F21 Is the Medical Examiner's or Coroner's Official Cause of Death the Last Word?

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After attending this presentation, attendees will understand the importance of an effective evaluation of the circumstances surrounding a questioned death and the findings at autopsy.

This presentation will impact the forensic science community by describing four cases in which review of the evidence regarding questioned deaths — medical records, witness statements, the results of external and internal examinations at autopsy, and postmortem toxicology analyses — either supported or refuted the medical examiner's or coroner's official Cause Of Death (COD).

Case 1: Involved a subject who died while lying prone with a police officer's knee placed on his back. The Medical Examiner (ME) determined that the COD was cardiopulmonary arrest and mechanical asphyxia, and the manner of death was homicide although the toxicology findings included dextromethorphan at 2.0mg/L in blood. The decedent's heirs sued the city for wrongful death. The city attorney hired an ME from another state who opined that the subject died from respiratory arrest due to dextromethorphan toxicity, even though in the months prior to this event, the subject survived being admitted to various emergency departments after ingesting 30 tablets of a dextromethorphan over-the-counter preparation. A major weakness in the city's case was that the police officer's partner recorded the death event with his cellphone.

Case 2: Involved a subject who died one morning after injecting himself with heroin the evening before and ingesting methamphetamine the day before. At autopsy, signs of respiratory depression and arrest were present that are associated with death due to morphine (heroin) toxicity, including pulmonary edema in both lungs, lungs weighing >500g, and pulmonary vasculature congestion. Additionally, there were no signs of cardiovascular issues. Before the toxicology results were reported, a suspect — a methamphetamine dealer — was identified. The heroin dealer was never discovered. The toxicology results revealed methamphetamine at 0.70mg/L, amphetamine at 0.16mg/L, and free morphine at 0.05mg/L in the blood. The coroner opined that the COD was methamphetamine overdose. The suspect was then charged with murder for providing the lethal dose. Prior to trial, the coroner's COD opinion was challenged by a medical examiner and a toxicologist. On the very eve of trial, charges were dismissed.

Case 3: Involved a subject who was admitted into the hospital one evening with severe back pain. Multiple Central Nervous System (CNS) depressant medications were administered, including morphine, cyclobenzaprine, hydromorphone, lorazepam, and tizanidine. The next day, the patient appeared to be tolerating the drug regimen; however, the following morning he was found dead with a mouthful of emesis. Autopsy indicated bilateral congestive pulmonary edema, right lung weight of 1,050 grams, left lung weight of 980 grams, and a bladder filled with urine. Toxicology results revealed a free morphine level of 0.16mg/L and cyclobenzaprine level of 0.02mg/L in blood. The coroner ruled the COD was morphine toxicity and the heirs sued for wrongful death. The hospital disputed the coroner's finding, arguing that the medical personnel administered therapeutic doses of the medications.

Case 4: Involved a subject who suffered a serious injury at work, for which he was prescribed oxycodone. For at least six months, he abused prescriptions for oxycodone, during which time he demonstrated tolerance to the increased doses by engaging in a variety of normal activities. One morning he was found dead in bed. Autopsy showed that the right lung weighed 495 grams and the left lung weighed 465 grams. The upper airways were clear of debris and foreign material with normal-appearing mucosal surfaces. The urinary bladder contained 50 cubic centimeters of urine. The heart weighed 500 grams. There was 90% of focal non-calcified narrowing of the proximal left anterior descending coronary artery and 80% narrowing of the first and second diagonal coronary artery. The blood oxycodone level was 0.66mg/L. The ME initially concluded that the COD was atherosclerotic cardiovascular disease; however, after a visit from one of the heirs, the ME two months later changed the COD to oxycodone toxicity.

Cause of Death, Forensic Toxicology, Evidence Evaluation