K50 Levetiracetam (Keppra®) and Suicide

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After attending this presentation attendees will be educated on the effects of the drug levetiracetam (Keppra®) and will have explored its potential risk for suicide.

This presentation will impact the forensic science community by providing a detailed description of an anticonvulsant drug with relatively unknown toxicity. Only one case of drug overdose has been presented in the literature where the individual recovered with respiratory support. The North Carolina Office of the Chief Medical Examiner has two deaths from 2010 that are noted to have suicidal drug concentrations of levetiracetam.

Levetiracetam (Keppra®) is among the new anticonvulsant drugs that are replacing drugs such as carbamazepine, phenytoin, Phenobarbital, and valproic acid. Along with drugs such as topiramate, lamotrigene, and oxcarbazepine, the new drugs have been reported to have a more tolerable side-effect profile, better efficacy and an easier therapeutic maintenance. While the side-effect profile for levetiracetam has been good overall in comparison to classical anticonvulsants, there have been recognized psychiatric effects. The FDA revised the labeling of this drug in 2007 to include warnings regarding these potential behaviors. Individuals with prior psychiatric difficulties may be most at risk for possible mood changes, agitation, and thoughts of suicide.

A 48-year-old male was found dead on arrival, barricaded in his bedroom. Over thirty empty medication bottles surrounded the body. He was discovered with tape over his mouth and a suicide note in his pocket. The decedent had a past history of seizure disorder and multiple, attempted-suicidal, drug overdoses. An alkaline liquid-liquid extraction detected therapeutic levels of citalopram and cyclobenzaprine. Benzoylecgonine was detected after SPE. An extraction for acid/neutral compounds revealed elevated levetiracetam. The aorta and vena cava levetiracetam concentrations were 190 mg/L and 232 mg/L respectively.

A 56-year-old female was found dead in bed. She was last seen alive earlier that evening by her boyfriend. The decedent had several medical problems including diabetes mellitus, chronic pain, depression, and congestive heart failure requiring oxygen therapy. She was found with a broken oxygen concentrator, a bowl filled with pills, and a suicide note. The decedent had multiple prescriptions and was found with multiple drugs in her system including an elevated level of levetiracetam in the aorta blood at 35 mg/L and metaxalone at 26 mg/L.

The two cases mentioned above have added to knowledge of suicides involving levetiracetam and associated drug concentrations. While it is a known antiepileptic drug (AED), it has been studied in open-label trials for its potential to treat neuropathic pain and anxiety disorders. Because of levetiracetam's possible adverse psychiatric effects, it may be important to keep in mind the benefit-risk ratio of each patient during treatment with this medication.

Levetiracetam, Keppra, Suicide

 ** Presenting Author*