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GERD negatively impacts sleep quality, results in considerable economic burden

Bethesda, MD (Sept. 1, 2009) — There has been much debate about the relationship between gastroesophageal reflux disease (GERD) and sleep. Three new studies in *Clinical Gastroenterology and Hepatology* explore GERD's effect on sleep quality and the health-care system as well as how a widely prescribed sleeping pill may mask the disease. *Clinical Gastroenterology and Hepatology* is the official journal of the American Gastroenterological Association (AGA) Institute.

GERD is a commonly occurring condition in the U.S., with more than 40 percent of the population experiencing the disease. It develops when the reflux of stomach contents into the esophagus causes troublesome symptoms and/or complications. Heartburn and acid regurgitation are characteristic symptoms of this disease. Published literature estimates that approximately 75 percent of patients with heartburn experience nighttime GERD symptoms. Nocturnal acid reflux may be especially damaging because acid exposure is of longer duration and has been associated with complications of esophagitis, including Barrett's esophagus and cancer.

Study Suggests Sleeping Pill May Worsen Reflux Symptoms

The widely prescribed sleep-inducing hypnotic zolpidem (Ambien®) suppressed nocturnal arousals and awakenings in response to acid reflux events and increased the duration of each esophageal acid reflux event in healthy individuals and patients with GERD.

"As many as 15 percent to 30 percent of patients with disturbed sleep may have undiagnosed GERD. If the effect of blunted arousals or awakenings by sleep aids is substantiated, this would suggest caution in the use of sleep aids without first considering GERD as a cause in patients with complaints of disturbed sleep," said Anthony J. DiMarino Jr., MD, of Thomas Jefferson University and lead author of the study.

A total of eight controls and 16 GERD patients were enrolled in a randomized, double-blind, placebo-controlled study. They were given zolpidem or placebo on separate nights; the number of reflux events and reflux-associated arousals or awakenings was recorded.

"The drug had the effect of enabling subjects to 'sleep through' reflux events, thereby increasing nocturnal acid exposure. This suggests that hypnotic use by GERD patients could lead to increased risk for complicated disease. In fact, nocturnal reflux is the leading cause of Barrett's esophagus, a recognized cause of esophageal cancer," added Dr. DiMarino.

Researchers found that acid refluxing at night resulted in sleep arousal 89 percent of the time in participants (with and without GERD) given placebo but only 40 percent in those given zolpidem. In controls given placebo, acid reflux events lasted approximately one to two seconds; in controls given zolpidem, they lasted roughly three to 30 seconds. In GERD patients given placebo, the acid reflux events lasted about 20 to 55 seconds as compared to about four to eight minutes with zolpidem. With zolpidem, reflux events lasted approximately seven to 15 minutes when no arousal occurred and 30 to 68 seconds when an arousal was recorded.

GERD Nighttime Symptoms Are Prevalent, Have Negative Effects on Sleep Quality

Nighttime GERD symptoms interfere with patients falling and staying asleep, and result in considerable economic burden and reduction in health-related quality of life (HRQOL).

"These sleep difficulties result in substantial costs to the health-care system by increasing provider visits. There is a greater loss of productivity to the employer and poorer HRQOL to the patient," said Susan C. Bolge, PhD, of Consumer Health Sciences and corresponding author of the study. "Appropriate management of GERD must include treatment of nighttime symptoms, which affect both difficulty initiating and maintaining sleep."

Researchers obtained data from a patient-reported survey conducted in 2006 among the general U.S. population. Respondents who experienced GERD symptoms at least twice in the past month were categorized as GERD patients and were sub-classified into groups based on nighttime symptoms and sleep difficulties.

Of 11,685 survey respondents with GERD, 88.9 percent experienced nighttime symptoms, 68.3 percent sleep difficulties, 49.1 percent difficulty falling asleep and 58.3 percent difficulty staying asleep. These sleep difficulties were associated with a poorer HRQOL.

Sleep difficulties were also associated with greater use of health-care resources (0.9 additional provider visits), loss of work productivity (5.5 percent decrease) and increased impairment of daily activities (10.9 percent increase). This increased use of health-care resources and loss of work productivity contributes to increased economic burden of GERD.

Data Indicate Association between GERD and Sleep Problems

This large, population-based, cross-sectional, case-control study indicates a dose-response link between sleep problems and GERD that might be bi-directional, i.e. sleep problems may influence the development or increase the severity of GERD and GERD may influence the development or increase the severity of sleep problems.

"The interplay between sleep problems and GERD seems complex, but our finding of a link between the two cannot be dismissed. This finding may be of clinical relevance since a separate randomized controlled trial showed that sleep problems were improved after GERD therapy," said Catarina Jansson, PhD, of the Karolinska Institutet and lead author of the study. "Our finding may also explain the reduced work productivity associated with GERD."

The study was based on two large health surveys performed in the Norwegian county Nord-Trøndelag from 1984 to 1986 and 1995 to 1997. GERD was assessed in the second survey, which included 65,333 participants (70 percent of the county's adult population). The 3,153 individuals who reported severe reflux symptoms constituted the cases, and the 40,210 individuals without reflux symptoms constituted the controls.

In models adjusted for age, sex, tobacco smoking, obesity and socioeconomic status, positive associations were observed between presence of insomnia, sleeplessness, problems falling asleep and risk of GERD. These associations were attenuated after further adjustments for anxiety, depression, myocardial infarction, angina pectoris, stroke and gastrointestinal symptoms, but remained statistically significant.

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To learn more about heartburn and GERD, read the AGA patient brochure on this topic at www.gastro.org/patient.

About the AGA Institute

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