



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Research and Engineering
Washington, DC

Medical Factual Report

March 8, 2016

A. ACCIDENT: ANC15FA071 Iliamna, Alaska

On September 15, 2015, about 6:00 a.m. Alaska daylight time (ADT), a single-engine, turbine-powered, float equipped de Havilland DHC 3T (Otter) airplane, N928RK, sustained substantial damage when it impacted tree and tundra-covered terrain, just after takeoff from East Wind Lake, about 1 mile north of the Iliamna Airport, Iliamna, Alaska. Of the 10 people aboard, 3 passengers died at the scene, the airline transport pilot and 4 passengers sustained serious injuries, and 2 passengers sustained minor injuries. The airplane was registered to, and operated by Rainbow King Lodge, Inc., Lemoore, California, as a visual flight rules (VFR) other work-use flight, under the provisions of Title 14 *Code of Federal Regulations* Part 91. Dark night, visual meteorological conditions prevailed, and no Federal Aviation Administration (FAA) flight plan was filed for the flight.

B. MEDICAL GROUP:

Nicholas Webster, MD, MPH
Group Chairman
NTSB Medical Officer

Mary Pat McKay, MD, MPH
NTSB Chief Medical Officer

G. J. Salazar, MD, MPH
FAA Aviation Accident Medical Case Review Physician

C. DETAILS OF INVESTIGATION

Purpose

This investigation was performed to evaluate the pilot for any medical conditions, the use of medications/illicit drugs, and the presence of any toxins.

Methods

The pilot's FAA medical certification file, hospital treatment records, FAA toxicology results, were reviewed by the group.

FAA medical certification file

According to the FAA medical certification file, the 54-year-old airline transport pilot was first medically certified in 1981. He reported he had accrued 10,000 total flight hours as of his most recent medical certification examination, dated May 12, 2015. At that time, he measured 71 inches tall and weighed 249 pounds. He reported no medications and the examining physician did not identify any abnormal findings. The FAA Aviation Medical Examiner issued him a Second Class Medical Certificate with the following limitation: must have available glasses for near vision.

At his 2013 FAA medical examination, the pilot had glucose in his urine and elevated blood glucose (147 mg/dl) but on the two subsequent exams the urinalysis was normal.

Post-Accident Medical Treatment Records

According to records of medical care provided after the accident, the pilot was transferred from Iliamna to Anchorage on the day of the accident and during the transport, he was given ketamine. Ketamine is an injectable rapidly acting general anesthetic agent.¹

On admission, he was diagnosed with rib fractures (right anterolateral ribs 2-5) and a hand laceration. An admission CT scan of the torso performed about seven hours after the accident also identified non-occlusive bilateral pulmonary emboli and a large thrombus in the right common iliac and common femoral veins (deep vein thrombosis (DVT)). A subsequent ultrasound evaluation of his leg revealed extensive venous clot in his right leg, extending into the calf veins.

Two days after admission, the pilot had an episode of syncope (passing out) and hypoxia (decreased oxygen in the blood) attributed to another pulmonary embolus. Follow up evaluation identified right heart failure and pulmonary hypertension attributed to chronic pulmonary emboli.

A DVT is a blood clot that forms in the deep veins of the body, usually in the leg. The classic symptom of a DVT is leg swelling. A DVT can break loose and travel to the lungs, resulting in a pulmonary embolism (PE)² Large pulmonary emboli can be fatal. The clinical presentation of a PE varies widely ranging from silent disease to chest pain and shortness of breath. Syncope or sudden loss of consciousness is the presenting symptom in about 10 to 20% of cases.^{3, 4}

During his hospitalization, the pilot described having had right leg swelling for about one week prior to the accident and had not sought medical evaluation of the swelling.

Toxicology

The FAA Bioaeronautical Laboratory testing of urine collected on admission to hospital was negative for ethanol and drugs of abuse but detected ibuprofen, ketamine, and its metabolite

norketamine in the urine. Ibuprofen is a non-sedating medicine used to treat pain, swelling and fever, marketed with various names including Motrin.⁵

D. SUMMARY OF FINDINGS

The pilot had not reported any active medical conditions or use of medications and had not sought medical care for his swollen leg. Toxicology identified ketamine, norketamine and ibuprofen in the urine.

Emergency treatment records revealed that the pilot had a one-week history of right leg swelling prior to the accident. In addition to crash induced injuries the pilot was diagnosed with a right leg DVT and bilateral pulmonary emboli. Two days after admission the pilot suffered a syncopal episode attributed to another pulmonary embolus.

References

¹ Drugs.Com FDA Professional Information. Ketamine. <http://www.drugs.com/pro/ketamine-injection.html> Accessed 02/16/2016.

² National Institute of Health, U.S. National Library of Medicine, MedlinePlus Deep Vein Thrombosis. <https://www.nlm.nih.gov/medlineplus/deepveinthrombosis.html> Accessed 02/16/2016.

³ Castella R, Tarsia p, Tantardina C, Pantaleo G, Guariglia A and Porro F. Syncope in patients with pulmonary embolism: comparison between patients with syncope as the presenting symptom of pulmonary embolism and patients with pulmonary embolism without syncope, *Vascular Medicine* 2003; **8**: 257–261.

⁴ Miniati M, Cenci C, Monti S, Poli D. (2012) Clinical Presentation of Acute Pulmonary Embolism: Survey of 800 Cases. *PLoS ONE* 7(2): e30891.

⁵ Drugs.Com FDA Professional Information. Ibuprofen. <http://www.drugs.com/pro/alivio.html> Accessed 02/16/2016.