

When Seasickness Persists After a Return to Solid Ground

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When 71-year-old Marilyn Josselyn finished a weeklong [cruise](#) on the Volga River in Russia with her husband, Roger, in 1998, she expected to feel like a bobbing buoy for a little while after returning to land. "I felt a rocking sensation, but I thought it was just the usual kind of thing," she said. But when the feeling persisted for weeks, then months, she began to realize something in her brain was truly off kilter.

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A smorgasbord of doctor-recommended treatments followed, including medication and vestibular therapy for patients with dizziness. "They'd have me stand in front of a chair, turn around as fast as I could, and then sit down," she said. "But it made me feel worse instead of better." Nine years of pitching and rolling have forced Mrs. Josselyn to quit her job as a court reporter and forgo the exotic trips she used to enjoy, and she wants nothing more than to get off the boat.

"Landsickness" or "reverse seasickness" is familiar to many people who have taken long cruises — once the body has become accustomed to constant motion, the vestibular system, which controls balance, usually takes a few hours or days to acclimate to being on land again. But in patients like Mrs. Josselyn, who suffer from what is known as mal de débarquement, or debarkation sickness, the brain never seems to readapt.

Their symptoms, which include dizziness, nausea and a persistent feeling of rocking from side to side, can continue for decades after the fateful voyage that initiates them. "Have you ever seen those wave machines at amusement parks?" said Mary Richards, 37, a psychotherapist in Palo Alto, Calif., who has the condition. "That's what my body feels like all the time."

When Timothy C. Hain, a neurologist at [Northwestern University](#), published the first survey study on mal de débarquement several years ago, the disease was so little known that he had trouble scraping together a group of 26 sufferers to investigate. The vast majority of them, for reasons he was unable to determine, were middle-aged women. "Most of them had tried many different medicines, and almost nothing seemed to work," he said — including drugs and therapies designed to treat other types of balance disturbances, such as [motion sickness](#) and dizziness.

After years of treating patients and mulling over individual case histories, Dr. Hain has formulated a broad theory of what causes the condition, with the help of Charles Oman, an aeronautics engineer at the [Massachusetts Institute of Technology](#) and head of the

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“A very sophisticated way of dealing with your environment is to form an internal model of it in your brain,” Dr. Hain said. “A boat is a perfect place for this kind of internal model to form. It’s rocking back and forth, and it gets into a rhythm that you start to be able to predict.”

Sufferers of mal de débarquement, Dr. Hain theorizes, form internal models of the boat that are very accurate — so accurate, in fact, that they typically suffer very little seasickness or uneasiness while on board. “They’re the ones who are walking around the boat and having a great time,” he said. “But when they get off, they don’t give up their internal models very easily.” The disconnect between the entrenched internal model and the person’s actual surroundings, he believes, is what spawns the disease’s disorienting symptoms.

One observation supporting this theory is that many sufferers immediately feel better when they enter the kind of moving environment that touched off the disorder in the first place — a boat, car or plane. “When I get in the car, I feel better,” Mrs. Josselyn said, “but when I get back out, it gets worse again.” According to Dr. Hain’s theory, this is because their internal models are once again consistent with what is actually happening around them.

But not every doctor who has worked with mal de débarquement patients agrees with Dr. Hain and Dr. Oman’s take on the condition. Carlos Gordon, a neurologist at Meir Hospital in Kfar Saba, Israel, is not convinced there is a direct connection between long cruises and the persistent symptoms typically associated with the disease. “There’s no proof that exposure to the abnormal environment is the cause,” Dr. Gordon said. “There are many patients that have the same symptoms following head trauma or a viral infection without previous exposure to sailing.”

He pointed out that since there is no laboratory examination to confirm the presence or absence of the condition — sufferers typically perform normally on standard tests of balance and coordination — there is no clear-cut reason to believe the disease has a defined physical cause.

Robert Baloh, a neurologist at the University of California, Los Angeles, hopes to resolve this dispute by taking a closer look at how the patients’ minds actually work. He is seeking approval to perform M.R.I. studies that would compare the neural activity of mal de débarquement patients with that of normal subjects and patients who are “in remission,” experiencing temporary relief from their symptoms.

“The condition may be related to the brain areas that sense movement, the temporal and parietal lobes,” Dr. Baloh said. “We want to see if there are differences in the way people process visual motion.”

Zohar Nachum, a neurologist at the Israel Naval Medical Institute in Haifa, has performed one of the only studies to date that lends insight into specific abnormalities in patients’ brain activity. Dr. Nachum recruited 17 subjects who were prone to short-term bouts of mal de débarquement and 17 others who were not, sent them on a short sailing voyage, and performed neurological tests on them before and after the trip.

The sailors susceptible to mal de débarquement used less input from their vestibular and visual systems to maintain balance, and also had delayed motor responses to unexpected perturbations, such as when a boat rolls over a breaker. These findings suggest that sufferers’ brains may not rely enough on certain types of changing information from the environment for orientation.

Though the mechanism underlying the disease remains largely a mystery, many patients have found through trial and error that Valium and related drugs, like Klonopin (clonazepam), mute their symptoms.

“These drugs don’t work on the inner ear, they work on the brain pathways that control dizziness,” Dr. Hain said. “They seem to be able to help people turn off their sensations of spinning.”

Another potential therapy involves a device called BrainPort, being developed by a Wisconsin-based company, Wicab Inc. Still being tested, and not yet submitted for federal approval, it would supply the brain with spatial information via tiny buzzes through electrodes attached to the tongue. The idea is to facilitate balance orientation by overriding internal models in the brain that give rise to feeling off kilter.

While some sufferers are holding out hope for a cure, Marilyn Josselyn has chosen, instead, to redefine her life within the constraints the disease has imposed on her. With her husband’s help, she has thrown her energy into creating an online support group for patients with the condition. She has to ration the time she spends on the site because her head whirls with vertigo if she sits in front of the computer for more than 15 minutes.

“I’m resigned to the fact that there’s not going to be a cure in my lifetime, but I’m happy I’ve been able to help others who are suffering,” she said. “A lot of people have had this for years and they don’t know what’s wrong with them. When they find the Web site, they say, ‘Thank God, I’m not crazy after all.’ ”

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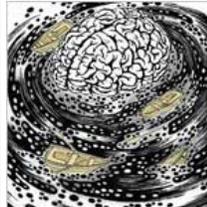
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