NATIONAL TRANSPORTATION SAFETY BOARD

Office of Research and Engineering
Washington, DC

Medical Factual Report

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Chief Medical Officer

A. ACCIDENT: CEN15FA190; Bloomington, IL

On April 7, 2015, about 0006 central daylight time (all referenced times will reflect central daylight time), a Cessna model 414A twin-engine airplane, N789UP, was substantially damaged when it collided with terrain following a loss of control during an instrument approach to Central Illinois Regional Airport (BMI), Bloomington, Illinois. The airline transport pilot and six passengers were fatally injured. The airplane was owned by and registered to Make It Happen Aviation, LLC, and was operated by the pilot under the provisions of 14 Code of Federal Regulations Part 91 while on an instrument flight rules (IFR)flight plan. Night instrument meteorological conditions prevailed for the cross-country flight that departed Indianapolis International Airport (IND), Indianapolis, Indiana, at 2307 central daylight time.

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, and the investigator's reports were reviewed.

   FAA Medical File and Medical Case Review

   According to the FAA medical files, the 51 year old male pilot received his first aviation medical certificate in 1986, without limitations. In 1988

he was awarded a first class medical certificate, again without limitations. He continued to periodically receive first class medical certificates without limitations through 2006, when a requirement to have glasses for near vision available was added. Throughout this period, the pilot reported no medical conditions and no medications; his required EKGs were interpreted as normal.

In 2008, the pilot reported having had a hernia repair. Although the pilot continued to require glasses to achieve the visual standards for near vision, in 2008 and 2009 his second class medical certificate had no limitations. The requirement for available lenses for near vision returned in 2010 and remained until in 2012 it was changed to a requirement to wear corrective lenses for both near and distant vision. In 2014, the pilot reported another hernia repair.

The pilot's last medical exam was dated February 2, 2015. At that time, he reported no medical conditions and no medications and was documented as 69 inches tall and 186 pounds. He reported 12,000 total hours of flight experience. No significant physical abnormalities were noted and he was issued a second class medical certificate limited by a requirement to have available glasses for near vision.

Autopsy

According to the autopsy performed under the authority of the McLean County Coroner, the cause of death was multiple blunt injuries due to an airplane crash.

Examination of the body for natural disease was limited by the severity of the pilot's injuries; much of the brain was not available for examination. The pathologist identified dilated cardiomegaly. The heart weighed 500 grams with mild dilatation of all chamber, greater on the left than right sides. The left ventricular free wall was 1.5 cm thick, the septum was 1.7 cm, and the right ventricle was 0.4 cm thick. Average heart weight for a 185 pound man is 358 grams with a range of 271- 473 grams.[1] Average wall thickness is 1.23 cm for the left ventricular and septal walls, and 0.3 cm for the right ventricle.[1] In addition, the pilot had severe coronary artery disease with a focal area of 60-75% stenosis in the proximal portion of the left anterior descending coronary artery. Although there were no areas of gross fibrosis, microscopic evaluation of the left ventricle identified extensive interstitial myocardial fibrosis and severe atherosclerosis of the basal septum nodal artery.

[1] 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.

Toxicology

Toxicology testing performed by the FAA's Bioaeronautical Research Laboratory identified ethanol at 0.010 gm/dl in cavity blood but no ethanol was identified in liver or brain. No other tested-for substances were identified.

Ethanol is the alcohol present in wine, beer, and liquor. It is a central nervous system depressant. 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] After absorption, ethanol is quickly distributed throughout the body's tissues and fluids fairly uniformly. Ethanol may also be produced in tissues by microbial activity after death.[3]

Personal Medical Records

Personal medical records were obtained from the pilot's surgeon and reflect the repair of a recurrent hernia in 2014. The pilot reported no chronic medical conditions and no medications to the surgeon.

Additional records were obtained from the primary care physician. These reflect an initial visit in December 2011 and a return for a comprehensive check up on March 27, 2015. No other visits are recorded. On both visits the pilot reported no chronic medical problems or medication use, that he exercised regularly by running or biking; on the second visit he mentioned running about 20 miles/week. There were no significant findings on either physical exam. Laboratory results from the second visit indicate elevated cholesterol but were otherwise unremarkable.

D. SUMMARY OF MEDICAL FINDINGS

The 51 year old male pilot had no diagnosed medical problems and did not routinely use medications. His toxicology results included 0.010 gm/dl of ethanol in cavity blood but none was identified in liver or brain. Autopsy findings included an enlarged heart with wall thickening and dilation of the chambers, 60-75% stenosis of the proximal left anterior descending artery, and within the left ventricle there was extensive interstitial myocardial fibrosis and severe atherosclerosis of the basal septum nodal artery.

[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 6/16/2015.
[3] Federal Aviation Administration. Forensic Toxicology Drug Information. Ethanol. http://jag.cami.jccbi.gov/toxicology/DrugDetail.asp?did=60 Accessed 03/02/2016.