K13 Oxycodone-Related Deaths in Delaware

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Attending this presentation will enable the participant to learn about: 1) the action of oxycodone; 2) a sensitive method for the analysis of oxycodone; and 3) the concentrations of oxycodone in postmortem specimens.

Oxycodone is a semisynthetic opioid analgesic derived from codeine that is indicated for the management of moderate to severe pain. Trade names for oxycodone containing preparations include Roxicodone, Percodan, Percocet, Roxicet, and Tylox. More recently, oxycodone has become available as a time release preparation (Oxycontin). The effects of oxycodone include euphoria, analgesia and sedation and it has a dependence liability similar to morphine. The typical adult dose (immediate release formulations) is 2.5-5 mg every 6 hours, although doses of 10-30 mg every four hours may be used for more severe pain. Extended release formulations are generally administered in doses of 10-80 mg every 12 hours. Therapeutic concentrations have been reported up to about 100 ng/mL.

The number of oxycodone-related deaths in Delaware has increased over the past 2 years. As a part of this study, blood and tissue specimens were analyzed for the oxycodone related deaths received from January 2001 through July 2002. Specimens were analyzed for oxycodone solid phase extraction (SPE) followed by gas chromatography-mass spectrometry. Briefly, the sample preparation procedure included deproteination, derivatization with hydroxylamine, SPE and derivatization with BSTFA. Quantitation was performed using a 6-point calibration curve with d3-oxycodone as the internal standard. The limit of quantitation for oxycodone was 20 ng/mL. The heart blood, peripheral blood and liver oxycodone concentrations from 8 of these cases are summarized in the table below.

Case 1: A 29-year-old white female with a history of spinal fusion reported to the ER in a confused, emotionally labile state that progressed to somnolence and a coma. She received medical clearance from the ER to be transferred to a psychiatric hospital. She remained comatose and was found dead in her bed the next morning at the psychiatric facility. Thirteen “OC 40” pills were recovered from her gastric contents.

Case 2: A 57-year-old white female was found dead in bed at home. She had an extensive cardiac history.

Case 3: A 42-year-old white male was found unresponsive on the kitchen floor after an evening of heavy drinking at a bar the night before. He reportedly was offering “Oxycontin” tablets to other patrons at the bar.

Case 4: A 45-year-old white male was found dead on a couch. He had a history of alcohol and cocaine abuse. No cause of death was determined at autopsy.

Case 5: A 29-year-old white male was found dead in bed after an evening of playing games and drinking. His history included a renal transplant 2 years earlier, hypertension and diabetes mellitus.

Case 6: A 59 black female was found unresponsive in bed. She had reportedly not been feeling well for 3 weeks and refused to go to the hospital. She had a history of Hepatitis C, cirrhosis and mental status changes.

Case 7: A 50-year-oldwhite female complained of shortness of breath prior to collapsing and becoming unresponsive. She had a history of obesity and hypertension.

Case 8: A 39-year-oldwhite male who was found dead in bed. He had a history of chronic pain and had been diagnosed with GuillainBarre neuropathy. His body was embalmed prior to examination.

The overlap between non-fatal and fatal oxycodone concentrations in the cases summarized above, as well as in additional oxycodonerelated cases received at the State of Delaware OCME, has made interpretation somewhat complex. However, these data suggest that low concentrations of oxycodone in combination with alcohol and/or other drugs can cause death. In addition, the analysis of peripheral blood and tissue specimens demonstrated that postmortem redistribution did occur in some of the oxycodone-related cases.

Oxycodone, Postmortem, Distribution

 ** Presenting Author*