



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Research and Engineering
Washington, DC

Medical Factual Report

November 13, 2018

Mary Pat McKay, MD, MPH
Chief Medical Officer

A. ACCIDENT: ERA18FA005; Bardstown, KY

On October 5, 2017, about 1830 eastern daylight time, an experimental, amateur-built BC Ultra Pup, N484HC, collided with terrain following a go-around at Samuels Field Airport (BRY), Bardstown, Kentucky. The airplane was substantially damaged. The private pilot was fatally injured. The airplane was registered to and operated by the pilot under the provisions of 14 Code of Federal Regulations Part 91. Day, visual meteorological conditions prevailed, and no flight plan was filed for the local, personal flight. The flight originated about 1815.

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 reports, toxicology findings, and the investigator's reports were reviewed.

FAA Medical Case Review

According to the FAA medical case review, the 68 year old male pilot had reported 800 total hours of flight experience as of his last aviation medical exam, dated 10/2/2014. At that time, he was 70 inches tall and weighed 174 pounds. Over the years, the pilot had reported having an irregular heartbeat, high blood pressure, anxiety/depression and post-traumatic stress disorder (PTSD), as well as surgery for a hernia and a spinal fusion,

and medical disability benefits. At the time of his last exam, he reported using clonazepam, sertraline, and metoprolol to control these diagnoses.

[Clonazepam, commonly marketed as Klonopin, is a sedating benzodiazepine is primarily used to treat anxiety and panic attacks. It carries this warning, “Since clonazepam produces CNS depression, patients receiving this drug should be cautioned against engaging in hazardous occupations requiring mental alertness, such as operating machinery or driving a motor vehicle.”¹

Sertraline is an antidepressant commonly marketed with the name Zoloft. Although sertraline is not known to cause sedation or interfere with motor performance, major depression itself is associated with significant cognitive degradation, particularly in executive functioning.² The cognitive degradation may not improve even with remission of the depressed episode, and patients with severe disease are more significantly affected than those with fewer symptoms or episodes.^{3,4} This is why depression is a disqualifying condition for pilot medical certification. The FAA will consider a special issuance of a medical certificate for depression after 6 months of treatment if the applicant is clinically stable on one of four approved medications.⁵]

Metoprolol is a prescription medication that can control blood pressure and prevent or control certain arrhythmias. It is not considered impairing.

The pilot’s application for a medical certificate was denied by the FAA on 10/21/2014 as a result of his reported use of sedating medication. He did not appeal the denial.

Autopsy

According to the autopsy performed by the Office of the Chief Medical Examiner, Louisville, KY the cause of death was blunt force injuries and the manner of death was accident.

¹ National Institutes of Health. US National Library of Medicine. DailyMed. Clonazepam. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=acbce0e8-5098-4785-943b-8bdb5ff17fab> Accessed 11/1/2018.

² Snyder H. Major depressive disorder is associated with broad impairments on neuropsychological measures of executive function: A meta-analysis and review. Psychol Bull, 2013. 139(1): 81-132.

³ Nakano Y, Baba H., Maeshima H, Kitajima A, Sakai Y, Baba K, Suzuki T, Mimura M, Arai H. Executive dysfunction in medicated, remitted state of major depression. J Affect Disord, 2008. 111(1): 46-51.

⁴ Paelecke-Habermann Y, Pohl J, Lepow B. Attention and executive functions in remitted major depression patients. J Affect Disord, 2005. 89(1-3): 125-135.

⁵ Federal Aviation Administration, Guide for Aviation Medical Examiners, Item 47. Psychiatric Conditions - Use of Antidepressant Medications. https://www.faa.gov/about/office_org/headquarters_offices/avs/offices/aam/ame/guide/app_process/exam_tech/item47/amd/antidepressants/ Accessed 5/24/2016.

The heart was enlarged, it weighed 460 grams. Average weight for a 172 pound man is 345 grams with a range of 261 to 455 grams.⁶ There was no description of wall thicknesses or chamber size. There was moderate coronary artery disease with 60% stenoses in the left coronary and the left circumflex arteries. There was a focal area of myocardial discoloration on the left septal surface is present just below the aortic valve. Microscopy demonstrated an area of myocyte hypertrophy with diffuse, patchy interstitial replacement fibrosis.

In addition, there was evidence of chronic obstructive pulmonary disease (COPD or emphysema).

Toxicology

Toxicology testing performed by the FAA's Bioaeronautical Sciences Research Laboratory identified sertraline and its metabolite desmethylsertraline in blood and liver.

Personal Medical Records

Records from the pilot's care through a Veteran's Administration Medical Center were obtained and reviewed for the last three years of his life. The pilot carried diagnoses of obsessive compulsive disorder (OCD), depression/anxiety (not further specified), paroxysmal atrial fibrillation/supraventricular tachycardia (2014), and chronic obstructive pulmonary disease (COPD). He had also had hernia and back surgery.

In the eight months preceding his fatal accident, the pilot had had a number of health issues. He had fallen in February 2017 and fractured a small area of the posterior wall of his acetabulum (hip socket) which was treated conservatively and resolved. He also struck his left elbow, causing a tiny chip fracture, but the elbow developed an infection several months later and he required surgery to remove the infected tissue. His prostate specific antigen rose significantly, and he required a biopsy that was complicated by significant bleeding (the result was negative). He developed a tear in his retina that required laser surgery and because of persistent symptoms was scheduled to have a cataract removed in November 2017. As part of the evaluation of his eye symptoms, he underwent an ultrasound evaluation of his carotid arteries which identified an early stenosis of his right carotid (when more severe, these stenoses lead to strokes); he was considering additional medical treatment.

The pilot had regular visits with a mental health counselor. At his last visit, dated 9/5/2017 (one month before the accident), he told the counselor that things had gone "from bad to worse" in terms of his anxiety

⁶ Kitzman DW, Scholz DG, Hagen PT, Ilstrup DM, Edwards WD. Age-related changes in normal human hearts during the first 10 decades of life. Part II (Maturity): A quantitative anatomic study of 765 specimens from subjects 20 to 99 years old. Mayo Clinic Proc., 1988. 63(2): 137-46.

and stress, primarily due to his recent medical issues. His coping mechanism was to retreat to the “dark and quiet” of his basement when he was overwhelmed. The counselor found him anxious with logical thought content but rated his judgment and insight as “fair.”

At the time of his last appointment, the pilot’s medications included: albuterol inhaler, budesonide/formoterol inhaler, and tiotropium inhaler for his COPD; cetirizine for allergic rhinitis; finasteride for prostate symptoms; metoprolol to control his arrhythmia; and sertraline and trazodone for anxiety/sleep.

[The inhalers the pilot was using to control his COPD generally cause few psychoactive effects. Used repeatedly, the albuterol may cause tachycardia and tremulousness, but the records do not reflect how often the pilot was using these medications.

Cetirizine is a sedating antihistamine commonly marketed with the name Zyrtec. It carries this warning, “When using this product: drowsiness may occur; avoid alcoholic drinks; alcohol, sedatives, and tranquilizers may increase drowsiness; be careful when driving a motor vehicle or operating machinery.”⁷

Finasteride, commonly marketed with the name Proscar, is a prescription medication used to treat the symptoms from an enlarged prostate. It is not considered impairing.⁸

Trazodone is an antidepressant whose mechanism of action is not known. It is sedating and is commonly prescribed off-label for insomnia. It carries this warning, “Antidepressants may impair the mental and/or physical ability required for the performance of potentially hazardous tasks, such as operating an automobile or machinery; the patient should be cautioned accordingly. Trazodone hydrochloride may enhance the response to alcohol, barbiturates, and other CNS (central nervous system) depressants.”⁹]

D. SUMMARY OF MEDICAL FINDINGS

The 68 year old male pilot had reported having an irregular heartbeat, high blood pressure, anxiety/depression and post-traumatic stress disorder (PTSD), as well as

⁷ National Institutes of Health. US National Library of Medicine. DailyMed. Cetirizine tablets. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=a5be7921-c1cb-4b9f-9f4a-1c4b68b2b8a3> Accessed 11/1/2018.

⁸ National Institutes of Health. US National Library of Medicine. DailyMed. Finasteride. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=81b424d3-8418-4497-9395-59eae6755230> Accessed 11/1/2018.

⁹ National Institutes of Health. US National Library of Medicine. DailyMed. Trazodone. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=a699724b-7412-479e-9894-4cf6ec454d8b> Accessed 11/1/2018.

surgery for a hernia and a spinal fusion, and medical disability benefits. At the time of his last exam, he reported using clonazepam, sertraline, and metoprolol to control these diagnoses. The pilot's last application for a medical certificate was denied by the FAA on 10/21/2014. He did not appeal the denial.

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Toxicology testing identified sertraline and its metabolite desmethylsertraline in blood and liver.

According to personal medical records, the pilot carried diagnoses of obsessive compulsive disorder, depression/anxiety (not further specified), paroxysmal atrial fibrillation/supraventricular tachycardia, and chronic obstructive pulmonary disease (COPD). He had also had hernia and back surgery.

In the eight months preceding his fatal accident, the pilot had had a number of health issues. He had fallen in February 2017 and fractured a small area of the posterior wall of his acetabulum (hip socket) which was treated conservatively and resolved. He also struck his left elbow, causing a tiny chip fracture, but the elbow developed an infection several months later and he required surgery to remove the infected tissue. His prostate specific antigen (PSA) rose significantly and he required a biopsy that was complicated by significant bleeding (the result was negative). He developed a tear in his retina that required laser surgery and because of persistent symptoms was scheduled to have a cataract removed in November 2017. As part of the evaluation of his eye symptoms, he underwent an ultrasound evaluation of his carotid arteries which identified an early stenosis of his right carotid (when more severe, these stenoses lead to strokes); he was considering additional medical treatment.

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