



CORONARY HEART DISEASE AND AIR TRAVEL

Introduction

Each year some 1.6 billion passengers are carried by domestic and international airlines in some 15,000 jet aircraft flying some 20 million hours. That this is accomplished with the accidental loss of an average of only 1,200 lives makes aviation a safer means of transport than road and is a tribute to the competence and professionalism of the industry. Such a large exposure of people over such a time frame makes it inevitable that if death or illness occurs in the home, or in the workplace, it may also occur during travel. This is of concern for a number of reasons: the cabin environment is not a favourable place in which to be unwell, since the patient may be hours away from hospital services, and, from the operational viewpoint, diversions are both costly to the airline and inconvenient to others. This last point particularly applies to the proposed ultra-long haul (up to 18 hours), sometimes transpolar, sectors.

Flying and the cabin environment

Even seasoned travellers find flights stressful: parking at the airport, the crowds of people, carrying belongings long distances, delays at check in and at departure. Up to one third also will express some unease about leaving the ground. The cabin micro-environment, whilst protected, is not a normal one. The cabin altitude is maintained at between 6,000 – 8,000 feet (1,676 – 2,438 metres). At sea level a barometric pressure of 760 mmHg gives an arterial PaO₂ of 103 mmHg (13.7 kPa) when breathing air. At 5,000 feet (1,525 metres) the barometric pressure will be 565 mmHg and the PaO₂, on air, 75 mmHg (10.0 kPa). At 8,000 feet (2,438 metres) the figure will be 65 mmHg (8.7 kPa). The oxygen dissociation curve of normal haemoglobin is such that 90% saturation of haemoglobin is still achieved at cabin altitudes but whilst this is tolerable for a healthy individual it may not be so if tissue perfusion is for any reason inadequate. Other problems include low humidity –

there is little moisture in the air at altitude - noise, vibration, limited space and changes in circadian rhythm.

Coronary heart disease and flying

The coronary syndromes span an occasional episode of chest pain, frequent angina, unstable angina and myocardial infarction. Symptoms may be absent either on or off treatment and breathlessness may represent an “angina equivalent”, or, be due to significant left ventricular dysfunction with or without pulmonary oedema. The coronary pathology may be quite minor and localised or more severe and involve all three coronary vessels. Finally the left ventricle may be intact, or more severely damaged. From this range of possibilities, those advising patients about flying have to give a responsible view about whether or not it is appropriate to fly.

In general, if a patient can manage a flight of stairs without stopping and without significant symptoms whilst holding a conversation, he/she should be fit enough to fly. Patients with frequent (i.e. daily) angina should be discouraged from flying and those with an unstable syndrome should not fly. There need be no bar for those with mild stable angina but travel should be delayed for three weeks or so following a recent myocardial infarction by which time convalescence should be nearing completion. A stable old myocardial infarction should not be a problem, but it is worthwhile informing the airline medical branch.

Following coronary surgery limiting factors include the stability of the sternal wound and the need for the resorption of air from the pleural cavity – usually about two weeks. By contrast, the symptom-free patient following coronary angioplasty/stenting should be fit enough to travel after 1-2 weeks. In the event of significant left ventricular dysfunction/failure flying is contra-indicated if oxygen is needed at rest on the

ground. Patients should be encouraged to keep plenty of their usual medication with them, including nitroglycerine. It is also wise to take a prescription (for the customs officer), and a medical report. Dosing frequency should be maintained across the time zones.

Airline medical services and in-flight medical care

All the major airlines have medical branches and invite passengers, and their medical attendants to advise them of possible problems of a medical nature. Airport medical services can make trolleys or wheel chairs available, if needed, but giving them prior warning is advisable. Medical or nursing escorts can be requested, but have to be paid for by the patient. On board oxygen (which is separate from the emergency system)

should be requested well in advance to ensure an adequacy of supply if there is frequent angina or a reduced PaO₂ at ground level. Occasionally, myocardial infarction will occur whilst in the air, and about half of all deaths will occur within the first 15 minutes from an arrhythmia. Cabin staff are trained for such an emergency and all airlines carry first aid and medical emergency kits. Most major airline flights are now equipped with a “smart” in-flight defibrillator. Nevertheless, even with a defibrillator at hand, the chances of successful restoration of a satisfactory rhythm and eventual discharge from hospital are limited. It is for that reason, that careful assessment of patients with coronary heart disease is so important.

Further reading:

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