Jet Lag

The main symptoms associated with jet lag are tiredness, sleeping difficulties, and sleepiness during the day resulting from desynchronization between the individual's internal clock and the external environment. The internal clock controls all body functions (temperature, heart rate, hormone production, sleep, mood, performance, etc.) which vary according to individual circadian cycles (1-day cycles). The internal clock, on the other hand, is controlled by zeitgebers (time-givers), the most significant being light, social contacts and knowledge of clock time. Therefore, when traveling rapidly across time zones, the zeitgebers in the new environment will be sending conflicting messages to the internal clock, resulting in the above symptoms.

Besides zeitgebers, a number of other factors influence the severity of the symptoms. The main ones are: number of time zones crossed, the direction of flight (eastward vs. westward, with westward flight usually easier), the degree of stimulation in the environment, the cumulative sleep loss (quantity and quality), and individual differences (old vs. young, morningness vs. eveningness) (1-4).

An understanding of zeitgebers and these other factors will help physicians to intervene and minimize the severity of jet lag. To this day there is no miracle treatment, even though there has been and still is significant research on modalities such as bright light (5,6) and melatonin (7-9).

For the general traveling public, the idea is to try to adapt as quickly as possible to the new time zone. Since we know that light and social contacts are the most significant zeitgebers, the traveler should get as much exposure as possible to natural light during the day at the new destination as well as interacting with local people. For example, when traveling from North America to Europe, one could get a short rest (2 hours is good because it tends to respect the sleep cycle for light vs. deep sleep) and then spend the rest of the day outside if possible.

The so-called "jet lag diet" (10) is only speculative and has no scientific basis. However, we know that smaller meals before and during the flight are better tolerated than larger meals. Also, the use of caffeine and physical activity can be used strategically at the destination to help control daytime sleepiness.

Judicious use of hypnotics helps control sleep loss but does not re-entrain the circadian cycle (11). If necessary, it is advisable to prescribe the lowest effective dose of a short- to medium-acting compound for the initial few days. Alcohol should not be used as a hypnotic because it disturbs sleep patterns and will sometimes provoke sleep apnea.

Exercise has only anecdotal support and probably acts indirectly through the influence of social cues, bright light and beneficial effects on subsequent sleep. Likewise, theories advanced by homeopathy, aromatherapy, and acupressure are only speculative and have no scientific basis.

Finally, the hormone melatonin, secreted at night by the pineal gland, purportedly helps travelers overcome jet lag. Since the first publication of these guidelines in 1996, research and publications on melatonin have continued to appear regularly in the literature. While the hypnotic activity of melatonin is generally accepted, its pure chronobiotic properties are still controversial (9,13,14).

Further, melatonin is still considered a dietary supplement in most countries including the United States

and is, therefore, under no specific control. Studies have found nonidentified contaminants or even the absence of the active compound in some products. It would appear safer at this time to use a simple hypnotic like zolpidem or temazepam for which control is well established (14).

As already stated, there is no magic potion to eliminate jet lag, but proper pretravel medical advice given by a well-informed primary care provider can make the difference between a good and a bad trip.

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