K43   Toxicology Result of Drivers of Fatal Motor Vehicle Accidents in Harris County, Texas, in 2011

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After attending this presentation, attendees will have relevant information about the involvement of illicit, prescription, and over-the-counter drugs in causing the majority of fatal traffic accidents. Attendees will learn the importance of extensive standardized testing of biological specimens for different classes of drugs in addition to alcohol.

This presentation will impact the forensic science community by raising awareness on the prevalence of fatal motor vehicle accidents caused by drugs alone with no alcohol involved. The involvement of drugs in fatal traffic accidents other than alcohol have not been adequately explored, partly due to lack of information in police training and most of the crime laboratories are neither mandated nor equipped to perform confirmation and quantitation of illicit, prescription, and over-the-counter drugs in biological specimens, especially blood. The other reason is the high cost of drug confirmation in biological specimens and the possibility of obtaining convictions based on only blood alcohol levels.

Driving under the influence of alcohol and drugs has been the main cause of fatal and non-fatal accidents for drivers and other occupants in the car, as well as pedestrians. In 2011, the medical examiner of the Harris County Institute of Forensic Sciences performed autopsies of 214 victims of fatal car crashes. All drivers of fatal motor vehicle accident cases were subject to alcohol screening and confirmation, nine-panel Enzyme-Linked Immuno-Sorbent Assay (ELISA) screens for drug of abuse, standard basic drug screen for prescription and over-the-counter drugs using Gas Chromatography/Mass Spectrometry (GC/MS), screens for 11 synthetic marijuana (Spice/k2) drugs, 8 methylcathinones (bath salt) drugs, and three hypnotic Z-drugs using Time-Of-Flight/Liquid Chromatography/Mass Spectrometry (TOF/LC/MS). All identified drugs by screening methods were subject to confirmation and quantitation by GC/MS, GC/MS/MS, and LC/MS/MS instruments. Out of 214 victims, 134 (63%) had ethanol and other drugs in their system. Out of 134 cases, 86 cases were positive for ethanol with quantitation result greater than 0.08gm/dl in 77 (89%) of cases and less than 0.08gm/dl in 9 (10.4 %) of cases. Out of 134 cases, 46 (34%) were positive for illicit, prescription, and over-the-counter drugs with no ethanol. Next to ethanol, the most common drug identified was marijuana in 30 (22%) of the cases with and without ethanol present. Ten (17%) of the cases had alprazolam, 9 (6.7%) cases had cocaine, 7 (8.9%) cases had hydrocodone, and 5 (3.7%) cases had PCP. The prevalence of alcohol and drugs among the deceased drivers' cases indicate alcohol and marijuana being the most common findings followed by benzodiazepines, opiates, cocaine, PCP, muscle relaxants, and other prescription drugs. Out of 134 drug-positive cases, 100 (74%) are male and 26% are female drivers, 63 (47%) are White, 48 (35%) are Hispanic, 27(20%) are Black, 3 (2%) are Asian and 2 (1.4%) are unknown race. The most common age group is in the range of 21 – 30 (35%), followed by 31 – 40 (20%), 41 – 50 (15%), 51 – 60 (17%), >60 (8.2%), <21 (11%). White male drivers, 21 – 30 years of age, are the most identified victims of fatal alcohol and drug related accidents.

The importance of screening and confirmation of illicit, prescription, and over-the-counter drugs in the biological specimen of motor vehicle accident victims is discussed.

Drugs, Driver, Fatality