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Human toxicity following an inhalational exposure to Transport® Mikron™ (acetamiprid and bifenthrin) insecticide

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Background: Transport® Mikron™ is a novel microemultion insecticide spray comprised of acetamiprid and biefnthrin; a neonicotinoid and a pyrethroid, respectively. No data exists for this product regarding human toxicity. Acetamiprid acts as a selective nicotinic acetylcholine receptor agonist. Bifenthrin exerts its effect as a voltage-gated sodium channel-opener. We present a case of human toxicity following a prolonged inhalational exposure to acetamiprid and bifenthrin.
Case report: A 67 year old female presents to the Emergency Department (ED) following a 10 hour inhalational exposure to 5% acetamiprid and 6% bifenthrin that had been sprayed in her house by an exterminator. She presented with profuse diarrhea, vomiting, urination, and leg weakness. On exam she had diffuse muscle fasciculations with 4/5 muscle strength in her lower extremities, a disconjugate gaze, and a confused mental status. Laboratory analysis was significant for a sodium of 121 mmol/L, potassium 3.0 mmol/L, chloride of 86 mmol/L, HCO3 of 18 mmol/L, and calcium of 7.8 mmol/L. The patient's initial creatinine kinase (CK) was 1648 U/L, and peaked the following day at 2561 U/L. She received 15 mg intravenous diazepam to manage her fasiculations. Her gastrointestinal and electrolyte abnormalities resolved within 36 hours, and her neurologic symptoms resolved within 48 hrs. Ultimately, the patient was discharged home on hospital day 3. We were unable to obtain xenobiotic levels.
Conclusion: We present the first case report of human toxicity associated with exposure to acetamiprid and bifenthrin. Mechanistically, we attribute the nicotinic symptoms to the acetamiprid component. Management of this toxicity includes IV fluids, electrolyte repletion, and benzodiazepines. Providers should monitor CK levels in patients exhibiting muscle fasciculations, and anticipate symptom resolution with supportive care alone.