G113 Death of a Bodybuilder: A Case Report of Mixed Drug Overdose With Lethal Gamma- Hydroxybutyrate Level

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After attending this presentation, attendees will learn an approach to evaluation of a multi-drug overdose primarily due to gamma- hydroxybutyrate (GHB) with complex history and presentation; and, be able to recognize the symptoms and signs of GHB poisoning when combined with lower levels of multiple other drugs. Consideration of the changes in drug levels possible with decomposition; and be able to evaluate the role of confounding causes of death such as the possibility of heat-related death in an enclosed car in a parking lot in the sun.

This presentation will impact the forensic science community by assisting attendees to be able to recognize the signs and symptoms of gamma-hydroxybutyrate use, abuse, and overdose, particularly when exacerbated by the presence of multiple other drugs; compare to other drug signs and symptoms when assessing a multi-drug overdose; and evaluate the confounding effect of perimortem heat exposure with onset of decomposition.

A 29-year-old male bodybuilder with a history of utilizing gamma- hydroxybutyrate (GHB or GBH) for its anabolic effect, was found dead in the passenger seat of a car in an airport short-term parking lot, at 2:00 p.m. during the month of May. The windows of the car were closed. Although it had been slightly more than seven hours since he was last seen alive, the decedent was in the early stages of decomposition.

The decedent had mentioned use of GHB to his employer as an event that occurred in the past. His father was also aware of his GHB abuse, but believed it to have ended. In April, a drug screening had not found any drugs in his system. He was known to have an intermittent problem with alcohol abuse and had recently signed up for rehab. He had sustained a significant fall not long before his death, for which he was treated and released; he had multiple healing injuries. He was also on regularly prescribed medications for a recent problem with sleep. These medications included zolpidem, alprazolam, and mixed amphetamine salts.

The week before his death, he hosted a friend from out of state, who was a physician. The night before death, which was also the last night of his friend's stay, the two of them went to a party which lasted for most of the night. In the early morning hours, they had an argument. The victim called another friend asking for intervention; this friend noted that he seemed somewhat groggy on the phone. The other friend was not able to provide intervention. A neighbor saw the victim's car depart in the early morning with two men in it, but could not identify them through the windows. It is possible that the friend who needed to go to the airport was driving the car, with the victim in the passenger's seat, where he was found dead more than seven hours later.

At autopsy, he was well developed and very muscular (5'8", 236 lbs; BMI = 35.9). The BMI classification into "obese" is likely incorrect as the body fat percentage was probably low, based on body habitus. The body showed evidence of early decomposition, with rigor passed, livor fixed in a pattern consistent with his position slumped forward in his seat, and extensive skin slip along the upper back. Small amounts of decomposition fluid in the body cavities were found on internal examination, and tissues were moderately autolyzed on histologic examination.

The only autopsy findings besides decomposition were healing injuries of the face, hands, toes, heels, and left flank, which were nonsignificant in death; and minor heart hypertrophy, which was probably physiologic (exercise-related), as he was known to do extensive exercising, and there were no hypertensive changes to the myocardium on histology. Of note, the gastric mucosa was free of small hemorrhages.

Toxicology provided the answer. There was present in his system more than enough GHB to be lethal. There were also small amounts of four other drugs, amphetamine (likely due to Adderall), citalopram (prescribed for depression), diphenhydramine (over-the-counter antihistamine, sometimes used as a sleep aid), and trazodone (another antidepressant). These four drugs likely contributed to death and likely contributed by making him sleepy, so that he did not exit the car nor telephone to seek help. Amphetamine likely made him more vulnerable to a cardiac arrhythmia in the setting of a lethal dose of GHB causing respiratory depression. Of note, no alcohol was present. The role of perimortem heat in accelerating his death could not be definitively determined by autopsy; this was a point of considerable significance to the family, who were of the opinion that the physician friend was culpable for allowing the groggy victim to remain in the car with the windows rolled up when it was time for him to catch his plane.

The time sequence of GHB intoxication, its effects in use, abuse, and overdose, and the likely mitigating or exacerbating effects of the other drugs present, are considered in relation to the findings in this case of fatal GHB overdose in a setting of multidrug use in a decedent who was otherwise probably healthier than the average person.

Gamma-Hydroxybutyrate, Perimortem Heat Exposure, Multi-Drug Overdose

 ** Presenting Author*