

# NHF Head Lines

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## The Link Between Sleep and Headache

*J. Steven Poceta, MD  
Scripps Clinic and The Scripps  
Research Institute, La Jolla, California*

**E**ven prior to modern medicine, there was an indication from clinical observation that a relationship between sleep and headache existed. The relationship, however, was—and still is—unclear. Some scholars discuss sleep primarily as a means to end a migraine attack, and think of sleep deprivation or irregular sleep as a triggering factor. Others have emphasized excessive sleep or even the act of sleeping itself as triggering factors.

To this day, the nature of the relationship has remained uncertain—excess sleep causes headache; sleep deprivation causes headache; sleeping will relieve a migraine; and so on. However, overlooking sleep-related problems in headache represents a missed opportunity.

While the exact relationship is still unknown, studies have illuminated the link. A report of migraine attacks in 1,698 adults showed a clear circadian pattern: 48% of migraines occurred between 4 am and 9 am. It therefore seems there are similar mechanisms in headache generation and sleep maintenance.

Cluster headache and migraine often have their onset during sleep, while hypnic headache always does. “Sleep-related headaches” have been described as those in which 75% of headaches originate during sleep. My own interest in the link originated

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An Award-Winning  
Bimonthly Publication  
of the National  
Headache Foundation

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**NHF HEAD LINES**

**PUBLISHED BY:**

National Headache Foundation

820 N. Orleans, Suite 217

Chicago, IL 60610-3132

Toll-free 1-888-NHF-5552

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This publication discusses a broad range of headache symptoms, medications, and treatments in an effort to inform and educate readers and it is not meant to substitute your healthcare provider's advice. Because each patient is different, your healthcare provider should always be consulted prior to beginning or changing any treatment.

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## The Link Between Sleep and Headache

*Continued from page 1*

from the fact that certain patients with obstructive sleep apnea (a condition in which breathing is interrupted during sleep) develop morning headache, which resolves when the sleep apnea is treated. Obstructive sleep apnea (OSA) and insomnia are two conditions that are found commonly in middle-aged adults. Exploring the restorative nature of a headache

**48% of migraines occurred between 4 am and 9 am.**

sufferer's sleep, excessive daytime sleepiness or fatigue, habitual snoring, and adequacy of sleep can offer clues as to whether sleep is a contributing factor to headache.

### The Effect of Sleep on Migraine, Tension-Type, and Cluster Headache

Complaints of poor sleep are common in headache patients. Patients with chronic headaches have more complaints of insomnia and fatigue, as well as anxiety and depression. Fifty two percent of migraine patients mention "changes in sleep" as a trigger (the 4th most mentioned after stress, menstruation and strong odors). Both sleeping longer or less than usual can trigger migraine in certain patients.

The impact of length of sleep is difficult to assess because it is subject to many influences. Previous night's sleep affects subsequent nights. Stress and mood disorders can have an effect. In fact, the issue may be *variation* from ideal sleep amounts and irregularity of schedules, not the length of sleep itself.

There is clinical anecdote, though little direct evidence, that sleeping longer than usual produces not only migraine, but tension-type headache as well. The cause has been considered to be bruxism (grinding teeth), neck and head position, depression, or increased muscle tension in the frontalis or jaw muscles. Some clinicians have the impression that shortened

sleep time also leads to a tension-type headache that is relieved by sleep.

Migraines are sometimes triggered by stress or the "let-down" period following stress. It is logical to assume that changes in sleep would be part of any stress-relaxation response. Several studies have suggested a link between the REM stage of sleep and migraine and cluster headache. The observation that migraine more commonly occurs out of naps or nights with slow-wave sleep and the observation that REM provokes migraine is consistent with the idea that longer sleep might trigger migraine as a result of changes in previous nights' sleep. That is, slow-wave sleep and REM sleep rebound would be expected to occur during recovery from a stressful, sleep deprived period.

Of course, sleep can also help relieve a migraine. In a study of 50 migraineurs, 28 reported that their headache would be relieved after a night's sleep, while 14 subjects could shorten the attack by napping during the day.

### DIET AND LIFESTYLE CHANGES FOR SLEEP-RELATED HEADACHE

- Get adequate amounts of sleep on a regular schedule
- Avoid tobacco, alcohol, and caffeine
- Exercise daily and maintain good posture
- Practice muscle relaxation techniques such as biofeedback
- Avoid foods that can trigger migraine
- Sleep in a comfortable position such that the neck is not strained or the head too high
- Treat TMJ dysfunction or teeth grinding with mouth splints made by a dentist



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## Treating Sleep-Related Headache

Both nonpharmacologic and pharmacologic methods are used to treat migraine, tension-type or cluster headaches related to sleep issues. Lifestyle changes range from regular sleep schedules and exercise to wearing mouth splints (see box on page 2).

All the usual acute medications for migraine, cluster and tension-type headache can be used. Rapid acting agents such as nasal sprays or injections are often preferred, since many patients do not wake up until the headache is full-blown. The tricyclic antidepressants are used extensively for headache prevention and for insomnia and have real potential in patients whose headaches are sleep-related. Hypnotic sedatives are generally not used for headache prevention, but their muscle-relaxant and sleep-promoting effects can be helpful during flares of sleep-related headache. Like analgesics, hypnotic sedatives should be limited to one or two days per week because of the potential for rebound insomnia.

## Sleep Apnea and Headache

Obstructive sleep apnea (OSA) has been linked to morning headaches and it appears that as many as 44% of cluster headache patients have the condition. OSA is a breathing disorder characterized by brief interruptions of breathing during sleep, caused by mechanical and structural problems in the airway. Snoring and daytime sleepiness are the cardinal symptoms. In one study, 18 of 50 patients also had recurrent morning headaches. They were described as diffuse or frontal in location. Onset was gradual over the years and headaches seemed more likely to occur in the more obese OSA patients.

While frequent morning headache is a nonspecific symptom in patients with a variety of sleep disorders and is not a consistent symptom of OSA, there is a significant association between snoring alone and frequent morning headache. Thus, most but not all of the evidence supports the idea that snoring and OSA are associated with morning headache. OSA can cause headaches directly, or it can be a trigger for either ten-

sion-type headaches or migraines in susceptible individuals. Treatment of OSA can be helpful in many types of headache syndromes.

## Treating Headaches Related to Obstructive Sleep Apnea

One way of determining if a symptom is caused by sleep apnea is to treat the sleep apnea and see if the symptom goes away. In a small number of studies, more than half of all patients diagnosed with OSA and treated with nasal continuous positive airway pressure (CPAP) had improvement or elimination of their headache syndrome, especially if the headaches tended to occur in the morning or if the sleep apnea was severe.

Lifestyle changes that may improve OSA include losing weight, improving nasal function by treating allergies, and getting adequate sleep so that the poor sleep quality caused by the sleep apnea is not compounded by insufficient sleep quantity. Sleeping on the side, rather than the back, may help some people.

Pharmacotherapy has little role in the treatment of significant sleep apnea, while the role of surgery in obstructive sleep apnea is controversial and not a first-line therapy. Nasal continuous positive airway pressure (CPAP) is the most widely used and effective treatment. These devices are now small and quiet, and can sit on a bedside table. The patient wears the CPAP mask upon going to bed and the machine delivers a constant flow of air that produces a pressure in the pharynx.

Custom oral appliance devices made by dentists are more effective for mild and moderate sleep apnea than for severe sleep apnea. These devices force the jaw and base of the tongue forward, which may increase the diameter of the upper airway or tense the muscles of the tongue to minimize vibration and collapse. Drug store devices are usually not an adequate test of oral appliance therapy.

## Hypnic Headache Syndrome

Patients with hypnic headache syndrome have headaches exclusively upon waking.

Occurrence is usually at a consistent time of night, but the headaches are variable in nature. The pain has been described as moderate (mild in 5%, severe in 21%), unilateral or diffuse, constant or throbbing. Nausea is infrequent and autonomic signs, such as aura, are rare. About one-half of the patients have had previous headache diagnoses and most patients are elderly, with 60 being the mean age of onset. Hypnic headache probably has more than one un-

### SYMPTOMS OF HYPNIC HEADACHE

- Headaches occur at least 15 times per month for at least one month
- Headaches awaken patient from sleep
- Attacks last 5 to 60 minutes
- Pain is generalized or bilateral
- Pain is not associated with autonomic features
- Testing excludes an organic cause, such as cerebral aneurysm

derlying cause and is considered benign.

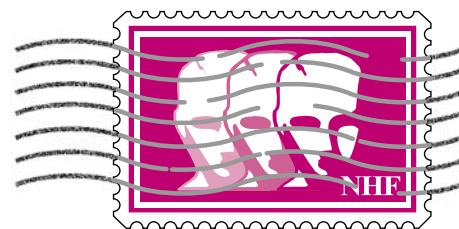
There have been no trials of treatment for hypnic headache, but preventive therapy is used to avoid waking with a headache. Successful treatment has been reported with lithium, indomethacin, flunarizine, Bellerigal<sup>®</sup>, caffeine at bedtime, and beta-blockers. Sumatriptan and aspirin/caffeine have been used for abortive therapy.

## Conclusion

Determining the cause of sleep-related headaches requires assessing lifestyle issues and caffeine use. It may also require an overnight sleep study. A common and treatable cause of sleep-related headache is obstructive sleep apnea. Sometimes, however, there is no cause found for headaches that occur out of sleep. This illustrates the as yet poorly understood relationship between these very common conditions: sleep and headache. ♦

# Reader's Mail

We welcome your letters; please limit them to one page. We reserve the right to edit them. Send your letters to: Reader's Mail, NHF, 820 N. Orleans, Suite 217, Chicago, IL 60610-3132 or [NHF1970@headaches.org](mailto:NHF1970@headaches.org).



## When Chronic Daily Headache Isn't Caused by Rebound

**Q.** Your recent article on transformed migraine (*NHF Head Lines 132*) has inspired me to pose a question I've been wanting to ask for a long time—if a person has daily migraines which are *not* caused by medication rebound, what is she supposed to do? Everything I read either explicitly says or implies that if only a person would get off daily medications, the problem would be solved. So what if it's not?

I began getting migraines in pre-school, complete with severe noise and light sensitivity and vomiting. By age 11, I was getting them once a week, and by age 14, two to three times a week. This was in the 1960s when there were no decent medications. During my 20s, the migraines turned into chronic daily headaches. By this time, I admit I was taking a lot of over-the-counter (OTC) medications because they dulled the pain a little, which was better than nothing. When I first read about rebound headache in the late 1980s, I took myself off of OTCs and all caffeine, but my headaches only worsened and I was confined to bed the entire time.

Finally, when I was pregnant and nursing, my headaches let up enough that I tried going off all medications again to see if rebound was the problem. I was off everything for five months, but still had a headache all day every day. When I stopped nursing, the killer migraines came back.

I don't take hormones, my diet is very restricted, and I've tried biofeedback, acupuncture and other alternative therapies with no success. I have seen a headache specialist and taken four preventive medications and still need daily Imitrex® to be at all functional. Everyone seems to think you shouldn't take Imitrex every day, but what if you won't

be able to get out of bed otherwise?

Your article stated that rebound may be a factor in 50 to 80% of chronic headache cases. When a person has demonstrated that she's in the remainder to whom that doesn't apply, what is she supposed to do other than take daily drugs that allow her to have some semblance of life?

**A.** *You have obviously been plagued by headaches your entire life and have become quite knowledgeable in the field of rebound and chronic daily headache. You make a good point that there are patients who develop a pattern of chronic daily headache despite not overusing caffeine or analgesics. In fact, even patients who do have rebound headache generally require a daily preventive medication since their headaches do not usually completely resolve when they get off of the offending agent(s).*

*I do not know your entire medical history, whether you were on appropriate doses of these preventive medications or whether you were off any potential rebound-causing medications while you were using the preventive agents. However, especially in headache specialty centers, we do see patients who have failed numerous therapies in the past. At this point, they may benefit from experimental approaches that are not "standard of care." Rather than subject you to Imitrex on a daily basis, since we are still not certain of long-term adverse effects even if it did give you complete relief (which it does not), I would see a healthcare provider who specializes in headache. You may even require hospitalization at a dedicated headache treatment unit to transition you onto other preventive medications and off the Imitrex.*

Loretta Mueller, D.O.  
University Headache Center  
Moorestown, NJ

## Headaches During Week Off the Pill

**Q.** I get headaches during the week off my birth control pills. Painkillers don't seem to help and the headaches go on for three or four days. I have tried not having a Pill break, but then my eyes dry up and I can't wear my contact lenses! Do you have any advice?

**A.** *It sounds like you are experiencing menstrual headaches. Most, but not all, menstrually-related headache is migraine, which is sensitive to the normal ebb in estrogen levels prior to and during the bleeding phase of the cycle. There are many ways to handle this. Sometimes adding an estrogen patch during that week helps. A relatively new pill called Mircette® was supposed to prevent "Pill-break" headaches by adding in some estrogen on the third through seventh day. Unfortunately, most patients get their headache in those first two days, so it doesn't really help.*

*Taking anti-inflammatories at moderate to high doses during this time can be helpful. You could also treat with preventive medication for 10-14 days out of the month, or continuously. Some physicians simply allow their patients to take more of the migraine-specific acute agents, such as a triptan, during this time, or even a "mini-prophylaxis" with naratriptan before and during the expected headache (a treatment which is not supported by the FDA but has been well researched and published).*

*Finally, if the reason you are taking oral contraceptives is for birth control, you may find that your headaches are not as severe with your natural menstrual cycle off of*

*the Pill. (Be sure to talk to your gynecologist about an alternative method of birth control in that case!)*

Debra Elliott, M.D.  
Tulane Headache Center  
New Orleans, LA

## Unable to Take Triptans Because of Heart Problems

**Q.** I'm a 46-year-old male who has been a chronic headache sufferer for the past 11 years. Quite amazingly, I'm now seeing my 47th doctor. Suffice it to say, I've tried all the available treatments and medications, all to no avail. At age 35, I underwent a quintuple-bypass surgery and ever since then, my cardiologist has emphatically ruled out me taking any of the triptans (or ergots) even in a supervised hospital setting. It's quite frustrating to hear of the success many are having with the triptans, knowing that I can't take them. For those in my physical state, can we look forward to a headache medication that we can take?

**A.** *I understand your plight of not being able to use the newer triptan medications because of your known coronary artery disease. It is believed that with these medications there is added risk of serious cardiovascular side effects with underlying heart disease or multiple risk factors for heart disease. We do not know the actual risk in someone with your condition, but it is thought to be higher than the risk for the general population, which is very low at approximately 1 in 1,000,000 at this point. Even if these medications could be used and did help you manage your headaches, they should not be used on a daily basis, and you state you suffer from daily headaches. A daily preventive regimen is still the best approach for a daily headache pattern. This may include low doses of older antidepressant medications, blood pressure pills*

*such as beta-blockers, or antiseizure medications. If your headaches can be reduced in frequency and severity with a daily preventive medication, perhaps you would respond to a general painkiller if used no more than two days a week.*

Loretta Mueller, D.O.  
University Headache Center  
Moorestown, NJ

## Oxygen Therapy for Cluster Headache

**Q.** I want to try oxygen therapy for cluster headache and my doctor has agreed. However, I cannot find sufficient detail anywhere to know exactly how much to use. My oxygen supplier supplied the oxygen with a multi-regulator and a face mask, which has attached to it a choice of five color-coded individual diluter jets. In conversation with my doctor, the oxygen supplier agreed that the diluter jet to use was the 28% one at a flow rate of 6 liters per minute. I have now also got a mask called a non-rebreathable mask with two flap-per valves. Is this the correct thing to attach to the tank—just set the flow rate to 7-15 and breath? Or, as some diving friends have recommended, do I need a demand valve which will guarantee 100% oxygen. Not having any real understanding of this, it is very difficult to explain what I need either to my doctor or the oxygen supplier.

**A.** *All of the studies done with oxygen in cluster headache indicate that 100% oxygen is necessary. It should be used by mask at a flow rate of 8-10 liters per minute. Do not use it for more than 10 minutes at a time. High concentrations of oxygen for long periods of time can cause damage to the lungs. If the oxygen is going to work, it will within 5-10 minutes, so if there is no relief in 10 minutes, it isn't going to work. In my experience, it helps about 50% of attacks, but*

*others report benefit in 60-70% of patients.*

Robert Kunkel, M.D.  
Cleveland Clinic Foundation  
Cleveland, OH

## Severe Light Sensitivity During Migraine

**Q.** Since my early 20's I have had one or two migraines a year. I am now 52 years old. A little over a year ago I started having severe daily migraines. My MRI and CAT scans were normal and replacement hormones don't seem to trigger the migraines. I have severe reactions to triptans, so I take Midrin<sup>®</sup>. I also take Depakote<sup>®</sup> and Serzone<sup>®</sup>, which help, although I still have two to three migraines per week. I have allergies to numerous medications.

When the severe migraines began, I started having daily photosensitivity (sensitivity to light). I have to wear wrap-around sunglasses and a hat and I keep my apartment darkened. Sometimes the photosensitivity is so severe that my eyeballs hurt and I become nauseated. I am unable to go outdoors and even a 60-watt bulb can hurt my eyes. Flickering lights seem to be the worst and I am unable to use my computer because of the monitor. All the specialists I've been to have told me there isn't anything they can do to treat the photosensitivity.

Do you have any ideas about what I can do about the photosensitivity? I'm feeling isolated staying at home in my darkened apartment.

**A.** *Patients with chronic recurrent headaches sometimes experience a worsening of headaches at certain times of life such as the perimenopausal years. Once you are in a bad headache cycle such as you describe, any sensory input may*

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# Reader's Mail

aggravate headaches, especially certain types of lighting.

Decreasing the frequency of headaches with daily preventive medications and other treatment modalities may improve both the headaches and the photosensitivity.

Any time there is a change in character of the headache, even after decades of migraine, a diagnostic work-up needs to be completed, and it appears yours have been normal. Hormonal manipulation for hormonally-triggered headaches, which yours may be, is a last resort, but sometimes adjusting hormone replacement therapy may help.

Generally, using continuous estrogen and progesterone on a daily basis for those women who still have a uterus is better than cyclic therapy where progesterone is used only for certain days of the month. Also, the estrogen patches

may be more beneficial than the tablets. Sometimes adjusting the dosage helps. For those women with hot flashes and other menopausal symptoms, using a higher dose of estrogen may be beneficial.

If you are not experiencing marked benefit on the Depakote and Serzone, there are many other preventive medications that can be tried despite your multiple drug allergies. Treatment at a headache center at this point might be recommended.

Loretta Mueller, D.O.  
University Headache Center  
Moorestown, NJ

## Kudos for Head Lines

I would like to compliment the National Headache Foundation for publishing an outstanding article in the July/August

2003 *NHF Head Lines*. This article, authored by Dr. Freitag and titled "Manual Medicine in the Treatment of Headaches," is one of the finest articles I have seen written on the subject. Dr. Freitag did an outstanding job of describing the present clinical benefits, research and potential side effects of manipulative therapy. I believe articles of this nature give your members factual information that they can use to make appropriate decisions for their particular health care needs.

I look forward to the day when there is more integration between the providers of manual therapy and traditional allopathic healthcare providers. Again, I would like to compliment you, Dr. Freitag and your organization for an outstanding article, which will benefit your members.

Robert P. Lynch, D.C., F.I.C.C.  
South Portland, ME ♦

# Support Group Program Update

Dear NHF Members:

This issue of *NHF Head Lines* marks the near-end of yet another busy year for the support group program. We have added new cities and states, and have been fortunate enough to revive a few groups that had lost co-sponsorship or leadership. We extend our welcome to Atlantis, Florida; Jonesboro, Arkansas; and Shreveport, Louisiana.

As the year closes, I want to take the opportunity to acknowledge our fine healthcare professional volunteers who provide the leadership for these nationwide groups. Thanks to them, you are provided with the most current and comprehensive information available to the headache sufferer.

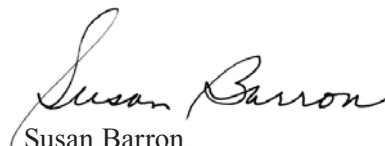
The following topics are just some of those that were presented during 2003:

- Sleep and headache
- Managing headaches on a day-to-day basis
- Headache medications and various side effects
- Pharmaceutical updates
- Relaxation techniques
- Alternative therapies: massage, yoga, oriental medicine, laughter
- Dental issues

- Chiropractic intervention
- Diet and headaches
- Research participation
- Social security disability update
- Headache and hormones
- Journaling
- Prodromes
- Friends and family meeting
- Cluster headaches, tension-type headaches and chronic daily headaches

As you will note, the various topics represent all types of headaches and interventions. Why not take a moment to scan our support group listings? If we have a group meeting near your home, think about attending. If no support group is listed in your area and you would like to assist in establishing one, please contact me and we'll do it together.

Sincerely,



Susan Barron  
Support Group and Membership Services Coordinator