



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Research and Engineering
Washington, DC

Medical Factual Report

December 27, 2017

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Chief Medical Officer

A. ACCIDENT: CEN16LA260; Kennett, MO

On July 7, 2016, at 0650 central daylight time, an Air Tractor Inc AT-602, N967JB, collided with power lines and terrain during an aerial application of a field about 4 miles northeast of Kennett, Missouri. The airplane was destroyed by impact forces. The commercial pilot sustained fatal injuries. The airplane was registered to and operated by Bootheel Air Services LLC under 14 Code of Federal Regulations Part 137 as an aerial application flight that was not operating on a flight plan. Visual meteorological conditions prevailed at the time of the accident. The local flight last departed from Hornersville Memorial Airport (37M), Hornersville, Missouri, about 0541.

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 case review, autopsy report, toxicology results, and the investigator's reports were reviewed.

FAA Medical Case Review

According to the FAA files, the 48 year old male pilot reported 4,500 total civilian flight hours as of his last medical exam, dated 12/01/2015. At that time, he was 72 inches tall and weighed 283 pounds. He had previously reported several orthopedic surgical procedures to the FAA. At the time of the last exam, records were reviewed from a hospital admission for an

acute infection. These apparently documented a diagnosis of depression/anxiety but according to the medical case review, a follow up note from the physician stated this was not a current problem and the pilot had been off medication for some years.

During the exam, the pilot's blood sugar was found to be elevated and a diagnosis of diabetes was made with a Hemoglobin A1C of 7.0%.¹ The pilot was started on metformin, a non-impairing prescription medication for diabetes that causes hypoglycemia very rarely when used alone. In addition, he reported the use of fenofibrate and pravastatin to treat high cholesterol. Neither of these medications are considered impairing. On 1/4/2016, after review of the records and follow up of his diabetes, the FAA issued the pilot a special issuance second class medical certificate limited by a requirement to wear corrective lenses and marked, "Not valid for any class after 12/31/2016."

Autopsy

According to the autopsy performed by Mineral Area Pathology LLC, 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 by the St. Louis University Toxicology Laboratory acetaminophen, citalopram, chlorpheniramine, and dextromethorphan in urine.

Toxicology testing performed by the FAA's Bioaeronautical Sciences Research Laboratory identified acetaminophen, chlorpheniramine, citalopram and its metabolite n-desmethylocitalopram, dextromethorphan and its metabolite dextrophan in liver. Acetaminophen and chlorpheniramine were found in cavity blood and the rest were found in muscle. Acetaminophen was identified in urine.

Acetaminophen is an analgesic and fever reducer available over the counter in many products; it is commonly marketed as Tylenol. Chlorpheniramine is a sedating antihistamine available over the counter in many cold, cough, and allergy preparations. It carries this warning, "May impair mental and/or physical ability required for the performance of potentially hazardous tasks (e.g., driving, operating heavy machinery)."²

¹ Hemoglobin A1C is a measure of the percentage of hemoglobin molecules that have a glucose molecule attached to them (what percentage have been glycosylated). It is used as a measure of average blood glucose over the preceding several weeks. Non-diabetic levels are below 5.4%. Between 5.5 and 6.4% is considered "pre-diabetes" and above 6.5% indicates diabetes. For diabetic individuals, levels below 7.0% are considered "good control."

² Federal Aviation Administration. Forensic Toxicology Drug Information: Chlorpheniramine. <http://jag.cami.jccbi.gov/toxicology/DrugDetail.asp?did=29> Accessed 12/27/2017.

Citalopram is a prescription antidepressant medication often marketed with the name Celexa. It carries this warning, “In studies in normal volunteers, citalopram in doses of 40 mg/day did not produce impairment of intellectual function or psychomotor performance. Because any psychoactive drug may impair judgment, thinking, or motor skills, however, patients should be cautioned about operating hazardous machinery, including automobiles, until they are reasonably certain that citalopram therapy does not affect their ability to engage in such activities.”³ N-desmethylocitalopram is its primary metabolite.

Major depression itself is associated with significant cognitive degradation, particularly in executive functioning.⁴ The cognitive impairment often resolves as the emotional symptoms resolve. The FAA requires that pilots treated for depression undergo specific testing to ensure their cognitive functioning is intact and they are using a non-impairing antidepressant. The FAA’s Guide for Aviation Medical Examiners states “The use of a psychotropic drug is disqualifying for aeromedical certification purposes – this includes all antidepressant drugs, including selective serotonin reuptake inhibitors (SSRIs). However, the FAA has determined that airmen requesting first, second, or third class medical certificates while being treated with one of four specific SSRIs may be considered (see Item 47., Psychiatric Conditions – Use of Antidepressant Medications). The Authorization decision is made on a case by case basis. The Examiner may not issue.”⁵ The four potentially allowable antidepressants are fluoxetine (Prozac), escitalopram (Lexapro), sertraline (Zoloft), and citalopram (Celexa).⁶

Dextromethorphan is a cough suppressant available over the counter in many products. At usual dosing, it is not considered impairing. Dextrophan is its primary metabolite.

D. SUMMARY OF MEDICAL FINDINGS

The 48 year old male pilot had reported multiple orthopedic surgeries and use of medication for high cholesterol to the FAA. At the time of his last aviation medical examination, diabetes was diagnosed and treatment with metformin initiated. The aviation medical examiner questioned records from a recent hospitalization that stated the

³ National Institutes of Health. US National Library of Medicine. DailyMed. Citalopram. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=6daeb45c-451d-b135-bf8f-2d6dff4b6b01> Accessed 12/27/2017.

⁴ Snyder HR. 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.

⁵ Federal Aviation Administration. Airman Medical Examiner’s Guide, 2016. http://www.faa.gov/about/office_org/headquarters_offices/avs/offices/aam/ame/guide/media/guide.pdf Pg. 211. Accessed 1/15/2016.

⁶ Federal Aviation Administration. Aviation Medical Examiner’s Guide, 2016. SSRI Decision Path 1. http://www.faa.gov/about/office_org/headquarters_offices/avs/offices/aam/ame/guide/media/SSRI%20Decision%20Path%20-%20I.pdf Accessed 1/16/2016

pilot had anxiety/depression but was told this was not a current diagnosis and that he had not been on medication in years. According to the autopsy performed by Mineral Area Pathology LLC, the cause of death was multiple blunt force injuries and the manner of death was accident. No significant natural disease was identified. Toxicology testing identified acetaminophen, chlorpheniramine, citalopram and its metabolite n-desmethylocitalopram, dextromethorphan and its metabolite dextrorphan in liver. Acetaminophen and chlorpheniramine were found in cavity blood and the rest were found in muscle. Acetaminophen was identified in urine.