Defibrillation Aboard a Commercial Aircraft

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A 53-year-old executive (6 ft 3 in tall; 327 lb) with a history of diabetes mellitus, hypertension, and coronary artery disease (coronary artery angioplasty in 1995) was traveling with his wife on vacation and ran to catch a connecting flight. The plane had closed the doors for takeoff when his wife noted that he was unresponsive. A flight attendant brought out the on-board automatic external defibrillator (AED; “ForeRunner,” Heartstream) and was assisted by a passenger with paramedic training. The device was applied and successfully defibrillated the patient with a single 130-J biphasic shock (see Figure). The patient regained pulse and blood pressure and was never intubated. His first blood pressure measurement was 150/92 mm Hg. He was transferred to a nearby hospital, where myocardial infarction was ruled out by serial creatine phosphokinase and troponin I measurements. He underwent cardiac catheterization (which revealed severe 3-vessel disease with preserved left ventricular function) and coronary artery bypass graft surgery. An implantable cardioverter-defibrillator was implanted because of concern that poor distal vessels had made the revascularization incomplete. He was discharged from the hospital 11 days after the cardiac arrest.

AEDs recently have been placed on board some flights by domestic carriers and are likely to become standard on several airlines in the near future. With the improvement of medical equipment on aircraft and superior reporting of medical emergencies, we will better understand the scope of this problem and the benefit of enhanced medical capabilities.
Playback of electrogram and device activity as recorded on PC memory card from automated external defibrillator. Electrogram is recorded between shocking patches (at upper right anterior and left lateral chest). A, Ventricular fibrillation is recognized and converted with a single shock after 12 seconds. Resulting rhythm is sinus bradycardia at 51 bpm with 2:1 conduction (arrows point to p waves). Note device activity before charging (“Shock advised”) and after conversion (“No shock advised, monitoring”). B, After 2.5 minutes, 2:1 conduction of p waves (arrows) changes to 1:1 atrioventricular conduction. Wide QRS complex is present. Atrial fibrillation developed 1 minute later. C, Atrial fibrillation persists and accelerates to 140 bpm before device is disconnected for transport of patient by emergency personnel, 10 minutes after defibrillation. Note that QRS complex has become narrow. Subsequent monitor recordings by emergency personnel demonstrated spontaneous resumption of sinus mechanism at 108 bpm.
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