Through the vast reaches of prehistory, humanity has traversed the planet barefoot, one step at a time. Yet, all of us living on this island continent have come here by sea or air, by boat or plane, either personally or through our ancestors. Travel by boat, plane, car and many other “passive” forms of transport are a daily part of modern life. Even so, they pose particular and poorly understood challenges to the control of balance and the perception of motion through the various senses. Particular clinical problems can occur in the transition from one mode of transport to another. As many people experience, the transition from land to passive transport is commonly associated with motion sickness. The transition back to land is much less commonly associated with a disembarkation sickness known as Mal de Debarquement syndrome (MdDS).

In most instances the dizziness of MdDS is usually described as rocking, swaying and bobbing, often as though still on the boat. Usually the patient feels as though they are moving although in most cases they are also aware that this is an illusion of motion. Rocking can be continuous and in some patients is even present while lying. Where symptoms are intermittent, they are often made worse by activity and are often worse at the end of the day. Interestingly, they usually much reduced or disappear with return to passive transport, such as back to sea or as a car passenger. The author has seen a man who, after several years of comfortable retirement half spent on ocean cruises, experienced continuous rocking on land and finding his only relief back at sea. A majority of patients also note that certain visual stimuli aggravate their dizziness (Cha et al. 2008), a symptom known as visual vertigo. Perhaps the commonest culprits are shopping centres and supermarkets, with complex layout, fluorescent lights, reflective surfaces and hustle and bustle. Numerous other possible triggers can include repetitive visual patterns, fast action on television and scrolling on computers and smart phones.

Although objectively measured balance is usually normal, MdDS is a cause of very significant suffering and disability with patients commonly reporting fatigue, poor concentration and anxiety (Macke et al. 2012). While anxiety, and in particular psychophysiological dizziness, can be associated with rocking dizziness and visual vertigo, most studies conclude that MdDS is not caused by anxiety. The author has seen a number of “down to earth” patients with absolutely no background anxiety who deal with MdDS with little or no emergent anxiety.

The cause of MdDS is not well understood. Many people experience transient symptoms after passive travel, especially after a long and rough sea voyage (Gordon et al. 1992). Getting “one’s land legs” generally lasts no more than a day or two but beyond this span MdDS is said to be present, although precise definitions vary. It seems common sense that MdDS is a failure of the normal readjustment and adaptation to land although the mechanisms behind this have not been identified.

It is important to recall that MdDS is uncommon and occurs in a tiny proportion of the millions who travel each day. While it can recur with a further dose of passive transport, this is probably the exception rather than the rule. Furthermore, sometimes the inciting episode of transport can be as commonplace as a single rough plane trip. To complicate matters further, MdDS can recur without a clear trigger and “spontaneous” MdDS can occur de novo without an obvious cause. Migraine appears to be associated with MdDS and with rocking dizziness that develops spontaneously with or without a prior history of typical motion-induced MdDS (Cha and Cui 2013). Headache is also a common symptom in MdDS, although typical MdDS is not clearly associated with migraine in most studies (Cha et al. 2008). Thus, it seems likely...
that the cause of MdDS is more complex than failure to readjust to balance conditions on land as the apparent link to migraine suggests an alteration of excitability in the central nervous system.

A patient has been described who developed MdDS after a cruise but also had severely impaired vision and peripheral neuropathy that affected his balance (Moeller and Lempert 2007). Interestingly, he also had Charles Bonnet syndrome with continuous visual hallucinations as a consequence of his blindness. Thus, it was speculated that his MdDS might similarly represent a form of hallucination but within the motion perception system. This hypothesis gains some support from a recent functional neuro-imaging study (PET and fMRI) in MdDS that shows increased activity in the right entorhinal cortex, a part of the temporal lobe that contains specialised neurons that respond to place and orientation (Cha et al. 2012). Clearly research into the cause of MdDS is a work in progress.

For the patient with MdDS, the diagnosis should be fairly straightforward if the clinician is familiar with the condition and the history of rocking dizziness with antecedent passive transport is clear. There is usually no spinning vertigo or any other symptoms or signs to suggest an inner ear disorder. Indeed, objective physical examination is usually entirely normal or just reveals minor and nonspecific increased body sway. Likewise, all standard clinical tests are normal or unremarkable, including all the widely available vestibular function tests and MRI of brain and ears.

In practice, however, a diagnosis of MdDS is often delayed and often various misdiagnoses are offered, perhaps most often a misattribution to a psychiatric diagnosis. Thus, a clear and accurate diagnosis along with well-informed reassurance is the most important aspect of management relevant to all patients with MdDS. Most patients recover, with only a small minority having symptoms that last beyond one year. No specific treatment has been proven to cure the condition but there is some evidence that selective serotonin reuptake inhibitors (SSRIs) and benzodiazepines (most commonly clonazepam in Australia) are the most effective in alleviating symptoms. In practice, management is usually a trial and error approach that often includes encouragement of activity and formal vestibular rehabilitation.

MdDS poses many challenges and opportunities for clinicians and researchers. Most pressing is the need for greater recognition amongst clinicians, leading to better individual patient management and a greater clinical base for research. Understanding the cause or causes of MdDS is important in its own right, but also offers the prospect of better understanding the way in which we adapt to changes in our motion environment and may shed light on other more common disorders such as motion sickness and vestibular migraine.

References: