K11   Mixed Prescription Drug Death

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After attending this presentation, attendees will become aware of the effects of mixing prescription drugs.

This presentation will impact the forensic community by increasing the awareness of the role of prescription drugs in deaths.

This laboratory has been detecting an increase in the prevalence of multiple prescribed opioid compounds in drug related postmortem cases. In most of our cases, the decedents have histories of addiction to oxycontin and xanax.

A case of postmortem analysis will be presented of a 36-year-old single white male who consumed Oxycontin, Xanax, and Actiq (fentanyl lollipop). The decedent had morbid obesity (BMI of 46) with a long history of lower back pain for at least six years. His clinical work-up for his lower back pain was inconclusive, although a spinal surgery for disc fusion was suggested at one point. He was known to visit various pain clinics and acquired prescription Actiq for at least 18 months. According to multiple co-workers, he demonstrated a typical pattern of opioid compound addition which interfered with his job performance significantly. During his last year, he was admitted twice at a local rehabilitation center for his addition to Oxycontin and Xanax. Of note, per multiple co-workers and family members, the decedent had no prior suicidal ideation or attempt.

The decedent was discovered in his residence with early decomposition after failing to report to work as an accountant. Scene investigation found a fentanyl lollipop inside his shirt pocket as well as crushed pill fragments scattered on the floor and table. Multiple bottles of prescription oxycodone and alprazolam, some empty and others near- full, were located at the scene. Autopsy revealed hypertensive cardiovascular disease and focal bronchopneumonia, and both were not considered to be medically significant. Comprehensive analysis was performed on various postmortem tissues, including femoral blood, urine, stomach content and liver.

All submitted tissues were subject to standard analytical screening and mass spectrometry confirmation protocols. Positive findings of the analysis are as follows:

Blood

Oxycodone   1.86 mg/L
Oxymorphone   0.072 mg/L
Fentanyl 64 mcg/L

Liver

Oxycodone   1.83 mg/Kg
Oxymorphone   0.12 mg/Kg
Fentanyl 96 mcg/Kg

Stomach Contents
Total weight received: 244 gms

Oxycodone   147.30 mg/Kg
Oxymorphone   0.62 mg/Kg
Fentanyl 3648 mcg/Kg

Urine

Oxycodone   5.82 mg/L
Oxymorphone   0.36 mg/L
Fentanyl 890 mcg/L
a-hydroxyalprazolam   1.60 mg/L
Alprazolam   0.35 mg/L

biomarker for cyanide so this technique will be able to be applied to cold cases. For forensic casework, a stable and quantifiable marker is needed to determine an accurate level of exposure postmortem. This method will be able to be used in cold cases because ATCA is a stable metabolite that stays in the body after

the initial dose of cyanide is depleted.

Endogenous ATCA is always present in the body in low quantity originated from dietary intake of cyanide, smoking, fires or the normal metabolism of amino acids. A selective and sensitive analytical method is needed to determine the endogenous level of ATCA or identify cyanide poisoning. The use of ATCA as a biomarker for cyanide poisoning is promising due to its stability at ambient, as well as freezing temperatures and its production is directly related to cyanide exposure.

The molecularly imprinted polymers (MIPs) are made on the surface of a silica cylinder to serve as a selective stir bar sorption extraction (MISBSE) device. From an external calibration, the capacity of one MISBSE for ATCA was about 31 ng. The data showed that 700 rpm was the optimum stir speed and that sorption plateau was reached after 30 minutes of extraction time. Under the optimal extraction conditions, the MISBSE could selectively extract ATCA from urine samples. The MISBSE has improved the ability to extract lower concentrations of ATCA. Combining MISBSE with Liquid Chromatography Mass Spectrometry (LC/MS/MS), ATCA was detected
Note: Alprazolam and its metabolite were only detected in the urine specimen.

The medical examiner ruled the cause as multiple drug intoxication and manner as accidental.

Oxycodone, Fentanyl, Prescription