K21 Death Caused by Fentanyl Smoking

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After attending this presentation, attendees will have greater awareness that smoking should be considered as a potential route of administration in cases of fatal fentanyl intoxication.

This presentation will impact the forensic science community by informing attendees of an uncommon route of administration for a drug that has become increasingly important in drug overdose deaths.

Fentanyl is a highly efficacious synthetic opioid analgesic marketed under a variety of proprietary names. Fentanyl is commonly implicated in deaths attributed to recreational drug abuse in West Virginia; a state which currently endures the highest per capita rate of opioid fatality in the U.S. Fentanyl is clinically employed in combination with other analgesics for post-surgical pain control as well as in the treatment of chronic pain. When employed for outpatient chronic pain control, fentanyl is characteristically prescribed as a transdermal patch preparation. It is in this form that fentanyl is often diverted and fatally abused, with patch mastication and/or ingestion as well-described patterns of drug misuse. A case will be reported of fatal recreational fentanyl abuse by a method of drug intake rarely described in forensic literature: smoking of fentanyl patch material.

Authorities were notified when two unresponsive individuals were discovered in a parked car. The man in the driver's seat was pronounced dead on the scene. The investigating officer noted a piece of singed aluminum foil in the decedent's lap. The foil was retained as evidence and the decedent was transported to the medical examiner's office.

The body was that of a 33-year-old white male with a height of 74.5 inches and weight of 223 lbs. A complete autopsy revealed marked pulmonary edema but no apparent anatomical cause of death. Review of the decedent's medical records failed to demonstrate current or prior prescription access to fentanyl or other opioid pharmaceuticals. Specimens submitted for toxicological analysis included subclavian blood, gastric contents, urine, liver, and vitreous humor.

The following tests were performed by the toxicology laboratory: blood alcohol by GC-FID, blood precipitate immunoassay for drugs of abuse (EMIT), and acid/neutral and alkaline drug screens of blood by GC-MS. No alcohol or drugs were detected by these methods. A directed assay was then performed for fentanyl using liquid-liquid extraction of subclavian blood. Analysis was performed on an HP 1100 series LC-MSD using a Zorbax SB-CN column, APCI+ ionization, and data collection in SIM mode.

Fentanyl was identified and quantitated in the blood at 9.3 ng/mL, a concentration at which fatal toxicity has been reported. Norfentanyl, an

active metabolite, was not detected suggesting rapid accumulation of lethal fentanyl blood levels and respiratory arrest. No commercial fentanyl preparations were present in the vehicle where the decedent was discovered; however, the piece of aluminum foil was analyzed and found to be positive for fentanyl with no other drugs detected. Cause of death, as determined by peer review, was the result of non-prescribed fentanyl abuse and the manner was accidental.

The majority of fatal overdoses involving fentanyl use in West Virginia occur in the setting of multiple drug toxicity. This case of fatal fentanyl intoxication in a 33-year-old man was unusual in that no other drugs or alcohol were detected and that smoking was concluded to be the route of administration.

Fentanyl, Smoking, Postmortem

 ** Presenting Author*