

EDITOR'S PAGE



Aviation Emergencies for Heart Failure Cardiologists

A New Twist to the Heart Team

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I seem to have an unlucky cloud when it comes to aviation emergencies. Over the past several decades, I have been involved in more than 2 dozen trans-Atlantic or trans-Pacific calls for a physician, while in flight. I would like to start with the history of airline emergency medical kits and how they have changed over the years. In 1986, the U.S. Federal Aviation Administration (FAA) regulations mandated that all domestic passenger airplanes with a flight attendant must have an emergency medical kit containing medications and devices on board. The FAA also required that airlines ensure that each crew member received training for in-flight medical events. At that time, the medical kit contained an antihistamine (Benadryl) injection, an epinephrine injection, a 50% dextrose injection, and nitroglycerin tablets. Ten years later, following additional studies, oxygen supportive care items, analgesics, bronchodilators, and oral antihistamines were added to the medical kit. In 2004, the FAA declared that planes with the capacity of at least 30 passengers be equipped with an automated external defibrillator in the emergency medical kit. Additional medical items included a minimum of analgesics, antihistamines, aspirin, bronchodilator, dextrose, epinephrine in 2 different doses, lidocaine injection, sublingual nitroglycerin, and saline (1). Despite advances in cardiac arrest algorithms, a number of different medicines are absent. For example, glucagon would be extremely helpful for episodes of hypoglycemia, given that glucagon does not require intravenous (IV) access. In addition, there are no antiseizure-specific medications on board. The antiarrhythmic drug of choice is lidocaine, even though amiodarone has replaced this in the advanced cardiac life support algorithms, and the doses for epinephrine for cardiac arrest do not match

recent American Heart Association AHA recommendations (2); and for us heart failure doctors, no furosemide (Lasix)! It is important to reflect on the lessons that I have learned from these many episodes.

PATIENT FIRST

There are many incentives to keep the flight going without diversion, but it is key to use your best judgment, to do what is best for the patient. The first time I diverted a plane, which resulted in dumping a large amount of fuel and substantial inconvenience, to land, there was significant pressure not to do so. Many passengers were critical of the decision, despite not being medical professionals. Keep the thick skin and do what is right for the patient at that time. It is difficult to judge the trajectory of the patient, but recognizing that trans-Atlantic and trans-Pacific flights do not have many opportunities for emergency landings, a decision must be made relatively early and quickly.

BUILD THE HEART TEAM

Creating a team of health professionals in the air enhances the ability to care for your patient. Having a paramedic, nurse, or pharmacist in addition to the multitude of subspecialty physicians allows for better control of the emergency. Make sure the call goes out beyond a doctor on board. The last emergency I attended in the air was a patient with seizures; she was stabilized in part through the great care of a paramedic getting difficult IV access and a former intensive care unit nurse helping to administer drugs. With the administration of oxygen, fluids, and benzodiazepine, the patient was stabilized, and the flight was urgently landed.

RECOGNIZE THE MEDICAL KIT IS SOMETIMES LACKING

As described above, the medical kits have drugs established prior to 2004, without significant updates in the minimum medications and updating along with guidelines. There is a greater need for pediatric drugs to be updated (3).

TAKE THIS INTO ACCOUNT WHEN YOU ARE TREATING THE PATIENT

One of the most important treatments, I believe, is the use of oxygen. Not only is it therapeutic for many conditions that are triggered by low oxygen, but it also serves as a calming agent in highly anxious patients. If you find that there is not a medication available in the medical kit, call for therapies from the passengers. In one particular case, I was called upon to care for an elderly lady whose inhalers fell out of her bag at the departing airport. Upon takeoff, a large amount of cold particulate air blasted into her lungs from the air ducts. She started wheezing and turning cyanotic. After oxygen was administered, there was some stabilization but not enough to maintain an overseas flight. In this particular case, the medical kit was lacking bronchodilators, so I made an

announcement asking if any asthmatic passengers on board would be willing to share their medications. A 12-year-old boy came forward who had a history of asthma, and we were able to administer the bronchodilators and break the asthmatic attack. She improved significantly. The prompt ability to get bronchodilator medications on board may have prevented further issues including respiratory collapse.

CONCLUSIONS

As a cardiovascular specialist, you will likely be in a position to be called upon for an aviation emergency. Recognizing some of the unusual resources and limitations that you have may facilitate the care of our patients in this difficult situation. The multidisciplinary heart team approach in this setting may afford the best opportunity for a successful outcome. Tell me about your experiences and what else should be in the kit to better serve our patients.

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