

H9 The Recent Outbreak of Brorphine Use in Cook County, Illinois

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Learning Overview: After attending this presentation, attendees will have better knowledge regarding the epidemiology, the mechanism of action, and the toxicological features of the emergent synthetic opioid brorphine.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by presenting a review of cases from a large metropolitan area where brorphine was detected in the blood specimens.

Brorphine is a novel synthetic opioid that causes psychoactive effects similar to heroin, fentanyl, and other opioids. It is structurally similar to fentanyl but different from previously identified fentanyl analogs. Synthetic opioids can be found in powder or tablet form and may be mixed with other psychoactive substances, thus increasing the risk of severe complications and even death.

A rise in the use of brorphine has been observed in Cook County IL, in the recent period. In the present study, case files from the electronic database of the Cook County Medical Examiner's Office in Chicago, IL, were reviewed from June 2020 to the present for deaths due to acute intoxication in which brorphine was identified in the postmortem samples. The following keywords were searched in the "primary cause of death" field: "combined," "drug," "intoxication," "toxicity," and "brorphine." No limits regarding age, race, and sex were imposed. Only cases in which investigative and full National Medical Services (NMS) toxicologic reports were available were included. A urine screening test for brorphine was performed in all cases. Positive cases were then confirmed by Liquid Chromatography/quadrupole Time-Of-Flight/Mass Spectrometry (LC/qTOF/MS) and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). The detected brorphine concentrations in blood specimens ranged from 0.5 to 8.1ng/mL.

The number of deaths due to synthetic opioids is rapidly increasing in the United States. Among these, brorphine use is rapidly increasing, and only little information can be found in the literature. This study adds valuable information that can help determine the current scenario of deaths due to acute toxicity in which brorphine is involved. According to the literature, as of mid-July 2020, brorphine was confirmed in blood specimens associated with fatalities in the United States and Europe. It is believed that it can cause respiratory depression alone or combined with other synthetic opioids, leading to death.

Final results, including demographic comparisons, and toxicological data, will be presented to the attendees.

Brorphine, Toxicology, Death