



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Research and Engineering
Washington, DC

Medical Factual Report

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Chief Medical Officer

A. ACCIDENT: WPR16FA014; Morongo Valley, CA

On October 17, 2015, at 1552 Pacific daylight time, a Piper PA28R-180, N4972J, impacted mountainous terrain near Morongo Valley, California. The airplane was registered to, and operated by, the pilot under the provisions of 14 Code of Federal Regulations Part 91. The private pilot and passenger sustained fatal injuries; the airplane was destroyed. The cross-country flight departed Palm Springs International Airport, Palm Springs, California, at 1513, with a planned destination of Santa Barbara Municipal Airport, Santa Barbara, California. Visual meteorological conditions prevailed at the departure location, and no flight plan had been filed.

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 blue ribbon medical file, FAA medical case review, toxicology results, autopsy report, personal medical records, ATC transcript and audio recordings, and the investigator's reports were reviewed.

FAA Medical File and Medical Case Review

According to the FAA files, 71 year old male pilot reported 0 flight experience as of his only medical exam, dated 1/29/2014. At that time, he was 70 inches tall, weighed 157 pounds, and reported hypertension with the use of two medications, atenolol and amlodipine, to the FAA. His

physical examination was unremarkable and he was issued a combined student pilot and third class medical certificate limited by a requirement for corrective lenses. A Private Pilot Certificate was issued 9/09/2014.

Atenolol and amlodipine are prescription blood pressure medications often marketed with the names Tenormin and Norvasc, respectively.^{1,2}

Autopsy

According to the autopsy performed at the request of the San Bernardino County Sheriff's Department, Coroner Division, the cause of death was multiple blunt force injuries crash and the manner of death was accident.

Examination of the body for natural disease was limited by the severity of the pilot's injuries; the majority of the brain and none of the heart were available for examination. No significant natural disease was identified from the available remains.

Toxicology

Toxicology testing performed by the Office of the Medical Examiner, County of San Diego presumptively identified an opiate and confirmed the presence of quetiapine and its metabolites in liver tissue.

Toxicology testing performed by the FAA's Bioaeronautical Research Laboratory identified amlodipine, atenolol, losartan, atorvastatin, hydrocodone (0.116 ug/g) and its metabolites hydromorphone (0.045 ug/g) and dihydrocodeine as well as quetiapine (0.725 ug/g) in liver tissue. In addition, atenolol, hydrocodone (0.056 ug/g), and quetiapine were identified in lung tissue.

Atenolol and amlodipine are described above. Losartan is another prescription blood pressure medication often marketed with the name Cozaar.³ Atorvastatin is used to treat high cholesterol and is commonly marketed with the name Lipitor.⁴ Hydrocodone is a prescription opioid identified as a Schedule II controlled substance by the Drug Enforcement Administration. It is most commonly sold in combination with

¹ National Institutes of Health. US National Library of Medicine. DailyMed. Atenolol tablets. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=f36d4ed3-dcbb-4465-9fa6-1da811f555e6> Accessed 3/14/2017.

² National Institutes of Health. US National Library of Medicine. DailyMed. Amlodipine tablets. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=1cec7a02-b7a5-49e1-ab64-3a4dab4149d2> Accessed 3/14/2017.

³ National Institutes of Health. US National Library of Medicine. DailyMed. Losartan <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=3cdcf8cc-4964-4c53-e054-00144ff88e88> Accessed 3/15/2017.

⁴ National Institutes of Health. US National Library of Medicine. DailyMed. Atorvastatin tablets. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=18fe5990-399d-416c-852f-e14974317b8b> Accessed 3/15/2017.

acetaminophen, often with the names Vicodin and Lortab. It carries a number of warnings. The two most relevant ones in this case are, “Hydrocodone, like all narcotics, may impair the mental and/or physical abilities required for the performance of potentially hazardous tasks such as driving a car or operating machinery” and “Alcohol and other CNS depressants may produce an additive CNS depression, when taken with this combination product, and should be avoided.”⁵ Quetiapine is an atypical antipsychotic indicated for the treatment of schizophrenia and bipolar syndrome. It carries a number of warnings including an increased risk of seizures and a specific warning about somnolence, “quetiapine has the potential to impair judgment, thinking, or motor skills, patients should be cautioned about performing activities requiring mental alertness, such as operating a motor vehicle (including automobiles) or operating hazardous machinery until they are reasonably certain that quetiapine therapy does not affect them adversely. Somnolence may lead to falls.”⁶

Personal Medical Records

According to records obtained from the VA visited by the pilot from 1999 to the date of the accident, he had a medical history of chronic neck pain requiring the use of opioids, vitamin D deficiency, hypertension, an abnormal stress thallium test suggesting coronary artery disease, deafness requiring hearing aids, prediabetes (recent Hemoglobin A1C of 5.7-5.8%), chronic obstructive pulmonary disease (COPD), Barrett’s esophagus, and low testosterone. His medications at the time of the accident included hydrocodone/acetaminophen combination (7.5mg/325mg every 6 hours), losartan, atenolol, amlodipine, aspirin, atorvastatin, finasteride, gabapentin, and topical testosterone.

Hydrocodone/acetaminophen combination, losartan, atenolol, amlodipine, aspirin, and atorvastatin are described above. Finasteride is a prescription medication used to treat symptoms caused by an enlarged prostate gland; it is commonly marketed with the names Proscar and Propecia.⁷

Gabapentin is a prescription medication initially developed as an antiseizure drug but now often used to treat nerve pain. It is commonly marketed with the name Neurontin. Gabapentin carries a warning about increased risk of suicidal thoughts or actions with its use and risk of somnolence and dizziness. As a result, patients are to be notified that “gabapentin may cause dizziness, somnolence, and other symptoms and

⁵ National Institutes of Health. US National Library of Medicine. DailyMed. Hydrocodone Acetaminophen. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=fa32969f-7210-47ec-bbd1-f62bea8989a7> Accessed 3/15/2017.

⁶ National Institutes of Health. US National Library of Medicine. DailyMed. Quetiapine. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=904f80af-44b6-d964-1680-ac9e6b61327b> Accessed 3/15/2017.

⁷ 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 3/15/2017.

signs of CNS depression. Accordingly, they should be advised neither to drive a car nor to operate other complex machinery until they have gained sufficient experience on gabapentin to gauge whether or not it affects their mental and/or motor performance adversely.”⁸ Testosterone is a male hormone.

Because of existing risk factors, the pilot underwent cardiac testing in 2001. The results were an abnormal exercise stress test and thallium stress test indicating likely early single vessel coronary artery disease. As the pilot was asymptomatic at the time, the decision was to improve the control of his blood pressure and cholesterol levels. Follow up stress testing was unchanged and as the pilot remained asymptomatic, no further intervention was performed.

Also in 2001, the pilot received the diagnosis of post-traumatic stress disorder (PTSD), but no psychiatric records supporting the diagnosis are present in the files until 2003. Those records indicated the pilot had a prior history of abuse of cocaine, heroin, and alcohol, but had been “clean and sober” for the preceding 14 years and was active in Alcoholics Anonymous (AA). At this point, he began weekly psychotherapy sessions. As a result of the psychotherapy, he was also diagnosed with major depression. In 2004, the pilot was first prescribed quetiapine to address his difficulty sleeping, nightmares, and other symptoms of PTSD and depression.

The pilot periodically reported neck pain that radiated down his arm and received treatment for it. The first time he was treated with opioids for the pain was in 2007. It recurred in 2010 and, following a telephone consultation with the physician, the patient was prescribed hydrocodone/acetaminophen 5/325mg, one tablet 4 times a day as needed. The prescription was for 120 tablets with 3 refills. He continued on this regimen until the dose was increased to the 7.5/325mg tablets in July 2012.

In November 2014, the pilot’s long term use of hydrocodone for chronic pain was changed because the Drug Enforcement Administration changed it from a Schedule III controlled substance to Schedule II, indicating an increased risk for abuse. Over the next few months, he tried using codeine and tramadol instead but was unable to get sufficient pain relief. He returned to hydrocodone/acetaminophen 7.5/325 mg four times a day on February 19, 2015 and was maintained on that dosing regimen until the accident. Records indicate he routinely refilled the prescription monthly.

⁸ National Institutes of Health. US National Library of Medicine. DailyMed. Gabapentin. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=0936a88f-b569-49c4-951b-14e8f6273b53> Accessed 3/15/2017.

In a visit with his primary care physician dated August 25, 2015, the physician noted the pilot had a normal neurologic exam including motor and nerve function as well as normal gait, and that his mood was stable and calm. The physician documented his impression that the pilot's judgment and insight were intact.

According to the pilot's psychology and psychiatry treatment notes, his post-traumatic stress disorder and recurrent major depressive disorder were treated with quetiapine and psychotherapy from 2003 forward. His psychotherapy sessions began weekly and over the years decreased to monthly, but increased back to biweekly during periods of increased stress or symptoms. Several months before the accident, the pilot had been feeling "pretty bad" and requested biweekly rather than monthly therapy sessions to obtain additional support for the stressors in his life. During a session on September 14, 2015 the therapist noted the pilot reported he was "doing OK" but seemed edgy. About three weeks before the accident, the pilot met with his therapist (September 22, 2015). At that time, the records document that he was doing "pretty good." Although the plan was to return to monthly sessions beginning in October, the therapist noted his "seemed to be isolating" himself and documented her intent to review the issue with him at the next visit.

D. SUMMARY OF MEDICAL FINDINGS

The 71 year old male pilot had reported hypertension and his use of medication to control it to the FAA. However, he had not reported his diagnoses of chronic neck pain requiring the use of opioids, vitamin D deficiency, an abnormal stress thallium test suggesting coronary artery disease, deafness requiring hearing aids, prediabetes (recent Hemoglobin A1C of 5.7-5.8%), chronic obstructive pulmonary disease (COPD), Barrett's esophagus, low testosterone, post-traumatic stress disorder (PTSD), or recurrent depression. The postmortem examination was limited by the inability to examine the brain or heart due to the degree of damage to the body. Similarly, toxicology testing was limited to liver and lung tissue. However, toxicology testing identified amlodipine, atenolol, losartan, atorvastatin, hydrocodone (0.116 ug/g) and its metabolites hydromorphone (0.045 ug/g) and dihydrocodeine as well as quetiapine (0.725 ug/g) in liver tissue. In addition, atenolol, hydrocodone (0.056 ug/g), and quetiapine were identified in lung tissue. According to his VA records, his complete set of medications at the time of the accident included hydrocodone/acetaminophen combination, losartan, atenolol, amlodipine, aspirin, atorvastatin, finasteride, gabapentin, topical testosterone, and quetiapine. In addition, in the months before the accident, he complained of increased stress and requested additional psychotherapy appointments for support. About three weeks before the accident, his mood had improved somewhat but he continued to have symptoms of PTSD and depression and require psychotherapy.