K63 Morbidity Involving the Hallucinogenic Designer Amine 2C-I: Case Report

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After attending this presentation, attendees will be familiar with a new class of hallucinogenic synthetic amines and a severe complication that occurred in one case involving 2C-I.

This presentation will impact the forensic community and/or humanity by familiarizing attendees with a new class of hallucinogenic drugs and one possible adverse effect of these drugs. It will also describe a successful method for detecting these designer amines.

The 2C* family of designer amines are derivatives of the natural compound b-phenethylamine. They contain methoxy groups in positions 2 and 5 and a hydrophobic 4-substituent (iodine in 2C-I, bromine in 2C-B, etc). The name "2C" comes from the two carbon atoms that separate the amine from the phenyl ring. The 2C* drugs have hallucinogenic properties and are sometimes incorrectly sold as MDMA. Little is known about the pharmacological and toxicological properties of the 2C* drugs, but it is known that they show affinity to type-2 serotonin ($5\text{-}HT_2$) receptors, acting as agonists or antagonists similarly to other hallucinogenic drugs.

In an adverse event involving one of the 2C* drugs, a 39-year-old woman presented to the emergency department on New Years day after a night of partying with diminishing mental status, agitation, hypothermia, hypertension, vasoconstriction, and hemorrhagic stroke. She was unresponsive and had extensor posturing. Her friends provided a history of MDMA (ecstacy) and 2C-I ingestion, the latter of which the patient reportedly synthesized at home using a recipe from the internet. A high performance liquid chromatography (HPLC) rapid UV scanning method (BioRad REMEDi) could not detect MDMA or MDA due to an interfering substance. However, a method using liquid chromatography tandem mass spectrometry (LC-MS/MS; Applied Biosystems 3200 QTrap) with selected reaction monitoring followed by a linear ion trap full scan was able to detect and identify both MDA and 2C-I in the patient's urine. MDA is a minor metabolite of MDMA and also an independently used drug. The absence of MDMA suggests that the patient ingested MDA alone and not MDMA, as was stated in the history. A head CT scan revealed that the patient had a congenital cerebrovascular abnormality (Moyamoya) that put her at a higher risk for stroke. Hypertension and stroke following MDMA ingestion has been well described. Similar reports are not available for MDA and 2C-I, perhaps because such exposures are less common and/or less often identified. The patient had an extended stay in the ICU, and six months later could follow commands but not speak. Despite these modest improvements in mental status, the patient remains severely disabled and requires total care.

In conclusion, associating clinical syndromes with use of illicit drugs by relying solely on self reporting or that of family members or involved by- standers may not be reliable, nor is laboratory analysis that does not address a broad spectrum of designer amines. This is potentially the first adverse event reported for 2C-I, though the possibility of 2C-I being coincident to MDA toxicity will also be discussed.

2C-I, MDA, LCMS

 ** Presenting Author*