



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Research and Engineering
Washington, DC

Medical Factual Report

February 18, 2020

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Chief Medical Officer

A. ACCIDENT: ERA18LA183; Rio Grande, PR

On June 30, 2018, about 1230 Atlantic standard time, a Bell 206B, N10CV, was substantially damaged during a forced landing in Rio Grande, Puerto Rico. The private pilot was fatally injured, three passengers sustained minor injuries. No flight plan was filed for the personal flight that was conducted under the provisions of Title 14 Code of Federal Regulations Part 91. Visual meteorological conditions prevailed at the time of the accident. The flight departed from Fernando Luis Ribas Dominicci Airport (TJIG), San Juan, Puerto Rico, and was destined for Villa Marina Heliport (PR26), Fajardo, Puerto Rico.

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 report, toxicology findings, and the investigator's reports were reviewed. Relevant regulation and medical literature were reviewed as appropriate.

FAA Medical Case Review

According to the FAA medical case review, the 53-year-old male pilot had reported 2,686 total flight hours as of his last exam, dated 10/16/2017. At that time, he was 71 inches tall and weighed 205 pounds. He had reported

having high blood pressure, hypothyroidism, diabetes, and neck arthritis to the FAA. At his last exam, he had reported using metoprolol to treat his high blood pressure, levothyroxine for his thyroid condition, and a combination of sitagliptin and metformin marketed with the name Janumet to treat his diabetes.^{1,2,3} None of these are considered impairing. Laboratory values for his thyroid disease and diabetes indicated good control. No significant abnormalities were identified and he was issued a third class special issuance medical certificate limited by a requirement he have available glasses for near vision and marked, “Not valid for any class after 10/31/2018.”

Autopsy

According to the autopsy performed by the Gobierno de Puerto Rico, Departamento de Seguridad Publica, Negociado de Ciencias Forenses, the cause of death was severe bodily trauma and the manner of death was accident. In addition, mild atherosclerotic disease without significant luminal stenosis was identified in the heart, along with some thickening of the left ventricular wall.

Toxicology

Toxicology testing performed by the FAA’s Forensic Science Laboratory identified diphenhydramine in heart blood (0.092 ug/ml) as well as rosuvastatin, metoprolol, and sitagliptin. All of these and acetaminophen were identified in urine.

Medication Descriptions

Diphenhydramine is a sedating antihistamine used to treat allergy symptoms and as a sleep aid. It is available over the counter under the names Benadryl and Unisom. Diphenhydramine carries the following FDA warning: may impair mental and/or physical ability required for the performance of potentially hazardous tasks (e.g., driving, operating heavy machinery).⁴ Compared to other antihistamines, diphenhydramine causes marked sedation; it is also classed as a CNS depressant and this is the rationale for its use as a sleep aid. Altered mood and impaired cognitive and psychomotor performance may also be observed. In fact, in a driving

¹ National Institutes of Health. US National Library of Medicine. DailyMed. Metoprolol. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=2d948600-35d8-4490-983b-918bdce488c8> Accessed 2/18/2020.

² National Institutes of Health. US National Library of Medicine. DailyMed. Levothyroxine. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=a3845f91-e0fe-42aa-8043-aeaac43f8eef> Accessed 2/18/2020.

³ National Institutes of Health. US National Library of Medicine. DailyMed. Janumet. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=d19c7ed0-ad5c-426e-b2df-722508f97d67> Accessed 2/18/2020.

⁴ Federal Aviation Administration. Civil Aerospace Medical Institute. Toxicology Drug Information: Diphenhydramine. Available from: <http://jag.cami.jccbi.gov/toxicology/DrugDetail.asp?did=50> . Accessed 03/18/2018.

simulator study, a single dose of diphenhydramine impaired driving ability more than a blood alcohol concentration of 0.100%.⁵ The therapeutic range of diphenhydramine (range in which it is expected to cause effects) is 0.0250 to 0.1120 ug/ml.⁶ However, diphenhydramine undergoes significant postmortem redistribution; after death it can move back into pooled blood from storage sites. For diphenhydramine, postmortem central blood levels may increase by about three times.⁷

Rosuvastatin is a cholesterol lowering prescription drug.⁸ Acetaminophen is an over the counter pain medication and fever reducer commonly marketed as Tylenol. Neither is considered impairing. Janumet and metoprolol were discussed above.

D. SUMMARY OF MEDICAL FINDINGS

The 53-year-old male pilot had reported having high blood pressure, hypothyroidism, diabetes, and neck arthritis to the FAA. At his last exam, he had reported using metoprolol to treat his high blood pressure, levothyroxine for his thyroid condition, and a combination of sitagliptin and metformin marketed with the name Janumet to treat his diabetes. None of these are considered impairing. Laboratory values for his thyroid disease and diabetes indicated good control.

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⁵ Weiler JM, B.J., Woodworth GG, Grant AR, Layton TA, Brown TL, McKenzie DR, Baker TW, Watson GS., Effects of fexofenadine, diphenhydramine, and alcohol on driving performance. A randomized, placebo-controlled trial in the Iowa Driving Simulator. *Ann Intern Med* 2000. 132(5):354-63.

⁶ Federal Aviation Administration. Civil Aerospace Medical Institute. Toxicology Drug Information: Diphenhydramine. Available from: <http://jag.cami.jccbi.gov/toxicology/DrugDetail.asp?did=50>. Accessed 03/13/2018.

⁷ Han E, et. al., Evaluation of postmortem redistribution phenomena for commonly encountered drugs, *Forensic Science International* 2012;219: 265–271.

⁸ National Institutes of Health. US National Library of Medicine. DailyMed. Rosuvastatin. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=134c5455-5171-66f3-e0c4-c475978ffb22> Accessed 2/18/2020.