



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Research and Engineering
Washington, DC

Medical Factual Report

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Medical Officer

A. ACCIDENT: ERA20FA031; New Bedford, MA

On November 4, 2019, at 1532 eastern standard time, a Cessna 150, N714LK, was destroyed when it impacted a cemetery in New Bedford, Massachusetts. The private pilot was fatally injured. The airplane was operated by the pilot as a personal flight conducted under the provisions of Title 14 Code of Federal Regulations Part 91. Visual meteorological conditions prevailed, and no flight plan was filed for the local flight. The flight originated from the New Bedford Regional Airport (EWB), New Bedford, Massachusetts, around 1450.¹

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 pilot's autopsy and toxicology reports were reviewed, as were the Federal Aviation Administration (FAA) medical case review and an e-mail from the Commonwealth of Massachusetts Office of the Chief Medical Examiner. Investigator reports and relevant regulation and medical literature were also reviewed.

¹ Summary taken from this accident's National Transportation Safety Board Aviation Accident Preliminary Report, originally published November 14, 2019.

3. Findings

a. FAA Medical Case Review

According to the FAA medical case review, the 74-year-old male pilot had his last aviation medical examination on November 1, 2018. At that time, he reported 1323 total civil flight hours. He was 65 inches tall and weighed 169 pounds. He reported having prostate cancer and using no medications. No significant issues were identified, and he was issued a third-class medical certificate limited by a requirement he wear corrective lenses.

b. Autopsy

The Commonwealth of Massachusetts Office of the Chief Medical Examiner performed the pilot's autopsy. According to the autopsy report, the pilot's cause of death was multiple blunt force injuries, and the manner of death was accident (plane crash). The autopsy identified coronary artery disease, including up to 80% stenosis of the left anterior descending coronary artery. Visual (non-microscopic) examination of the heart found no other evidence of natural disease. Due to the severity of the pilot's injuries, his brain was not available for examination. The autopsy did not identify any other significant natural disease.

c. Toxicology

At the request of the Medical Examiner's office, The Commonwealth of Massachusetts Department of State Police Crime Laboratory performed toxicological testing on pooled/cavity blood from the pilot, with negative results.² The pooled/cavity blood was screened for carboxyhemoglobin (a marker of carbon monoxide exposure) with a result of "none detected at 12%."³ According to an e-mail from the Medical Examiner's office, the employed carboxyhemoglobin test method was a qualitative test by diffusion, with color used as the method of detection.

The FAA Forensic Sciences Laboratory tested liver and muscle specimens from the pilot, and identified tamsulosin in both.⁴ No blood was initially available to the FAA for testing; as such, carboxyhemoglobin testing (which relies on measuring carbon monoxide bound to hemoglobin in blood) could not be performed. At the request of the National Transportation Safety Board, the local jurisdiction sent remaining pooled/cavity blood to the FAA for carboxyhemoglobin testing; however, by the time of its arrival, that specimen had become unsuitable for such testing.

² The Commonwealth of Massachusetts Department of State Police Crime Laboratory reported negative screening results for ethanol, methanol, isopropanol, acetone, amphetamine, benzodiazepines, buprenorphine, cocaine metabolite, fentanyl, methamphetamine, opiates, cannabinoid, and organic bases and neutrals.

³ Nonsmokers normally have carboxyhemoglobin levels of less than 1-3%. Heavy smokers may normally have levels as high as 10-15%.

⁴ The FAA Forensic Sciences Laboratory tests specimens for over 1,300 compounds including toxins, prescription and over-the-counter medications, and illicit drugs; information about these compounds can be found at the Civil Aerospace Medical Institute WebDrugs website (<https://jag.cami.jccbi.gov/toxicology>).

d. Descriptions of Substances

Tamsulosin, sometimes marketed as Flomax, is a prescription medication commonly used to treat symptoms of an enlarged prostate.⁵ It is not generally considered impairing.

Carboxyhemoglobin (which was not detected in this case) is formed when carbon monoxide binds to hemoglobin in blood, impairing the blood's ability to deliver oxygen to body tissues (hypemic hypoxia). Carbon monoxide is an odorless, tasteless, colorless, nonirritating gas that can be produced during hydrocarbon combustion. Exposure to carbon monoxide usually occurs by inhalation of smoke or exhaust fumes. Symptoms of low-level carbon monoxide exposure are nonspecific and variable, and may include headache, nausea, and tiredness. Increasing levels of exposure may become impairing or incapacitating, causing more serious neurocognitive, cardiac, and/or vision problems, progressing to fatality as blood carboxyhemoglobin surpasses about 40-50% (possibly lower in elderly people or those with serious co-existing medical conditions). As with other causes of tissue hypoxia, carbon monoxide poisoning may be insidious and difficult for an exposed person to recognize; there is no reliable physical sign of exposure.^{6,7,8,9}

D. SUMMARY OF MEDICAL FINDINGS

The 74-year-old male pilot had his last aviation medical examination on November 1, 2018. At that time he reported having prostate cancer and using no medications. He was issued a third-class medical certificate limited by a requirement he wear corrective lenses.

The Commonwealth of Massachusetts Office of the Chief Medical Examiner performed the pilot's autopsy. According to the autopsy report, the pilot's cause of death was multiple blunt force injuries. The autopsy identified coronary artery disease, including up to 80% stenosis of the left anterior descending coronary artery. The brain was not available for examination. The autopsy did not identify any other significant natural disease.

⁵ National Institutes of Health National Library of Medicine. Flomax. DailyMed. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=6771ad8e-ac92-4aec-b484-5d8350a353f8>. Updated December 16, 2019. Accessed July 7, 2020.

⁶ Maloney GE. Carbon monoxide. In: Tintinalli JE, Ma OJ, Yealy DM, et al., eds. *Tintinalli's Emergency Medicine: A Comprehensive Study Guide*. 9th ed. New York, NY: McGraw-Hill Education; 2020:1414-1417.

⁷ Clardy PF, Manaker S, Perry H. Carbon monoxide poisoning. In: Post TW, ed. UpToDate. Waltham, MA: UpToDate Inc. <https://www.uptodate.com/contents/carbon-monoxide-poisoning>. Updated December 18, 2019. Accessed August 4, 2020.

⁸ Spitz WU. Asphyxia. In: Spitz WU, Spitz DJ, eds. *Spitz and Fisher's Medicolegal Investigation of Death: Guidelines for the Application of Pathology to Crime Investigation*. 4th ed. Springfield, IL: Charles C Thomas; 2006:783-845.

⁹ Dolinak D, Matshes EW, Lew EO. Environmental injury. In: Dolinak D, Matshes EW, Lew EO, eds. *Forensic Pathology: Principles and Practice*. Burlington, MA: Elsevier Academic Press; 2005:239-258.

Toxicological testing by two laboratories identified only the non-impairing prescription prostate medication tamsulosin, in the pilot's liver and muscle. One laboratory used a qualitative test by diffusion to screen pooled/cavity blood for carboxyhemoglobin, reporting a result of "none detected at 12%." The other laboratory was unable to test carboxyhemoglobin as the available blood specimen had become unsuitable.