



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Research and Engineering
Washington, DC

Medical Factual Report

June 16, 2022

Mary Pat McKay, MD, MPH
Chief Medical Officer

A. CRASH: ERA22FA083; Statesboro, GA

Date: December 7, 2021

Injuries: 1 fatal

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 preliminary report were reviewed. Relevant regulation and medical literature were reviewed as appropriate.

FAA Medical Case Review

According to the FAA medical case review, the 61 year old female pilot had reported 4000 hours of flight experience as of her last aviation medical exam, dated 12/3/2020. At that time, she was 62 inches tall and weighed 118 pounds. She had reported no chronic medical conditions and no use of medications to the FAA. No significant abnormalities were identified and she was issued a second class medical certificate with a limitation requiring corrective lenses.

Autopsy

According to the autopsy report issued by the Georgia State Bureau of

Investigation, Division of Forensic Sciences, the cause of death was multiple blunt force injuries and the manner of death was accident. The brain was not available for examination due to the extent of injury. No other significant natural disease was identified.

Toxicology

Toxicology testing performed by the FAA's Forensic Sciences Laboratory identified ethanol in muscle tissue at 0.025 gm/dl but none in liver tissue; testing in brain tissue was inconclusive. In addition, quetiapine was identified in liver tissue at 17 ng/gm. No body fluids were available for testing.

Substance Descriptions

Ethanol is the intoxicant commonly found in beer, wine, and liquor. It acts as a central nervous system depressant. After ingestion, at low doses, it impairs judgment, psychomotor functioning, and vigilance; at higher doses it can cause coma and death. The effects of ethanol on aviators are generally well understood; it significantly impairs pilots' performance, even at very low levels.¹ Federal Aviation Regulations, Section 91.17 (a) prohibits any person from acting or attempting to act as a crewmember of a civil aircraft while having 0.040 gm/dL or more ethanol in the blood.² Because ingested alcohol is distributed throughout the body, levels from different post mortem tissues are usually similar. Ethanol may also be produced in body tissues by microbial activity after death.³ In this case, levels in different tissues may vary considerably.

Quetiapine, commonly marketed with the name Seroquel, is an atypical antipsychotic approved for the treatment of schizophrenia and bipolar disease. Off label, in much smaller doses, it may often be used to treat insomnia because of its notable somnolence effects, in addition to a host of potential psychiatric and metabolic side effects. It carries this warning about operating a motor vehicle; "Since SEROQUEL 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 SEROQUEL therapy does not affect them adversely."⁴

¹ Cook, C.C., Alcohol and aviation. *Addiction* (Abingdon, England), 1997. 92(5): p. 539-555.

² US Government Printing Office .eCFR- Code of Federal Regulations. 91.17. <http://www.ecfr.gov/cgi-bin/text-idx?rgn=div8&node=14:2.0.1.3.10.1.4.9>. Accessed 6/16/2022.

³ Federal Aviation Administration. Forensic Toxicology Drug Information. Ethanol. <http://jag.cami.jccbi.gov/toxicology/DrugDetail.asp?did=60> Accessed 12/02/2021.

⁴ National Institutes of Health. US National Library Of Medicine. DailyMed. Seroquel. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=0584dda8-bc3c-48fe-1a90-79608f78e8a0> Accessed 6/14/2022.

Quetiapine generally accumulates in the liver with regular use. Post mortem testing of liver tissue compared to central or peripheral blood samples in regular users of quetiapine generally ranged around 18 times higher.⁵

D. SUMMARY OF MEDICAL FINDINGS

The 61 year old female pilot had reported no chronic medical conditions and no use of medications to the FAA.

According to the autopsy report issued by the Georgia State Bureau of Investigation, Division of Forensic Sciences, the cause of death was multiple blunt force injuries and the manner of death was accident. The brain was not available for examination due to the extent of injury. No other significant natural disease was identified.

Toxicology testing performed by the FAA's Forensic Sciences Laboratory identified ethanol in muscle tissue at 0.025 gm/dl but none in liver tissue; testing in brain tissue was inconclusive. In addition, quetiapine was identified in liver tissue at 17 ng/gm. No body fluids were available for testing.

⁵ Håvard Breivik, Joachim Frost, Trine N Løkken, Lars Slørdal. Post mortem tissue distribution of quetiapine in forensic autopsies. Forensic Sci Int. 2020;315:110413.