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Rhabdomyolysis in a Patient with Polysubstance Use Disorder A Case Report of Intentional Caffeine Intoxication Revised

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Background: Caffeine is one of the most widely consumed substances globally, found in various foods, drinks, and supplements. The FDA recommends a maximum daily intake of 400mg for most adults to avoid negative side effects. This case report examines caffeine intoxication in the context of polysubstance use disorder and discusses a rare consequence: rhabdomyolysis . Rhabdomyolysis is when muscle cells break down and release proteins like creatine kinase(CK) and myoglobin and electrocytes into the blood stream. These proteins can be detected in the blood or urine, where elevated levels CK levels and myoglobin presence with lack of RBCs in the urine are indicative of rhabdomyolysis.

Case Presentation: A 40-year-old white male presented to the emergency department nine hours after ingesting 16 205mg caffeine tablets, totaling 3.3g. He admitted to taking them that morning to simulate the effects of methamphetamine. One hour later, he was feeling nausea and endorsed vomiting, diarrhea, and twitching. The patient's medical history was significant for polysubstance use disorder including methamphetamine and opioids, schizoaffective disorder bipolar subtype, untreated Hepatitis C, a previous suicide attempt, and multiple detoxification hospital stays. Two days before admission, he was released from jail where he was maintained on methadone 40mg for his 30-day jail sentence until release. Examination upon arrival to the ED revealed an anxious patient with a resting tremor who was orientated to person, place, and time who denied hallucinations or suicidal ideation. Laboratory data was consistent with rhabdomyolysis, with serum levels of total CK 811 U/L (normal 30-233 u/L), potassium 3.4 mg/dl (normal 3.5-5.1mg/dl), and myoglobin 388 ng/ml (normal 0-90ng/ml) . The toxicology panel was positive for methadone and cannabinoid. During his stay, he was administered fluids and medications including lorazepam and ondansetron for agitation and nausea. He was able to receive one dose of methadone on Day 2 of admission, but the patient requested to leave against medical advice (AMA) later that evening. The patient was noted to be restless, agitated, and anxious. Despite discussing the risks such as electrolyte abnormalities affecting various organs, withdrawal from methadone, and long-term damage of rhabdomyolysis, he left AMA.

Conclusion: This case report underscores the complexity of treating polysubstance use disorder due to stigmatization, difficulty in compliance and treatment, and toxic effects on different organ systems, and highlights a potential adverse effect of caffeine intoxication, specifically non-traumatic rhabdomyolysis. It presents the first documented instance of a patient using caffeine to mimic the effects of methamphetamine while also being treated with methadone for opioid use disorder. This report also demonstrates that rhabdomyolysis can occur after ingesting 3.3 grams of caffeine.

Keywords: Caffeine, Rhabdomyolysis, Opioid Use Disorder, Intoxification

