National Transportation Safety Board
Office of Research and Engineering
Washington, DC 20594

ERA23FA001

MEDICAL

Specialist's Factual Report

March 16, 2023

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A. ACCIDENT

Location: Hermantown, Minnesota
Date: October 1, 2022

B. MEDICAL SPECIALIST

Specialist: Turan Kayagil, MD, FACEP
National Transportation Safety Board
Washington, DC

C. DETAILS OF THE INVESTIGATION

1.0 Purpose

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

2.0 Methods

The Federal Aviation Administration (FAA) medical case review and the pilot's autopsy and toxicology reports were reviewed. Relevant regulation and medical literature were also reviewed.

D. FACTUAL INFORMATION

1.0 FAA Medical Case Review

According to the FAA medical case review, the 32-year-old male pilot had his only aviation medical examination on April 4, 2019. At that time, he reported 0 total civilian flight hours. He was 69 inches tall and weighed 183 pounds. He reported a history of seasonal and environmental allergies. He reported using triamcinolone nasal spray (a medication available over the counter for treatment of seasonal and environmental allergy symptoms) and a combination drug containing loratadine (a non-sedating antihistamine medication available over the counter for treatment of seasonal and environmental allergy symptoms and hives) and pseudoephedrine (a medication available over the counter for treatment of cold- or allergy-related nasal congestion). These medications are not generally considered impairing. No significant issues were identified and the pilot was issued a first-class medical certificate without limitation.

2.0 Autopsy

The Midwest Medical Examiner's Office performed the pilot's autopsy. According to the autopsy report, the pilot's cause of death was multiple blunt force injuries and his manner of death was accident. The autopsy did not identify significant natural disease.

3.0 Toxicology

3.1 NMS Labs Toxicology

At the request of the Midwest Medical Examiner's Office, NMS Labs performed toxicological testing of postmortem heart blood from the pilot. No tested-for substances were detected.[1]

3.2 FAA Toxicology

The FAA Forensic Sciences laboratory also performed toxicological testing of postmortem specimens from the pilot.[2] Codeine was detected at 22 ng/mL in urine. Codeine was not detected in heart blood. Pseudoephedrine was detected in femoral blood and urine.

3.3 Descriptions of Detected Substances

Codeine is an opioid drug. Medicinal uses of codeine include treating pain, cough, and diarrhea. In the United States, codeine is a federal controlled substance and usually requires a prescription, although a few states allow "behind the counter" sales of certain cough-and-cold products containing codeine without a prescription.[3,4] Products containing codeine often carry a warning that the drug may impair mental or physical abilities needed to perform potentially hazardous activities such as driving

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[1] The NMS Labs toxicology report listed tested-for substances as: amphetamines, barbiturates, benzodiazepines, buprenorphine/metabolite, cannabinoids, cocaine/metabolites, fentanyl/acetyl fentanyl, methadone/metabolite, methamphetamine/MDMA, opiates, oxycodone/oxymorphone, phencyclidine, ethanol, methanol, isopropanol, and acetone.

[2] The FAA Forensic Sciences laboratory has the capability to test for around a thousand substances including toxins, prescription and over-the-counter medications, and illicit drugs. Some of these substances are listed at https://jag.cami.jccbi.gov/toxicology.

[3] Drug Enforcement Administration. Controlled substances – alphabetical order. Drug Enforcement Administration website. https://www.deadiversion.usdoj.gov/schedules/orangebook/c_cs_alpha.pdf. Updated February 15, 2023. Accessed March 16, 2023.

[4] Food and Drug Administration. FDA Drug Safety Communication: FDA restricts use of prescription codeine pain and cough medicines and tramadol pain medicines in children; recommends against use in breastfeeding women. Food and Drug Administration website. https://www.fda.gov/drugs/drug-safety-and-availability/fda-drug-safety-communication-fda-restricts-use-prescription-codeine-pain-and-cough-medicines-and. Updated March 8, 2018. March 16, 2023.

a car or operating machinery, and that users should not drive or operate dangerous machinery unless they are tolerant to the effects of the drug and know how they will react to it.[5] An open prescription for codeine is generally disqualifying for FAA medical certification, although certification may be granted by FAA decision in certain cases of infrequent use for acceptable medical conditions. Regardless, the FAA states that a pilot should not fly after using codeine until adequate time has elapsed for the drug to be eliminated from circulation.[6] In addition to being used medicinally, codeine is sometimes used illicitly. Also, because it occurs naturally in the poppy plant, codeine might be detected in the urine of a person who has consumed poppy seeds.[7,8]

Pseudoephedrine is a drug commonly used as a nasal decongestant; it is widely available in a variety of cold and allergy medications sold "behind the counter" with no requirement for a prescription.[9,10] It is an ingredient in some cough-and-cold products that contain codeine.[11] Used appropriately, pseudoephedrine is not generally considered impairing.

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[5] National Institutes of Health National Library of Medicine. Codeine sulfate. DailyMed. https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=5819bdf7-300e-45b8-8f3a-447b53656293. Updated November 1, 2019. Accessed March 16, 2023.

[6] Federal Aviation Administration. Guide for aviation medical examiners: pharmaceuticals (therapeutic medications) do not issue - do not fly. Federal Aviation Administration website. https://www.faa.gov/go/dni. Updated November 23, 2022. Accessed March 16, 2023.

[7] Johnson RD, Lewis RJ, Hattrup RA. *Poppy Seed Consumption or Opiate Use: The Determination of Thebaine and Opiates of Abuse in Postmortem Fluids and Tissues*. Federal Aviation Administration. DOT/FAA/AM-05/11. June 2005. https://www.faa.gov/data_research/research/med_humanfacs/oamtechreports/2000s/media/0511.pdf. Accessed March 16, 2023.

[8] Reisfield GM, Teitelbaum SA, Jones JT. Poppy seed consumption may be associated with codeine-only urine drug test results. *J Anal Toxicol*. Published online October 1, 2022. doi:10.1093/jat/bkac079.

[9] National Institutes of Health National Library of Medicine. Sudafed Sinus Congestion. DailyMed. https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=c05d7e27-6821-468f-b27d-9c0b02a07b0f. Updated January 18, 2022. Accessed March 16, 2023.

[10] Food and Drug Administration. Legal requirements for the sale and purchase of drug products containing pseudoephedrine, ephedrine, and phenylpropanolamine. Food and Drug Administration website. https://www.fda.gov/drugs/information-drug-class/legal-requirements-sale-and-purchase-drug-products-containing-pseudoephedrine-ephedrine-and. Updated November 24, 2017. Accessed March 16, 2023.

[11] National Institutes of Health National Library of Medicine. Tusnel C. DailyMed. https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=403935ac-5111-4f8b-80ae-1bd47ae774c7. Updated December 23, 2020. Accessed March 16, 2023.

E. SUMMARY OF MEDICAL FACTS

The 32-year-old male pilot had his only aviation medical examination on April 4, 2019. At that time, he reported a history of seasonal and environmental allergies. He reported using triamcinolone nasal spray and a combination medication containing loratadine and pseudoephedrine. No significant issues were identified and the pilot was issued a first-class medical certificate without limitation.

According to the pilot's autopsy report, his cause of death was multiple blunt force injuries and his manner of death was accident. His autopsy did not identify significant natural disease.

NMS Labs performed toxicological testing of postmortem heart blood from the pilot and did not detect any tested-for substances. The FAA Forensic Sciences laboratory also performed toxicological testing of postmortem specimens from the pilot. FAA testing detected codeine at 22 ng/mL in urine and did not detect codeine in heart blood. FAA testing also detected pseudoephedrine in femoral blood and urine.

Submitted by:

Turan Kayagil, MD, FACEP
Medical Officer