NATIONAL TRANSPORTATION SAFETY BOARD

Office of Research and Engineering
Washington, DC

Medical Factual Report

December 7, 2020

Mary Pat McKay, MD, MPH
Chief Medical Officer

A. ACCIDENT: WPR19FA148; Alpine, UT

On May 17, 2019, about 1034 mountain daylight time, a Robinson Helicopter Company R44 II helicopter, N744TW, impacted mountainous terrain about 4 miles north of Alpine, Utah. The private pilot and passenger were fatally injured. The helicopter sustained substantial damage. The helicopter was registered to Tumbleweed Leasing CO INC. and operated by the pilot as a Title 14 Code of Federal Regulations Part 91 personal cross-country flight. Instrument meteorological conditions prevailed in the vicinity of the accident site about the time of the accident and no flight plan was filed. The flight originated from the pilot's residence near Myton, Utah about 0924 and was destined for South Valley Regional Airport (U42), Salt Lake City, Utah.

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 pilot for medical conditions, the use of medications/illicit drugs, and the presence of toxins.

2. Methods

   The FAA medical case review, autopsy report, toxicology findings, and the investigator's reports were reviewed. Relevant regulation and medical literature were reviewed as appropriate.

   FAA Medical Case Review

   According to the FAA medical case review, the 32 year old male pilot reported 22 total flight hours as of his only medical exam, dated

4/20/2017. At that time, he was 71 inches tall and weighed 201 pounds. He reported no chronic medical problems and no use of medications to the FAA. No significant abnormalities were identified on the physical exam and he was issued a first class medical certificate without limitations.

Autopsy

According to the autopsy performed by the Utah Office of the Medical Examiner, the cause of death was multiple blunt force injuries and the manner of death was accident. No significant natural disease was identified.

Toxicology

Toxicology testing performed at the request of the medical examiner by Utah Public Health Laboratories identified 300 ng/ml of amphetamine in blood obtained from the inferior vena cava.

Toxicology testing performed by the FAA's Forensic Sciences Laboratory identified amphetamine at 346 ng/ml in heart blood and 4167 ng/ml of urine; phenylpropanolamine and oxycodone in heart blood and urine; oxymorphone, a metabolite of oxycodone in urine; and oxazepam in urine.

Substance Descriptions

Amphetamine is a Schedule II controlled substance that stimulates the central nervous system. It is available by prescription for the treatment of attention deficit disorder and narcolepsy. It carries a boxed warning about its potential for abuse and has warnings about an increased risk of sudden death and the potential for mental health and behavioral changes.[1] After a single 30 mg oral dose, early blood levels averaged 111 ng/ml and average blood levels in adults using the long acting prescription orally for a week were about 65 ng/ml.[2]

However, amphetamine is also prepared and used as a street drug, often by snorting, inhaling, or injecting. Street preparations may begin with phenylpropanolamine, which may then contaminate the final product. Generally, levels above 200 ng/ml are the result of mis-using amphetamine to maximize its psychoactive effects.[3]

In the early phase, amphetamine mis-users may experience a combination of euphoria, excitation, exhilaration, rapid flight of ideas, increased libido,

[1] National Institutes of Health. US National Library of Medicine. Amphetamine salts. https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=72ddd1c9-ddbd-4c95-acd9-003189a353a3 Accessed 4/20/2020.
[2] Amphetamine. In: Disposition of Toxic Drugs and Chemicals in Man. Ed: Randall C. Baselt. 9th edition. (2011) Biomedical Publications, Seal Beach, CA.
[3] National Highway Traffic Safety Administration. Drugs and Human Performance Fact Sheets. Methamphetamine/Amphetamine. https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/809725-drugshumanperformfs.pdf Accessed 11/25/2020.

rapid speech, motor restlessness, hallucinations, delusions, psychosis, insomnia, reduced fatigue or drowsiness, increased alertness, a heightened sense of well-being, stereotypes behavior, feelings of increased physical strength, and poor impulse control. Heart rate, blood pressure, and respiratory rate increase and they may have palpitations, dry mouth, abdominal cramps, twitching, dilated pupils, faster reaction times, and increased strength. As the initial effects wear off, users commonly experience dysphoria, restlessness, agitation, and nervousness; they may experience paranoia, violence, aggression, a lack of coordination, delusions, psychosis, and drug craving.[3]

Phenylpropanolamine was once available in the US as a decongestant but its use was found to have an unacceptable risk of associated stroke and it is now only available for use in dogs in the United States.[4] As mentioned above, it is often used in the street preparation of amphetamine.

Oxycodone is available as a Schedule II controlled substance and is an opioid analgesic. It carries a boxed warning about its potential for abuse and addiction, as well as its ability to cause so much depression of central nervous system function that it can lead to death from failure to breathe. In addition, the drug information states, "Oxycodone may impair the mental or physical abilities needed to perform potentially hazardous activities such as driving a car or operating machinery."[5]

Oxazepam is a sedating benzodiazepine available as a Schedule IV controlled substance. It is also a metabolite of the sedating benzodiazepines diazepam (commonly marketed as Valium) and temazepam. It carries a boxed warning about the risk of sedation when used with opioids, as well as the risk of abuse and addiction. In addition, the drug information states, "As with other central nervous system-acting drugs, patients should be cautioned against driving automobiles or operating dangerous machinery until it is known that they do not become drowsy or dizzy on oxazepam therapy."[6]

D. SUMMARY OF MEDICAL FINDINGS

The 32 year old male pilot had reported no medical conditions and no use of medications to the FAA.

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[4] National Institutes of Health. US National Library of Medicine. DailyMed. Phenylpropanolamine. https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=0b2249cb-ecf4-4be9-a6b2-0fe6ca2a7a36 Accessed 11/25/2020.

[5] National Institutes of Health. US National Library of Medicine. DailyMed. Oxycodone. https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=094b64b3-cd32-4de5-afb6-ea00d9caad74 Acessed 11/25/2020.

[6] National Institutes of Health. US National Library of Medicine. DailyMed. Oxazepam. https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=a0d5a4c1-ec79-42e6-8e8f-ae4d144edb43 Accessed 11/25/2020.

According to the autopsy performed by the Utah Office of the Medical Examiner, the cause of death was multiple blunt force injuries and the manner of death was accident. No significant natural disease was identified.

Toxicology testing performed at two laboratories identified 300 ng/ml of amphetamine in blood obtained from the inferior vena cava; 346 ng/ml in heart blood and 4167 ng/ml in urine; phenylpropanolamine and oxycodone in heart blood and urine; oxymorphone, a metabolite of oxycodone in urine; and oxazepam in urine.