

Gender and nausea: Psychological and biological mechanisms in pathogenesis and treatment

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Women experience more nausea and vomiting (N&V) than men in a variety of clinical and non-clinical conditions. We studied gender differences in rotation-induced N&V in a series of experiments with healthy subjects: 1) More women than men were susceptible to a standard rotation procedure, and gender-specific norms for motion sickness susceptibility were established. 2) Gender differences were partially reversed with subjects of Asian origin. 3) Gender differences were also found for tolerance to experience pseudo-rotation but not for the ability to perceive pseudo-rotation. 4) Gender differences were most pronounced with variation of the body position: women did experience maximum N&V duringvection in the upright position, while in men a supine position elicited higher symptoms. 5) Women sensitized initially and habituated later, while men showed the opposite sequence in habituation to N&V. 6) Immunological and hormonal indicators of N&V supported this finding of different habituation/adaptation kinetics. 7) Pavlovian conditioning of N&V, using a salient taste as conditioned stimulus was more effective in inducing N&V in women than in men. 8) Both Latent Inhibition and Overshadowing were more effective in women than in men to reduced conditioned and unconditioned N&V. 9) A combination of both techniques did not have a synergistic effect. 10) Women are more prone than men to respond to placebo treatment with (conditioned) N&V symptom relief. In summary, gender differences in N&V are due to both psychological as well as biological differences. The most profound effects are presumably generated by gender differences in the strategy and efficacy learning.