

Jet lag

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Conflicts of interest: None.

Abstract

Long-distance travel, whether for pleasure, business, or both, is associated with travel fatigue and jet lag. Symptoms reflecting the jet lag syndrome include disturbance of sleep, increased levels of fatigue and irritability during the arrival daytime, and a variable loss of concentration. Jet lag is caused by the slow adjustment of the body clock to the new time zone, leading to desynchronization of the daily rhythms with the new environment. Jet lag lasts for several days (about two-thirds of the number of time zones crossed traveling east, and half traveling west). Management includes behavioral measures and drugs, but no cure is available.

■ *Heart Metab.* 2009;44:29–30.

Case report

The time in Bermuda is 4 hours behind that in the UK, and traveling westwards from London takes 7½ hours. Using my British Airways Air Miles, my wife and I flew first class return, obviously in comfort. I am always cautious regarding avoiding dehydration (1 litre of water for every 5 hours flying time) and excess of both alcohol (wine only) and caffeine (avoided). Traveling west I do not sleep, but traveling east – as long as it is a night flight – I settle down as soon as is practical. On this occasion, we left London at 15.00 h, arriving on time at 18.30 h local time (22.30 h UK time). The travel fatigue that is associated with any long journey was not evident (comfortable travel, excitement on arrival) and our hotel was reached at 20.15 h. A quick “freshening up” was followed by dinner on the restaurant terrace, where we were greeted warmly (our fourth visit – nice to be recognized). A relaxing meal, good wine, and bed at 22.30 h. Awake at 03.00 h (why is it always 3 a.m.?) and grateful for the in-room filter-coffee maker at 05.00 h. A lazy day by the pool/beach followed, with slight fatigue only. Sleep disturbance persisted for 4 days, in spite of our taking no caffeine after 17.00 h (tea). The holiday was very enjoyable, with good weather, and very relaxing. Seven days later, we left Bermuda at 20.00 h, arriving back in London the next day at 06.30 h local time. A smooth and excellent flight and 2 hours' sleep. The rest of the day was spent dealing with emails and

the post, and checking with my secretary about the week's events – from home, as planned – keeping going as long as possible to try to get back on UK time, bed at 22.30 h, and a complete night's sleep to 06.00 h. No further symptoms or problems. Unusually, I had experienced far more sleep disturbance going west than east. In contrast, traveling east my wife adjusted after 1 day only, and traveling west 2 days of fatigue slowed her – we are all individuals where jet lag is concerned.

Discussion

Jet lag is a result of the body clock not being adjusted to the new time zone [1]. The rhythm most affected is sleep. As the body clock adjusts, jet lag resolves. As the number of time zones crossed increases, so the severity of the jet lag increases, with flights to the east more affected than those to the west. The world is divided into 24 time zones based around the Greenwich meridian in the UK, and the time changes by 1 hour for every 15 degrees traveled in either direction. Traveling over three time zones increases the risk of jet lag. Flying east, the body finds it more of a challenge to adjust to a longer day, so jet lag lasts (in days) for two-thirds the number of time zones crossed traveling east, compared with approximately a half the number traveling west. Speeding up the time frame may help prevent or reduce jet lag.

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Table 1. Advice for coping with travel fatigue.

Before the journey	Plan the journey well in advance Arrange for any stopover to be comfortable Arrange documentation, inoculations, visas etc. Make arrangements at the destination
During the journey	Take some roughage (eg, apples) to eat* Drink plenty of water or fruit juice (rather than tea, coffee, or alcohol)
On reaching the destination	Relax and rehydrate with non alcoholic drinks Take a shower Take a brief nap, if needed, but not enough to stop you getting to sleep at night

* Many countries do not allow you to bring in fruit/foods.

The best way to alleviate jet lag is to adjust the body clock to maximize the synchronization of the circadian phase to the rhythm of light and dark at the destination [2]. Traveling west, it is helpful to stay awake as long as it is light; traveling east, staying awake (avoiding bright light in the morning) and being out and about as much as feasible in the afternoon are to be recommended. Melatonin secreted by the pineal gland is turned off by light, and this pattern of behavior is designed to turn it back on naturally at the correct time: the release of melatonin is associated with it being time to sleep. Advice on general issues is summed up in *Table 1*.

Pharmacological assistance is frequently advocated, using melatonin or a short-acting sedative such as the hypnotic agent, zolpidem. The effectiveness of melatonin (2–5 mg) taken at bedtime after arrival has been subject to a Cochrane review [3]. Melatonin may shift the time phase in addition to acting as a hypnotic, whereas zolpidem helps with sleep, but not with the circadian phase.

One Cochrane review found 10 randomized trials comparing melatonin with placebo in long-distance travelers; in eight of these, a clear reduction in jet lag was found after melatonin had been ingested. Five studies reported on global jet lag scores: on a scale of 0 = none to 100 = extreme, the mean was 48 among individuals receiving placebo and 25 among those receiving melatonin. The authors concluded: “Melatonin is remarkably effective in preventing or reducing jet lag and occasional short term use by adults appears to be safe”. They recommended 2–5 mg for up to 4 days after arrival, with no evidence of benefit if commenced beforehand. Regarding adverse effects, there are no safety data available for children or pregnant women, and melatonin should be avoided in those taking oral anticoagulants (eg, warfarin) or suffering from epilepsy.

In the USA, Thailand and Singapore, melatonin is considered to be a food additive and not a medication, so its purity is not regulated. Although in some countries (not the UK) it is considered a medication and requires a license, no preparation is marketed, so many rely on unregulated sources such as the Internet. The current situation is totally unsatisfactory, promoting counterfeit rather than genuine preparations.

Summary

If a journey crosses fewer than three time zones, jet lag is unlikely to be significant. If the time away is fewer than 3 days it is advisable to try to keep on your home time. If the journey is more than three times zones, jet lag can be minimized by using light to promote body clock adjustment, taking melatonin to help with clock adjustment and sleep, and keeping alert during day-time (caffeine of your choice – mine’s a cappuccino!).

Personal note

We were in the sky traveling smoothly at exactly the same time as the Air France flight was, tragically, not doing so. At times like these, we can only reflect on our vulnerability and offer sincerest condolences. ■

REFERENCES

1. Waterhouse J, Reilly T, Atkinson G, Edwards B. Jet lag: trends and coping strategies. *Lancet*. 2007;369:1117–1129.
2. Herxheimer A, Waterhouse J. The prevention and treatment of jet lag. It’s been ignored, but much can be done. *BMJ*. 2003;326:296–297.
3. Herxheimer A, Petrie KJ. Melatonin for the prevention and treatment of jet lag (Cochrane Review). In: *The Cochrane Library*; issue 2. Oxford: Oxford Update Software, 2003.