Survey of mal de debarquement

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Mal de debarquement, or "land sickness," is a transient sensation of tumbling, swinging, unsteadiness, and disequilibrium reported by passengers and crew after returning to land from long sea voyages. Although mal de debarquement is mentioned in classic texts on seasickness,[1,2] there are no specific studies concerning the nature and extent of this phenomenon. A computer search of the literature yielded only one publication dealing with persistent (not transient) mal de debarquement.[3] We report a survey of the incidence of mal de debarquement and its relation to experience at sea and susceptibility to seasickness.

Subjects, methods, and results

The information was collected by means of questionnaires distributed among 234 healthy crew members of seagoing vessels (300-500 tonnes). Subjects were aged 18-38 (mean 20·5) years and had 1-150 months' experience at sea (mean 17 (SD 18) months). None had a history of any disease which might cause vertigo or disequilibrium.

The occurrence and frequency of mal de debarquement were graded on a four point scale (very often, occasionally, only once, never). Latency from disembarkment to the onset of symptoms, duration of symptoms, and additional causative factors such as rough seas and length of voyage were also recorded. Present susceptibility to seasickness was graded on an eight point scale (not susceptible to very susceptible) according to Wiker *et al.*[4,5] Other parameters of susceptibility, such as nausea and vomiting during most recent voyages in rough seas and susceptibility to seasickness in the past,[2] were also graded.

One hundred and seventy one subjects (73%) reported having experienced mal de debarquement, 20 (9%) very often, 86 (37%) occasionally, and 65 (28%) only once. Mal de debarquement appeared immediately on returning to land in 127 (74%) of the 171 subjects and within six hours in 169 (99%). Its duration ranged from a few minutes to 24 hours (mean 156 (SD 308) minutes). In 159 (93%) subjects the phenomenon did not last more than six hours. The appearance of mal de debarquement was frequently related to a prolonged sea voyage (115 (67%) subjects) and to rough sea conditions (75 (44%)). The table lists the relevant correlations between parameters.

Kendall correlation coefficients

	Occurrence of mal de debarquement	p Value	No
Experience at sea	0·072	0·157	230
Present susceptibility to seasickness	0·290	0·0001	228
Nausea*	0·273	0·0001	228
Vomiting*	0·225	0·0001	231
Past susceptibility to seasickness	0·245	0·0001	227

*During most recent voyages in rough seas.

Comment

This study shows that mal de debarquement is a benign, transient picture of a tumbling or swinging sensation but not true vertigo. The phenomenon seems to be quite common among crew members of fairly small seagoing vessels (73%). None of our subjects suffered persistent mal de debarquement[3] or requested medical attention.

The occurrence of mal de debarquement was positively correlated with all the parameters of susceptibility to seasickness but was not correlated with experience at sea—that is, both inexperienced and experienced crew members had the sensation to a similar degree.

The nature of mal de debarquement, its short latency and limited duration, and its relation to prolonged sea voyages and rough sea conditions can be explained within the framework of sensory adaptation to ship motion. Passengers and crew on board ship are exposed to a series of unnatural and conflicting vestibular, visual, and proprioceptive stimuli which, according to the neural mismatch and sensory rearrangement theory, may cause seasickness and, at the same time, adaptation to specific ship motion.[2] This adaptation is often expressed in the familiar sensation of "getting one's sea legs," using the leg muscles to oppose the motion of the waves. After return to land these newly acquired sensorimotor patterns are no longer appropriate, giving rise to mal de debarquement, which lasts until readaptation is achieved.

Further studies measuring vestibulo-oculoproprioceptive interactions during mal de debarquement are warranted in order to clarify the neurophysiological basis of this phenomenon.

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3 Brown JJ, Baloh RW. Persistent mal de debarquement syndrome: a motion-induced subjective disorder of balance. *Am J Otolaryngol* 1987;**8**:219-22.
4 Wiker SF, Kennedy RS, McCauley ME, Pepper RL. Susceptibility to seasickness: influence of hull design and steaming direction. *Aviat Space Environ Med* 1979;**50**:1046-51.
5 Wiker SF, Kennedy RS, McCauley ME, Pepper RL. *Reliability, validity and application of an improved scale for assessment of motion sickness severity*. Washington, DC: US Department of Transportation, United States Coast Guard, Office of Research and Development, 1979. (Report No CG-D-29-79.)

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Ranitidine, aspirin, food, and the stomach

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Optimal prophylaxis against development of peptic ulceration in patients taking aspirin or non-steroidal anti-inflammatory drugs remains controversial. Clinical studies of patients taking these drugs have shown ranitidine 150 mg twice daily to be highly effective in preventing the development of duodenal ulceration but to have less effect on gastric damage.[1] Higher doses could, however, afford greater protection since microbleeding induced by aspirin can be reduced to placebo levels by giving high doses of the proton pump inhibitor omeprazole.[2] Patients are advised to take these drugs with food, but there are few data on the validity of this advice. Indeed, parenteral indomethacin has been shown to induce antral ulcers in rats that have been fed but not fasted.[3] We therefore investigated the effects of standard and higher doses of ranitidine on gastric mucosal injury induced by aspirin and whether this was affected by timing of dose in relation to food.

Subjects, methods, and results

Twenty healthy volunteers (13 men, seven women, aged 19-30 years) with normal results on screening endoscopy were given aspirin 600 mg four times a day