NATIONAL TRANSPORTATION SAFETY BOARD

Office of Research and Engineering
Washington, DC

Medical Factual Report

June 21, 2022

Mary Pat McKay, MD, MPH
Chief Medical Officer

A. CRASH: HWY22FH004; North Las Vegas, NV

Date: January 29, 2022
Injuries: 9 Fatal; 1 seriously injured

B. GROUP IDENTIFICATION

No group was formed for the medical evaluation in this accident.

C. DETAILS OF INVESTIGATION

1. Purpose

   This investigation was performed to evaluate the deceased drivers for medical conditions, the use of medications/illicit drugs, and the presence of toxins.

2. Methods

   The autopsy reports and toxicology findings for the deceased, noncommercial drivers were reviewed. Relevant regulation and medical literature were reviewed as appropriate.

Dodge Challenger Driver

Autopsy

According to the limited external examination report issued by the Clark County Coroner/Medical Examiner, the cause of death for the 59 year old male driver was blunt force injuries and the manner of death was accident.

Toxicology

Toxicology tests performed by NMS Labs at the request of the pathologist identified nicotine and its metabolite cotinine (presumptive positive results); cocaine at 390 ng/ml and its metabolite benzoylecgonine at 2700 ng/ml; and phencyclidine (PCP) at 27 ng/ml in peripheral blood.

Toxicology testing performed by the FAA's Forensic Sciences Laboratory at the request of the NTSB identified cocaine at 394 ng/ml in peripheral blood and 150 ng/ml in liver tissue; its metabolite benzoylecgonine at 2056 ng/ml in peripheral blood and 4984 ng/ml in liver tissue; an additional metabolite, ecgonine methyl ester was identified in both peripheral blood and liver tissue. In addition, PCP was identified at 19 ng/ml in peripheral blood and at 520 ng/ml in liver tissue; gabapentin was identified at 255 ng/ml in peripheral blood and in liver tissue and dextromethorphan was also identified in both specimens.

Substance Descriptions

Nicotine is found in tobacco; cotinine is a metabolite. "Presumptive positive" means a screening test was performed without confirmatory testing.

Cocaine is available as a Schedule II controlled substance and is generally used medicinally in a dilute solution as a topical anesthetic. In its street forms as a powder or crystal, it is a powerful rapid-acting central nervous system stimulant that may be smoked, snorted, or injected. Cocaine almost immediately produces effects including euphoria, excitation, general arousal, dizziness, increased focus and alertness. At higher doses, effects may include psychosis, confusion, delusions, hallucination, fear, antisocial behavior and aggressiveness. These effects last about 15 to 30 minutes and subside over 1 to 2 hours. Late stage effects begin at about 2 hours and continue for several hours as the active drug is metabolized to inactive substances. These effects include depression, agitation, nervousness, drug craving, general central nervous system depression, fatigue, and insomnia.[1]

Cocaine levels in blood is that are thought to elicit a "high" in novice users are between 120 and 270 ng/ml. However, regular users may achieve much higher levels due to the development of tolerance. Cocaine is rapidly metabolized by the body to inactive compounds (metabolites) including benzoylecgonine and ecgonine methyl ester. The half-life of cocaine ranges from 40 and 90 minutes. Cocaine can continue to be converted to benzoylecgonine after death - the amount of postmortem conversion is dependent on time, temperature, and sample storage conditions. While there are no accepted strategies for back calculation to determine an antemortem level from a postmortem sample, the antemortem level of

[1] National Highway Traffic Safety Administration Drugs and Human Performance Fact Sheets. Cocaine https://www.nhtsa.gov/sites/nhtsa.gov/files/809725-drugshumanperformfs.pdf Accessed 6/17/2022.

cocaine in this case is most likely higher (possibly significantly higher) than the measured postmortem level.[2,3,4]

PCP is a Schedule I controlled substance and is not available medicinally. It may be smoked (often added to tobacco or cannabis as a "dipper"), snorted or injected. Effects are dose dependent and include euphoria, calmness, feelings of strength and invulnerability, lethargy, disorientation, loss of coordination, distinct changes in body awareness, distorted sensory perceptions, impaired concentration, disordered thinking, illusions and hallucinations, agitation, combativeness or violence, memory loss, bizarre behavior, sedation, and stupor. Blood concentrations of PCP associated with arrests for erratic driving ranged from 10 to 188 ng/ml.[5]

Gabapentin is a prescription antiseizure medication also used to treat painful nerve conditions. Gabapentin is known to cause somnolence and dizziness; as a result it carries a warning regarding risks of driving and operating heavy machinery while using the drug.[6]

Dextromethorphan is a cough suppressant available over the counter in many preparations. In usual doses, it is not impairing.[7]

Toyota Sienna Driver

Autopsy

According to the limited external examination report issued by the Clark County Coroner/Medical Examiner, the cause of death for the 35 year old male driver was blunt force injuries and the manner of death was accident.

Toxicology

Toxicology tests performed by NMS Labs at the request of the pathologist did not identify any tested-for substances.

Toxicology testing performed by the FAA's Forensic Sciences Laboratory at the request of the NTSB did not identify any tested-for substances.

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[2] Isenschmid, DS; Levine, BS; Caplan, YH. The Role of Ecgonine Methyl Ester in the Interpretation of Cocaine Levels in Post Mortem Blood. Journal of Analytical Toxicology. 1992; 16:319-324.
[3] Isenschmid, DS; Levine, BS; Caplan, YH. A Comprehensive Study of the Stability of Cocaine and Its Metabolites. Journal of Analytical Toxicology. 1989; 13: 250-256.
[4] Logan, BK; Smirnow, D; Gullber, RG. Lack of predictable site-dependent differences and time-dependent changes in postmortem concentrations of cocaine, benzoylecgonine, and cocaethylene in humans. Journal of Analytical Toxicology. 1997;21(1):23-31.
[5] National Highway Traffic Safety Administration Drugs and Human Performance Fact Sheets. PCP. https://www.nhtsa.gov/sites/nhtsa.gov/files/809725-drugshumanperformfs.pdf Accessed 6/17/2022.
[6] National Institutes of Health. US National Library of Medicine. DailyMed. Gabapentin. https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=7538e255-95df-4991-aae0-a90d709f1e95 Accessed 6/17/2022
[7] National Institutes of Health. US National Library of Medicine. DailyMed. Dextromethorphan. https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=ffc7e1e2-b664-461b-963d-764bad2f983f Accessed 6/17/2022.

D. SUMMARY OF MEDICAL FINDINGS

The 59 year old male driver of the Dodge Challenger was found to have died from blunt force injuries. His toxicology was positive for cocaine (at 390 and 394 ng/ml in peripheral blood) and metabolites, PCP (at 27 and 19 ng/ml in peripheral blood), gabapentin, and dextromethorphan, as well as nicotine and a metabolite in two laboratories.

The 35 year old male driver of the Toyota Sienna was found to have died from blunt force injuries. His toxicology testing was negative for all tested-for substances in two laboratories.