



K65 Accidental Acute Combined Drug Toxicity Involving Heroin and Fentanyl in a 10-Year-Old Child

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Learning Overview: The goal of this presentation is to describe the circumstances and postmortem toxicological findings of a case involving an accidental acute heroin and fentanyl overdose in a 10-year-old child.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by increasing awareness of the severity of the national opioid epidemic.

A 10-year-old Black male was found unresponsive at home by his mother, lying facedown on a couch in cardiac arrest. Emergency medical services responded to the scene and initiated Cardiopulmonary Resuscitation (CPR). The decedent exhibited trismus, resulting in the administration of 10mg of midazolam in order to secure an airway. He was transported via ambulance to the emergency room but was pronounced dead shortly after arrival. Naloxone was never administered, most likely due to the decedent's age and lack of circumstantial evidence at the scene to suggest opioid abuse. According to the decedent's uncle, he had spent the day swimming with his family at the community pool and was observed awake and alert an hour before being discovered unresponsive by his mother. He had eaten a snack, vomited, and sat down on the couch to watch television.

At autopsy, the medical examiner noted that the decedent had aspirated his gastric contents and exhibited pulmonary congestion and cerebral edema with no other remarkable findings. Central and peripheral blood, vitreous humor, and total gastric content were collected and submitted for toxicological analysis. Comprehensive toxicology testing was performed, including a volatiles screen, a 5-assay Enzyme-Linked Immuno-Sorbent Assay (ELISA) screen, and a blood drug screen by both Gas Chromatography/Mass Spectrometry (GC/MS) and Liquid Chromatography/Ion Trap/Mass Spectrometry (LC/Ion Trap/MSⁿ). Morphine, 6-acetylmorphine, codeine, fentanyl, and midazolam were identified in the decedent's peripheral blood and were quantified by Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). 6-acetylmorphine and fentanyl were confirmed in the decedent's vitreous humor and were also quantified in the decedent's gastric content. Postmortem concentrations of detected analytes were as follows:

Table 1: Postmortem Concentrations of Detected Analytes

Analyte	Specimen	Concentration
Morphine	Blood – Iliac Vein	0.015mg/L
6-Acetylmorphine	Blood – Iliac Vein	<1.0ng/mL
	Gastric Content	<1.0ng/mL
Codeine	Blood – Iliac Vein	<0.010mg/L
Fentanyl	Blood – Iliac Vein	15.5ng/mL
	Gastric Content	6.5ng total
Midazolam	Blood – Iliac Vein	0.100mg/L

Based upon the autopsy results and the toxicology findings, the medical examiner determined the cause of death to be an acute combined drug toxicity involving heroin and fentanyl. The manner of death was ruled an accident. Although the media speculated that the decedent found the drugs either at the pool facility, on his way home, or in his home, video footage was obtained showing the decedent acting normally while walking to his house from the pool facility, and law enforcement concluded that there was no reason to believe the drugs were in the house. Despite the extensive investigation, little to no additional information was revealed regarding how and where the decedent came in contact with heroin and fentanyl. This case demonstrates the reach of the national opioid epidemic and that victims can come from all different demographics.

Fentanyl, Heroin, Postmortem