



Pathology Biology Section – 2003

G65 To Rave or Not to Rave: A Report of Three Fatal GHB Poisonings

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Gamma-hydroxybutyrate (GHB) has surfaced in the “rave” and “club” scene as a recreational drug, which is believed by users to be safe. There are increasing reports of near fatal and the occasional fatal outcomes of the use of this drug. It is simple to make, has euphoric effects, and has associated amnesiac effects, which make it an ideal candidate for use in the arena of date rape.

This report is of three deaths where GHB was the primary or sole toxic agent. In one case, death resulted from a suicidal consumption of drug where polypharmacology played a role. In the second case, hypothermia was a significant contributor to the cause of death. The third fatal case represents an accidental, isolated drug poisoning.

All blood samples obtained and analyzed were autopsy or admission blood and stored in sodium fluoride (NaF). Analyses were by liquid chromatography in the laboratory of Hospital for Sick Children in Toronto for Cases 1 and 2 and in the Virginia Division of Forensic Sciences in Case 3.

Results identified the levels of GHB to be: Case 1: 690 mg/L, Case 2: 55 mg/L, Case 3: 269 mg/L.

While GHB may be produced postmortem and may also be identified as a normal metabolite especially in the central nervous system, levels detected in these three decedents were well into the fatal ranges. The overlap with survivable intoxication is large. Why some individuals die with lower concentrations is unclear. Combination with other drugs or environmental conditions as in Case 1 and 2 respectively may have resulted in enhanced toxicity.

While GHB compared to other illicit drugs such as cocaine, opiates, or alcohol appears to be less serious to users, the clinical presentation of toxicity including death needs to be recognized by clinicians involved in the care of these patients. Pathologists performing forensic autopsies need to be aware of the use of this drug by this group of at risk individuals.

Samples from autopsy with subsequent testing of well preserved blood (in NaF), urine, and tissue needs to be processed in a laboratory geared to the identification of this drug. Interpretation of results must bear in mind the natural production of GHB for correct conclusions to be reached.

Lastly the dangers and legal implications of the use of GHB in date rape situations need to be remembered.

GHB, Fatality, Rave