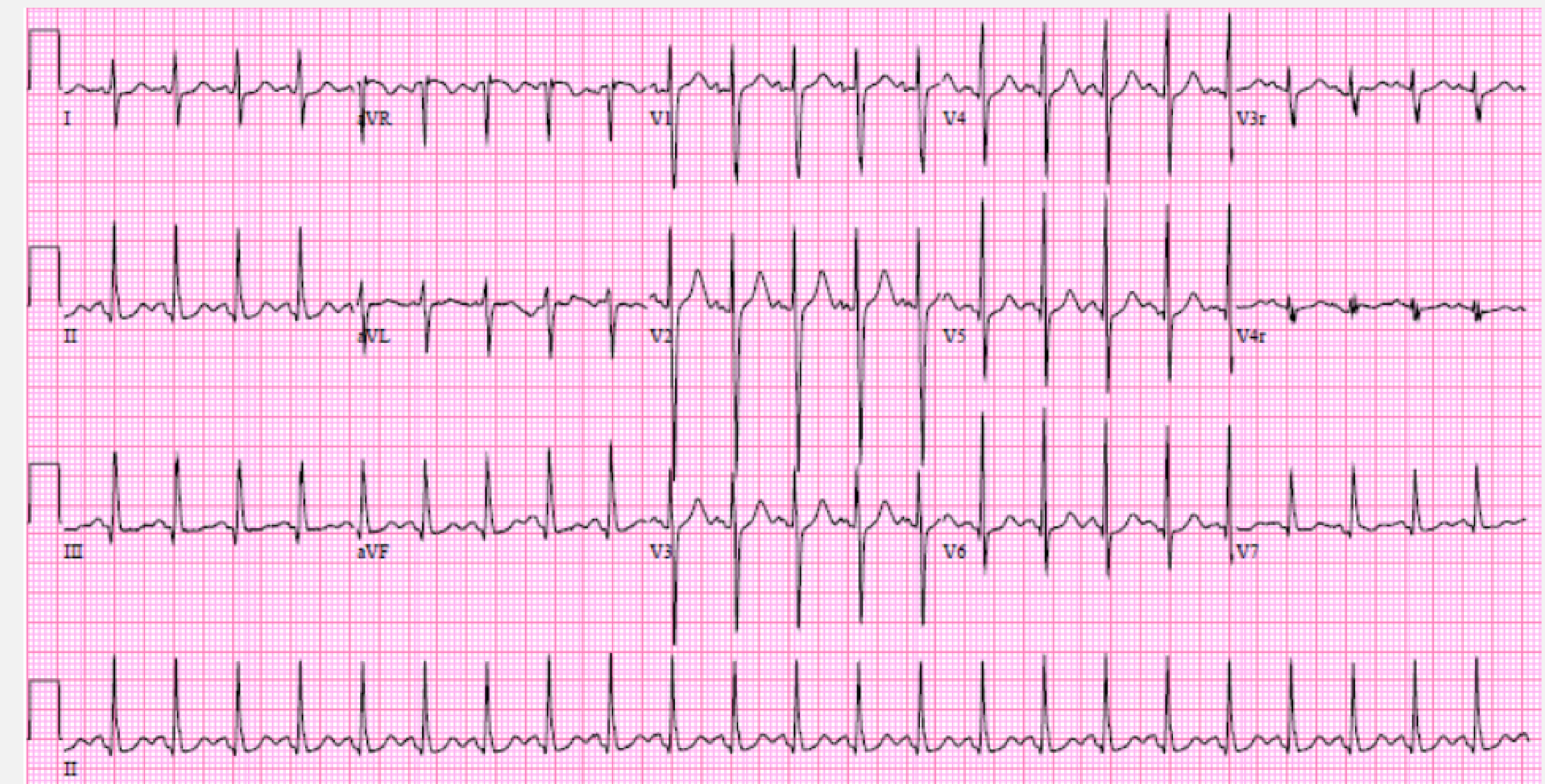
INTERVENTION

- In the PICU, laboratory studies demonstrated a worsening acidosis with pH of 7.23, HCO₃ 17 mEq/L, anion gap of 20, lactic acid of 5.0 mmol/L, and AKI with Cr at 0.83 mg/dL (initially 0.61 in ED).
- Ibuprofen was the only substance identified on a comprehensive blood drug screen. The estimated Ibuprofen dose ingested was approximately 340 mg/kg.
- She was extubated on hospital day one and was discharged on hospital day two to an inpatient psychiatric facility without neurologic or other physiologic consequences.
- The patient reported no previous suicide attempts or self-harm but had increasing ideations due to recent psychological stressors at home and school.

DISCUSSION

- Symptoms of acute ibuprofen are rare, but when present, usually take place within four hours of ingestion.
- Mild ingestions do not require any laboratory studies and most patients can be safely discharged home after 4-6 hours of observation.
- Furthermore, Ibuprofen levels are usually not readily available, do not correlate with clinical toxicity, and are therefore not recommended during workup.
- When history dictates, additional labs including Tylenol/ASA levels and drug screens should be ordered.
- Other than IV fluids and supportive care, severe overdoses have been treated with hemodialysis for acute renal failure and ECMO.
- Although this patient did not ingest the 400 mg/kg toxic dose of ibuprofen, she still exhibited features of a toxic overdose to include metabolic acidosis, hypothermia, AKI, nausea/vomiting, and severe encephalopathy requiring intubation for airway protection.
- Fortunately, her metabolic derangements were short-lived with adequate IV fluid resuscitation and did not suffer from prolonged or permanent neurological, gastrointestinal, or renal sequelae which seems to be consistent with the recovery described in other case reports.

Figure. Sinus tachycardia without interval abnormalities (QTC 467).



CONCLUSIONS

- Ibuprofen is a common medication in United States households which increases its risk as a culprit in cases of unintentional or intentional medication overdoses.
- While co-ingestants should be considered and treated when suspicion are high, Ibuprofen alone can cause profound encephalopathy in toxic overdoses and can make initial evaluation confusing to treating clinicians.
- Physicians should be ready to recognize, treat, and predict the physiological consequences of toxic and non-toxic ibuprofen overdoses.