



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Research and Engineering
Washington, DC

Medical Factual Report

February 11, 2016

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Chief Medical Officer

A. ACCIDENT: ERA14FA138

On March 1, 2014, about 1215 eastern standard time, a Beech F33A, N7203E, was destroyed when it collided with trees and terrain near Lumberport, West Virginia. The private pilot was fatally injured. Visual meteorological conditions prevailed, and no flight plan was filed for the local personal flight, which was conducted under the provisions of 14 Code of Federal Regulations Part 91.

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

2. Methods

The FAA medical certification file, FAA medical case review, toxicology results, autopsy report, personal medical records, and the investigator's reports were reviewed.

FAA Medical Certification file

The 68 year old male pilot was first medically certified in 1983 with a limitation for corrective lenses. From 1995 on, the pilot saw the same aviation medical examiner (AME). He reported no medications, no medical problems and no medications until 2004 when he reported using Ambien, a short acting sleep aid also known as zolpidem.¹ Zolpidem is designed to cause sleepiness and carries this warning, "Warnings - may impair mental and/or physical ability required for the performance of

potentially hazardous tasks (e.g., driving, operating heavy machinery).”² He received a third class medical certificate from the AME. In 2006, he reported using Ambien CR, which is a controlled release formulation of the same drug. He again received a third class certificate.

In September, 2008, the pilot reported using Tylenol PM “for sleep.” Tylenol is an over the counter analgesic also known as acetaminophen. The “PM” version also contains diphenhydramine, a sedating antihistamine that is a common ingredient in over the counter sleep aids. He also reported the 2006 visit to the AME for a flight physical. He received his medical certificate.

In September 2010, the pilot checked “NO” to the question on the application for a medical certificate about any current medications. He again checked “NO” to every question about his medical history on the application for a medical certificate including “high or low blood pressure,” “neurological disorders; epilepsy, seizures, stroke, paralysis, etc.,” “mental disorders of any sort; depression, anxiety, etc.” and “admission to hospital.” He did report his previous visit to the AME for a flight physical. He received a third class medical certificate.

On November 1, 2012, the pilot had his last aviation medical exam. He reported 1550 total flight hours with 30 in the preceding 6 months. On the application, he reported no medications, no medical conditions, and no visits to health care providers in the previous three years. He received a third class medical certificate.

Autopsy

According to the autopsy report from the State of West Virginia’s Office of the Chief Medical Examiner, the cause and manner of the pilot’s death were undetermined. The report notes previous diagnoses of hypertension, a remote cerebral infarction [stroke], depression, and anxiety. Specifically, the medical examiner wrote, “The decedent was a 68 year old man with a history of anxiety and mental depression, treated with duloxetine, mirtazapine, and clonazepam; and essential hypertension treated with valsartan. On Oct 29, 2008 he had been seen for stroke symptoms. A magnetic resonance image at that time showed an 8 mm infarction in the thalamus.” In a telephone conversation with the pathologist, the NTSB Chief Medical Officer understood this clinical information came from the pilot’s primary care physician, who was also his AME.

The autopsy was limited by the degree of injury to the body which included the absence of available brain tissue, heart, lungs, and most of the abdominal contents.

Toxicology

No blood or other body fluids were available for toxicological analysis. The State of West Virginia Office of the Chief Medical Examiner performed toxicology tests which identified ethanol at 0.07% and mirtazapine at 0.09 mg/kg in a muscle specimen.

The Bioaeronautical Research Lab at the Civil Aviation Medical Institute identified amlodipine, mirtazapine, and valsartan in the pilot's liver and mirtazapine in lung. Ethanol was not detected in muscle or liver.

Amlodipine and valsartan are used to lower blood pressure and are also known as Norvasc and Diovan, respectively. Mirtazapine, also known as Remeron, is an antidepressant whose mechanism is unknown.³ It carries a warning, "May impair mental and/or physical ability required for the performance of potentially hazardous tasks (e.g., driving, operating heavy machinery)."⁴

Personal Medical Records

The NTSB subpoenaed the pilot's primary care provider to provide personal medical records dating from 2008. This physician was also the pilot's AME from 1995 through 2012. A total of 5 pages of personal records were received. The first page is from a visit on November 18, 2008; under "HPI [history of present illness]", the physician wrote "CVA F/U [cerebrovascular accident follow up], still has dysarthria." (Dysarthria is difficulty speaking.) The blood pressure is documented as 135/90 but "running high on home monitoring" is also noted. On the physical exam the physician wrote "Lt [left] facial weakness." The physician noted the pilot was prescribed aspirin and Benicar (a drug used to treat high blood pressure, also named olmesartan). His diagnoses were "CVA and HTN [hypertension]."

A month later, on December 16, 2008, the pilot returned and the physician noted, "Speech much better," and on the physical exam the only notation about the pilot's neurologic status was "intact." Because of persistent mild elevations in blood pressure, the pilot's blood pressure medication dose was increased. When he returned a month later (January 2009), his blood pressure medication dose was further increased.

The next note is from April 1, 2009 for a "routine visit." This time the physician prescribed Cymbalta 90 mg/day; Remeron 15 mg at bedtime, and Exforge 5/160mg per day for the pilot. Cymbalta, also named duloxetine, is an antidepressant used to treat major depression, anxiety, diabetic neuropathy, and chronic musculoskeletal pain syndromes.⁵ Remeron, also named mirtazapine, is described above. Duloxetine carries the same warning as mirtazapine, "May impair mental and/or physical ability required for the performance of potentially hazardous tasks (e.g.,

driving, operating heavy machinery).”⁶ At that time, the FAA had not considered all antidepressants disqualifying for use by pilots. Exforge is a pill that combines amlodipine and valsartan, two different types of blood pressure medication.⁷ The only diagnosis in the record was “HTN [hypertension].”

The last note in the records received from the primary care physician is dated October 12, 2009 and was for “routine check” and “refills.” The physician prescribed Cymbalta (duloxetine), mirtazapine (Remeron), Exforge, and Klonopine (sic). Klonopin, also named clonazepam, is a benzodiazepine used to treat panic disorders and seizure disorders.⁸ It carries the same warning as mirtazapine and duloxetine, “May impair mental and/or physical ability required for the performance of potentially hazardous tasks (e.g., driving, operating heavy machinery).”⁹

No further records, such as any laboratory records, radiology records, notes from other treating physicians, or records of other visits were included in the information provided by the primary care physician in response to subpoena from the NTSB. In particular, there are no records documenting the extent of the pilot’s symptoms from his depression or anxiety, and no documentation of his neurologic function around the time of the accident.

Medical Literature

In a study that followed patients after a stroke that left them with no or minimal disability, the risk of recurrent major stroke was 14% and the risk of death from any cause was 32% by 10 years later. Recurrent minor stroke, diabetes, heart attack, and hypertension significantly increased the risk of recurrent major stroke.¹⁰ In a more recent study, the combined risk of recurrent stroke or death from any cause was 10% at one year, 26% at five years, and 45% at 10 years following a stroke. These rates are about double the risk of the stroke-free population. Risk of both stroke and death was increased by having had a heart attack, diabetes, or hypertension.¹¹

Current recommendations for treatment following transient ischemic attacks and ischemic strokes are designed to decrease the likelihood of a recurrent event. Guidelines include ongoing treatment with antiplatelet medications such as aspirin or clopidogrel, evaluation and aggressive treatment of cholesterol, and careful management of hypertension and diabetes.¹²

D. SUMMARY OF FINDINGS

The 68 year old male pilot had a history of hypertension, depression, anxiety, and had suffered a stroke in 2008. His physician/AME prescribed multiple medications for these conditions during visits for personal medical care in 2008 and 2009, including two

medications the FAA considered disqualifying for use by pilots. Neither the pilot or the AME reported these conditions or their treatment to the FAA when he obtained aviation medical certificates from the same physician/AME in 2010 and 2012.

The autopsy was limited by the degree of damage to the body which left no brain or heart tissue available for examination. The medical examiner in West Virginia identified mirtazapine and ethanol in muscle at 0.07%. The FAA's Civil Aerospace Medical Institute identified amlodipine, mirtazapine, and valsartan but no ethanol in specimens tested there.

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