



RECORD OF EMAIL

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Aviation Accident Investigator
Central Region

Date: November 5, 2021
Person Contacted: Mr. Turan Kayagil, MD, FACEP (NTSB Medical Officer)
NTSB Accident Number: CEN21FA380

Narrative:

According to the FAA medical case review, the 71-year-old male pilot had his last aviation medical examination on July 9, 2020. At that time, he reported 4000 total civilian flight hours. He was 72 inches tall and weighed 254 pounds. He reported using the prescription medication olmesartan to treat high blood pressure, for which he was medically qualified under Conditions Aviation Medical Examiners Can Issue (CACI) criteria. Olmesartan generally is not considered impairing. No significant issues were identified, and the pilot was issued a third-class medical certificate limited by a requirement to have available glasses for near vision.

Forensic Medical of Kansas performed the pilot's autopsy at the request of the Bates County Coroner. According to the autopsy report, the cause of death was multiple blunt force injuries, and the manner of death was accident. Coronary artery disease was identified, including greater than 75% narrowing of the left anterior descending and left circumflex coronary arteries. The heart was described as large, with normal chamber dimensions and total weight of 460 grams (the upper limit of normal heart weight for a male of the pilot's body weight is about 550 grams). The left ventricle of the heart was described as thickened, with a wall thickness of 2 cm (upper limit of normal is about 1.6 cm); the interventricular septal thickness was around the upper limit of normal at 1.8 cm and the right ventricle had a normal wall thickness. On examination of the brain, an area of intracerebral hemorrhage was identified in the right parietal lobe. Intracerebral hemorrhage is bleeding within brain tissue; in general, it may result from traumatic injury or non-traumatic hemorrhagic stroke. The autopsy did not identify any tumor, evidence of infection, or vascular malformation in the brain. Evidence of head trauma was present, including diffuse subarachnoid hemorrhage (bleeding around the brain) and patchy subgaleal hemorrhage (bleeding under the scalp). The autopsy did not identify any other significant natural disease.

NMS Labs performed toxicology testing on specimens from the pilot and detected ethanol at 0.016 g/dL in femoral blood. Ethanol was not detected in vitreous. No other tested-for substances

were detected. Testing of femoral blood for opioids (hydrocodone, dihydrocodeine, morphine, hydromorphone, codeine, 6-monoacetylmorphine, oxycodone, and oxymorphone) was negative.

The FAA Forensic Sciences Laboratory also tested specimens from the pilot. Ethanol was not detected in vitreous or urine. Hydrocodone was detected in liver at 3 ng/mL, in brain at 2 ng/mL, and in urine. Dihydrocodeine was detected in urine but not in liver or brain. Hydromorphone and morphine were detected in urine but not brain; hydromorphone and morphine results in liver were inconclusive.

Descriptions of detected substances:

Ethanol is the intoxicating alcohol in beer, wine, and liquor. It can impair judgment, psychomotor performance, cognition, and vigilance. FAA regulation imposes strict limits on flying after consuming ethanol. This includes a prohibition on acting as a crewmember of a civil aircraft while having a blood ethanol level of 0.04 g/dL or greater. Ethanol can also be produced by microbes in a person's body after death.

Hydrocodone, dihydrocodeine, hydromorphone, and morphine are opioid drugs. They are available as prescription medications and may also be opioid metabolites. For example, dihydrocodeine is a metabolite of hydrocodone, hydromorphone is a metabolite of both hydrocodone and morphine, and morphine and hydrocodone are both metabolites of the opioid drug codeine. Opioid drugs may be used medicinally to treat pain or to reduce cough or diarrhea. Opioid drugs also may be used illicitly. They are Drug Enforcement Administration (DEA) controlled substances with potential for abuse, dependence, and withdrawal, and may have impairing effects on cognitive and psychomotor performance. An open prescription for an opioid is generally disqualifying for FAA medical certification, although certification may be granted by FAA decision in certain cases of infrequent opioid use for acceptable medical conditions. Regardless, the FAA states that a pilot should not fly after using an opioid medication until adequate time has elapsed for the medication to be eliminated from the pilot's system.

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