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Effect of zolpidem on the sleep arousal response to nocturnal esophageal acid exposure

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Abstract

Background & aims: Nocturnal acid reflux is associated with complicated gastroesophageal reflux (GER) disease. Nocturnal GER initiates a protective arousal reflex, which induces a swallow to clear esophageal acid. The purpose of this study was to determine the effect of zolpidem on the sleep arousal mechanism and acid clearance in patients with documented GER, compared with control subjects with normal acid exposure.

Methods: Eight controls and 16 GER patients were enrolled in a randomized, double-blind, placebo-controlled study. Zolpidem or placebo was given on separate nights. Reflux events and reflux-associated arousals or awakenings were recorded using simultaneous esophageal pH recording and standard polysomnography.

Results: Nocturnal acid exposure resulted in a sleep arousal 89% of the time in participants (with and without GER) given placebo but only 40% in those given zolpidem ($P < .01$). In controls given placebo, acid reflux events lasted 1.15 \pm 0.28 seconds; in controls given zolpidem, they lasted 15.67 \pm 12.42 seconds ($P < .01$). In GER patients given placebo, the acid reflux events lasted 37.8 \pm 17.2 seconds compared with 363.3 \pm 139.3 seconds with zolpidem ($P < .01$). With zolpidem reflux events lasted 630.6 \pm 236.5 seconds when no arousal occurred and 49.2 \pm 19.11 seconds when an arousal was recorded ($P < .001$).

Conclusions: Zolpidem reduced the arousal response to nocturnal acid exposure and increased the duration of each esophageal acid reflux event in healthy individuals and patients with GER. Because nocturnal acid exposure was prolonged, hypnotic use by patients with GER could lead to increased risk for complicated disease.

Comment in

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Harding SM.

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PMID: 19465149 No abstract available.

Reflux is unlikely to occur during stable sleep.

Dent J.

Clin Gastroenterol Hepatol. 2010 Jul;8(7):638-9; author reply 639. doi: 10.1016/j.cgh.2009.12.025. Epub 2010 Jan 6.

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