8 Lifestyle Contributors to Headache

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Abstract: Lifestyle factors and exposure to specific headache triggers can play a significant role in determining headache frequency in many individuals with migraine and tension-type headache. Attention to these aspects of migraine management as part of the treatment plan has the potential to improve overall patient outcomes. Unfortunately, much of the evidence for the importance of lifestyle factors and triggers in migraine and other headache types is based upon anecdotal evidence and clinical experience, rather than formal scientific evidence. The evidence that is available is reviewed in this chapter, and the following observations are based on this evidence and clinical experience.

Lifestyle factors which may be important in influencing the occurrence of attacks in these primary headaches are irregular or insufficient sleep, irregular or skipped meals, excessive caffeine use, lack of exercise, and obesity. Specific headache triggers which may influence migraine frequency, and perhaps to some extent tension-type headaches as well, include stress, hormonal changes in women, weather changes, too little sleep, sleeping in, perfumes, bright lights, alcohol, certain foods, exertion, and caffeine withdrawal. Patients with migraine, tension-type headache, and perhaps some other headache types may benefit from an organized plan to address lifestyle issues and triggers. A formal lifestyle assessment by a health care professional can be part of such a plan, as can behavioral interventions such as relaxation training, stress-management training, and the acquisition of pacing and self-monitoring skills.

Established Knowledge

Introduction

Lifestyle factors have long been known to contribute to headache. Over half a century ago, John R. Graham published his "Ten commandments of migraine prevention," and many of these concern lifestyle factors (Graham 1955; Spierings 2002). For example, he addressed the modern concept of pacing when he commented that, "The most rewarding long-term therapy will result from an adjustment in [sic] patient's means of living within his or her capacities, rather than an endless round of medication." This chapter will discuss the evidence surrounding lifestyle issues and propose management strategies to address them. The patient case history below illustrates how important lifestyle factors can be for some patients.

Case History

A 40-year-old female with a long history of migraine without aura experienced on average six migraine days a month. Her migraines had been much more frequent in the past, when she would experience 12 or more migraine days a month. She was able to maintain her current migraine frequency if she paid strict attention to her lifestyle and also avoided migraine triggers that she had identified over the years. She was careful to maintain a regular sleep schedule, and slept approximately 8 h every night. She maintained a regular meal schedule, never skipped meals, and was careful not to go too long without food. She had discovered that she had significant dietary triggers, and scrupulously avoided foods which contained monosodium glutamate. She ate primarily foods that she baked or cooked herself, and avoided processed food as much as possible. In particular, she avoided processed meats with nitrites, aspartame, carbonated "soft" drinks, wine, and beer. It was also important to her to maintain careful

control over her schedule. If she overloaded her schedule and became too busy, she ran the risk of precipitating a migraine attack. This was particularly true if a major weather change was occurring (like a Chinook wind from the nearby Rocky Mountains), or if she was premenstrual. On those days, she would reduce her activities below their usual level in an effort to maintain herself below her migraine threshold despite the presence of triggers which she could not avoid. From past experience, she knew that if she relaxed her vigilance with regard to these lifestyle issues her migraine frequency would increase.

Overview

There is evidence that lifestyle factors play a role in initiating acute headache attacks (Martin and Behbehani 2001; Kelman 2007). Additionally, emerging evidence suggests that some lifestyle factors can contribute to the transition of headache disorders from the episodic to the chronic form (Bigal and Lipton 2006a; Scher et al. 2008).

Lifestyle contributors to headache frequency and intensity can be divided into two categories: lifestyle habits and specific headache triggers. The division between these two categories is somewhat arbitrary, but they are useful when discussing headache precipitants with patients. In this chapter, they will largely be discussed together. This chapter will deal primarily with migraine headaches, as this is a highly prevalent headache type with generally severe attacks, and one for which headache precipitants are perhaps best understood. However, similar headache aggravating factors have been reported to be important in patients with tension-type headache (Spierings et al. 2001). Lifestyle habits and specific headache triggers associated with migraine are listed in *Table 8.1*.

Headache Triggers

Definition

A trigger is a factor which temporarily increases the probability that a migraine headache will occur on exposure to that particular trigger. Every migraine patient can be considered to have a "threshold" for the initiation of a migraine attack. A trigger will result in a migraine attack if this threshold is reached. Trigger detection can be difficult because a trigger factor may not reach migraine threshold with each exposure. It will therefore sometimes cause a headache and sometimes not. An important concept is that two or more triggers occurring simultaneously may summate to reach the patient's threshold for a migraine attack. This may explain why apparently similar occurrences of a potential headache trigger will trigger an attack on some occasions and not on others. Many headache attacks experienced by migraine sufferers appear to the patient to be spontaneous, that is, without a recognizable trigger. Whether this reflects reality or whether potential triggers simply go unrecognized is unknown.

The Proportion of Patients Experiencing Migraine Triggers

In a population-based study, it was reported that 64% of individuals with migraine identified one or more trigger factors (Rasmussen 1993). In a headache referral patient sample, 76% of patients affirmed that at least some of their headaches were triggered by some sort of trigger factor

Table 8.1
Potential migraine triggers and aggravating factors

Specific migraine triggers	Lifestyle factors
Stress and emotional upset, fatigue	Irregular sleep or too little sleep
Decreasing estrogen levels (women)	Irregular meals or skipped meals
Weather changes	Excessively stressful lifestyle
Too little sleep	Excessive caffeine consumption
Sleeping late	Lack of exercise
Perfumes and odors	Obesity
Bright sun, fluorescent lights, glare, computer screens	
Smoke	
Alcohol	
Specific foods	
High altitude, flying	
Heat	
Exercise and exertion, sexual activity	
Loud noises	
Caffeine and caffeine withdrawal	
Infections	
Neck pain	

that they had identified. However, when the same patient sample was provided with a list of potential migraine triggers, 95% confirmed that some of the listed triggers at least occasionally triggered headaches for them (Kelman 2007). The mean number of triggers identified by individual patients was 6.7. The five most common triggers identified by patients were stress, missing meals or fasting, weather change, undersleeping, and in women, hormonal changes.

Migraine Triggers

Stress is the headache trigger identified by most migraine sufferers in a headache referral patient population (Robbins 1994; Scharff et al. 1995; Spierings et al. 2001; Kelman 2007), and also in population-based migraine samples (Rasmussen 1993). A further study identified stress as the most commonly reported trigger second only to a combined fatigue/sleeping difficulty factor in a population-based migraine sample (Chabriat et al. 1999).

In clinic-based studies, 72–84% of migraine patients listed stress as a headache trigger (Robbins 1994; Scharff et al. 1995; Spierings et al. 2001; Kelman 2007). In population-based samples, 42–44% listed stress as a trigger (Rasmussen 1993; Chabriat et al. 1999). In general, patients with chronic migraine report similar triggers as compared to those with episodic migraine attacks, although stress appears to be more prevalent in patients with chronic migraine (Kelman 2007; Radat et al. 2009).

Food triggers are generally not among the trigger factors listed most commonly by migraine sufferers and, for example, were identified by 27% (Kelman 2007) and 30% (Robbins 1994) of

respondents. In studies where alcohol was examined separately from "foods," alcohol was cited as a trigger by more patients compared to those who implicated foods. For example, alcohol was mentioned by 38% and foods by 27% of respondents in the study by Kelman (2007).

Several other unusual triggers of headache have been reported. Hot baths have been reported to trigger benign headache attacks (Negoro et al. 2000; Mungen and Bulut 2003), although reversible cerebral vasoconstriction has been found in some patients with headache attacks triggered by bathing (Mak et al. 2005). Headache attacks with symptoms consistent with migraine have also been reported to occur in some patients within 10–60 min of hair washing (Ravishankar 2006).

Other migraine triggers have been reported, including water deprivation (dehydration) (Blau 2005), and smoke (Spierings et al. 2001; Kelman 2007). The proportion of patients reporting individual migraine triggers in one large study is shown in *Fig. 8.1*.

Specific Food Triggers

Foods considered relevant as migraine triggers include red wine, beer, chocolate, monosodium glutamate (Robbins 1994) and alcohol, aspartame, cheese, chocolate, caffeine, and monosodium glutamate (Scharff et al. 1995). Additional triggers on standard lists include many other items, such as tomatoes, cured meats, and in particular strong or aged cheeses. Borkum (2007) lists a number of foods as suspected migraine triggers:

1. Red wine and other alcohol, caffeine
2. Citrus fruits, nuts, onions
3. MSG, nitrites (cured or processed meats), aspartame
4. Aged cheeses, sour cream, yogurt, yeast extracts
5. Smoked fish, pickled herring
6. Chocolate
7. Eggs, dairy products, beans, fatty foods
   (Modified from Borkum 2007)

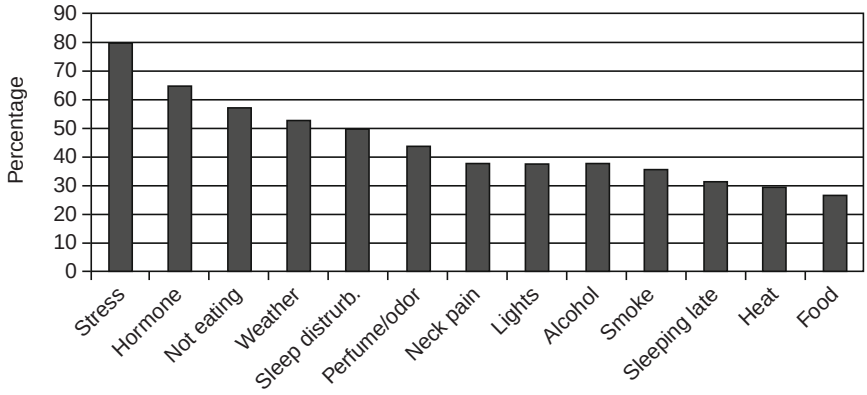

Fig. 8.1
Migraine triggers: percentage of patients reporting individual triggers (Clinic-based patient sample) (Kelman 2007)

Although the methodologies used are unique to each study, patients in headache referral populations tend to report alcohol and food related migraine triggers more commonly than individuals with migraine in population-based studies. Alcohol was reported as a migraine trigger by 35%, 42%, and 38% in each of the three clinic-based studies (Scharff et al. 1995; Spierings et al. 2001; Kelman 2007). The corresponding value in a population-based study was 20% (Rasmussen 1993). Similarly, the percentage of patients reporting specific food triggers in clinic-based studies was 27% (Kelman 2007) and 58% (Spierings et al. 2001). In a population-based study, 10% of patients reported specific food triggers (Rasmussen 1993).

Tension-Type Headache Triggers

Many of the headache triggers noted above are often considered characteristic of migraine. However, according to some studies the headache triggers identified by patients with tension-type headaches are quite similar to those in patients with migraine, both in headache referral patient samples (Scharff et al. 1995; Spierings et al. 2001) and in population-based samples (Rasmussen 1993; Chabriat et al. 1999), although some differences have been noted (Rasmussen 1993; Spierings et al. 2001). Triggers common to both include sleep problems, stress, weather, and menstruation (Savi et al. 2002; Wober et al. 2006; Orig et al. 2009). It has also been suggested that approximately 30% of individuals with tension-type headaches are susceptible to foods, most notably alcohol, chocolate, and cheese (Savi et al. 2002).

Lifestyle Factors

Sleep

Headache and sleep problems have been linked in several studies (Spierings and Van Hoof 1997; Boardman et al. 2005). In headache populations, sleep disorders have been "disproportionately observed" in individuals with migraine, tension-type, and cluster headache and include insomnia, hypersomnia, and obstructive sleep apnea (Rains and Poceta 2006). Of 1,283 migraineurs attending a tertiary headache clinic (Kelman and Rains 2005), approximately 50% identified sleep disturbance as a headache trigger, 53% reported difficulties falling asleep, and 51% reported difficulties staying asleep. Further, those with chronic migraine reported greater sleep disturbance than episodic migraineurs, with short sleepers (<6 h per night) experiencing more frequent and more severe headaches. The relationship between headache and sleep is complex. Morning headache, for example, has been reported to occur more frequently in patients with significant obstructive sleep apnea as compared to controls (Goksan et al. 2009). In those with obstructive sleep apnea, however, morning headache was more common in those with a history of a primary headache. The morning headaches varied in phenotype. Many appeared tension-type in nature, but others were suggestive of migraine, with unilateral headache and throbbing pain. Forty percent were reported to be severe.

Sleep hygiene has proven beneficial for children and adolescents with migraine (Bruni et al. 1999). Further, use of sleep hygiene strategies in women with chronic migraine has resulted

in statistically significant decreases in headache frequency and intensity, and reversion to intermittent headache patterns (Calhoun and Ford 2007). Rains (2008) has suggested that sleep diary analysis can help determine the best course of treatment. Sleep hygiene is considered appropriate at treatment outset for most patients. Typical recommendations include (1) avoiding daytime naps; (2) eliminating stimulants; (3) maintaining a consistent sleep–wake schedule; (4) having a dark, quiet, comfortable sleep environment; (5) limiting alcohol use; and (6) exercising regularly (at least 5 h before bedtime). Behavioral treatments, including relaxation, sleep restriction, and stimulus control, are recommended for individuals "who spend excessive time in bed not sleeping, those with irregular sleep schedules, or those who exhibit evidence of hyperarousal." Sleep restriction consists of a graduated program of limiting time in bed, and stimulus control involves increasing the conditioned response between the bedroom and sleep. When it is suspected that individuals have "unreal expectations concerning sleep or consequences of not sleeping, anticipatory anxiety, worry, or poor coping skills," referral for cognitive therapy is suggested.

Irregular Meals or Skipped Meals

Postponing a meal or omitting it completely can be a problem for many migraine sufferers (Martin and Behbehani 2001) and some individuals with tension-type headache (Slettbakk et al. 2006). Twenty-one percent of Dutch migraineurs surveyed advised that regular eating and sleeping helped to decrease the impact of their migraines (Vos and Passchier 2003). In a recent focus group, several tension-type headache participants reported the importance of regular eating and drinking as part of their headache management regimen (Slettbakk et al. 2006).

Fasting associated with religious customs such as Ramadan and Yom Kippur has been linked to headache. A recent literature review (Torelli et al. 2009) concluded that in many cases fasting headache is a primary headache, tension-type headache, or migraine without aura that is triggered by fasting. Turkish researchers (Topacoglu et al. 2005) observed that emergency department visits for headache were significantly more frequent during Ramadan months compared with non-Ramadan months. In a study of fasting during Yom Kippur, Mosek and Korczyn (1995) determined that 39% of individuals who fasted reported headache, and that participants with a chronic headache history had a higher incidence of fasting headache than those who did not (66% and 29%, respectively).

Excessively Stressful Lifestyle

In discussing stress, environmental factors or demands which are perceived as demanding or negative are best referred to as stressors, while the term "stress" denotes the individual's reaction to the stressors. The degree to which stressors will elicit a stress response from an individual will vary greatly from person to person, depending on that person's resources and how the environmental demands are perceived (Sauro and Becker 2009). Stress, by acting as a migraine attack trigger, can increase migraine frequency. It can also initiate migraine attacks for the first time in those genetically predisposed to migraine (De Benedittis et al. 1990), and can contribute to the transformation of migraine into a chronic daily headache pattern

(chronic migraine) (Scher et al. 2008). When it acts as a migraine trigger, the relationship of stress to migraine is complex, with headaches coming on during a stressful period, but also during the relaxation phase after stress (Spierings et al. 1997). As the stress experienced by the individual is dependant not only upon the stressor, but also upon the individual's reaction to the stressor, stress-management skills and pacing have the potential to be very helpful to the migraine sufferer (Rains et al. 2005; Sauro and Becker 2009).

Excessive Caffeine Consumption

Caffeine may be a problem for migraine sufferers both through the effects of higher doses on the nervous system, and also through the effects of intermittent relative caffeine withdrawal. Higher caffeine consumption has shown some association with the subsequent development of chronic daily headache, particularly for women under age 40 with episodic headache (Scher et al. 2004, 2008; Bigal and Lipton 2006a). As caffeine has analgesic properties (O'Connor et al. 2004), it would perhaps not be surprising if it led to a type of medication overuse headache. Caffeine withdrawal has been shown to be a potent headache precipitant (Silverman et al. 1992), and, along with change in sleep pattern and relaxation after stress, might be a contributor to Saturday morning headache.

Lack of Exercise

Exertion can be a headache trigger in patients with migraine, and this can be a barrier to patients with migraine maintaining a healthy level of fitness. In a population-based study, it was found that there was a strong linear trend toward a higher prevalence of "low" physical activity with increasing headache frequency. It was also found that physically inactive individuals at baseline were more likely to have non-migraine headaches 11 years later (Varkey et al. 2008). However, whether a long-term exercise program can improve headache in patients with migraine is unclear. A program which consisted of a combination of aerobic exercise and progressive muscle relaxation led to a significant reduction of self-rated migraine pain intensity in a randomized clinical trial (Dittrich et al. 2008). Aerobic exercise conditioning programs have been shown to be feasible in patients with migraine and have been reported to lead to improvements in migraine status and quality of life (Varkey et al. 2009). A multidisciplinary program with a heavy emphasis on exercise has been shown to improve migraine status in a randomized trial (Lemstra et al. 2002). However, much more research is needed to clarify what the effects of exercise programs on the course of migraine are (Busch and Gaul 2008).

Obesity

Obesity has been implicated as a factor which can increase migraine headache frequency. Overweight and obese migraine sufferers tend to have a higher headache frequency than those of normal weight (Bigal and Lipton 2006b). Obesity also appears to lead to a greater tendency for those with migraine to develop chronic migraine with a very high headache frequency

(Bigal and Lipton 2006b). Lifestyles which lead to an increased body mass index can therefore have an adverse effect on a patient's migraine.

Approach to Management

Lifestyle Factors

Certain lifestyle factors appear to influence migraine frequency in a high proportion of migraine sufferers, and likely should be seriously addressed by all migraine sufferers with significant disability. If the patient is not convinced that these are important, a headache diary may help to determine if this is indeed true. The following advice, some of which has been summarized by Spierings et al. (2001), should be discussed with all migraine sufferers.

1. Eat regularly during the day, and do not go without food for too long.
2. Go to bed on time (preferably at a similar time each evening). Oversleeping in the morning can trigger headaches. Avoid obtaining too little sleep.
3. Avoid excessive fatigue by pacing activities during the day, as well as in the course of the week.
4. Whenever possible, eat fresh foods to avoid chemicals in processed and preserved foods, and perhaps in foods that have remained too long in the refrigerator.
5. Avoid excessive stress where possible.
6. Maintain regular exercise.

Detection and Avoidance of Specific Triggers

The usual way that individuals with migraine detect specific triggers is to remain vigilant for relationships in time between specific experiences or ingestions and the occurrence of migraine attacks. As a result of such observations, in the experience of one author, few migraine sufferers dare to drink red wine, or if they do so, practice great moderation. Trigger detection can be difficult, however, as exposure to some triggers may result in migraine primarily when this occurs simultaneously with exposure to another trigger. As a result, each of the triggers may not often cause migraine on its own. It may be difficult, therefore, to establish a cause and effect relationship. The relationship between stress and migraine attacks may also be complicated in that the migraine may tend to occur during the relaxation phase once the stressful period is over (Spierings et al. 1997). An understanding of what the usual migraine triggers are, and keeping a careful headache diary which includes potential trigger exposure, can be very useful. In the case of food triggers, a very basic elimination diet can be tried for a time, followed by the introduction of individual foods one by one with careful diary monitoring for headache, but few migraine patients investigate food triggers to this extent.

The complexity of the specific trigger–migraine attack relationship is perhaps best illustrated by patients who regularly experience migraine attacks on Saturday mornings. At least three known headache triggers can be responsible for or contribute to this syndrome. These include caffeine withdrawal if the individual is in the habit of coffee consumption early in the morning on workdays; breaking a regular sleep schedule by sleeping in too long on Saturday morning; and a "let down" headache resulting from relaxation after a stressful work week.

Avoidable Versus Non-Avoidable Migraine Triggers

The degree of exposure to most migraine triggers is potentially modifiable to some extent by most individuals. These clearly include many of the major triggers like alcohol, sleep disturbances, skipping meals, and the like. It may be impossible to completely eliminate stressful life events, but the mastery of pacing and stress-management skills should provide some assistance. Research suggests that greater self-efficacy, defined as the perception that one is able to control one's psychological reactions to stressors, can act as a buffer and make it less likely that a stressful event will trigger a migraine (Marlowe 1998). Hormonal triggers may be difficult to manipulate, but some options are available, for example, continuous use of oral contraceptives without the usual monthly break in some patients with severe menstrual migraine. Even patients with major weather triggers may derive some benefit from ensuring that other more avoidable trigger factors are kept to a minimum when weather triggers are operative so that their presence will not help the weather changes reach the individual's migraine threshold.

The Lifestyle Assessment: A Practical Way to Address Lifestyle and Trigger Issues in Migraine Management

Many migraine sufferers can benefit from a careful review of their lifestyle and trigger management by a health care professional. This need not be a physician, and occupational therapists with special training and experience in headache management are very suited to this role.

Introduction

The lifestyle assessment is conducted utilizing a semi-structured interview. The interview explores typical headache triggers and examines diet, exercise, and sleep habits as well as stress-management strategies. A problem list and treatment plan are established in collaboration with the client. The lifestyle assessment may be completed at the clinic, in the client's home, or over the telephone. Telephone assessments have proven convenient for clients whose schedules prohibit a face-to-face visit and for those who live a considerable distance from the clinic.

The Assessment

The client's headache frequency and intensity are determined. Clients are asked what improves and worsens headaches, and to identify headache triggers. Diaries are reviewed, and potential temporal relationships are explored, such as intensity spikes around exposure to potential triggers or during the menstrual period.

Functional roles are identified, and areas of functional impairment or disability are explored. This discussion extends not only to task performance in general, but to the manner in which functional tasks are potentially overscheduled or avoided altogether. The utilization of adaptive methods to date (such as pacing and energy conservation) is also explored and encouraged.

The individual's exercise routine is examined. Potential barriers to exercise are explored, and strategies to address these issues are determined. Individuals are encouraged to consistently allow for warm up and cool down, to maintain good hydration before and during exercise, and to minimize high-exertion activities. Patients for whom a well-established relationship between head movements and headache is identified are advised to avoid exercise with repetitive and/or static awkward neck movements such as the front crawl swimming stroke or prolonged use of a bicycle requiring a forward flexed posture.

The client is encouraged to eat regularly (ideally every 3–4 h) and to make healthy meal and snack choices. Clients are also encouraged to (1) consult with a registered dietician or (2) analyze diaries for definite or possible triggers, eliminate these items for 3 months, and reintroduce foods if no headache improvement is observed (as per Martin and Behbehani 2001). The client is advised to drink between 1.5 and 2 l of water per day, and suggestions for adherence to this schedule are provided. The client's caffeine intake is reviewed. Clients are strongly encouraged to taper their caffeine intake. One strategy is to decrease by 5 ounces every 3–5 days (Bigal and Lipton 2006a).

A regular sleep–wake schedule is recommended, and instruction in sleep hygiene is provided, including utilization of a pre-sleep routine; relaxation exercises to facilitate falling asleep; eating at least 4 h prior to retiring; restricting fluid intake at least 2 h before retiring; and avoiding naps (Calhoun and Ford 2007). Sleep diaries are provided to establish baselines and to track improvements following implementation of sleep hygiene strategies. Stimulus control and sleep restriction can also be explored (Rains 2008). If there are concerns about snoring or sleep apnea, the client can be referred to an external agency.

Clients occasionally report an association between static and/or dynamic neck, shoulder, or upper back postures and headache. A referral can be made to a community physical therapist, or to an occupational therapist for assistance in adapting home and work environments.

Stress management, relaxation use, and current mood are broached. Instruction in relaxation is provided and an appropriate relaxation CD or tape can be suggested or given to the client to try. The client is challenged to consider all sources of stress, including the headache episode itself and his or her reaction to it. Finally, if the patient reports depressive or anxiety symptoms which are difficult to manage, he or she can be referred to a psychiatrist or psychologist for further assistance. For more information on the lifestyle assessment in the context of an organized headache treatment program, the reader is referred to Sauro and Becker (2008). *Table 8.2* summarizes the administration of the lifestyle assessment.

Table 8.2
Key elements of the lifestyle assessment

Components	Recommendations
Nutrition/ hydration	• Keep hydrated (i.e., drink ~1.5–2 l of water per day) • Do not skip meals • Eat throughout the day (every 3–4 h) • Limit caffeine intake to 1–2 cups/day. Consider stopping altogether
Sleep	• Keep a regular sleep–wake schedule throughout the week • Track sleep using diaries • Implement sleep hygiene strategies
Exercise	• Include a regular exercise regimen. Allow time for warm up and cool down and maintain hydration throughout
Posture/ function	• Use body mechanics strategies (and assistive devices when necessary) • Adhere to ergonomics principles • Utilize pacing, energy conservation, and rest breaks to maximize productivity
Psychosocial	• Increase awareness of relationship between stress and headache • Incorporate relaxation and stress-management strategies

Current Research

Much remains to be learned about headache triggers, both in migraine and also for other headache types. Most reports which attempt to quantify how often various potential triggers precipitate headache attacks involve patient surveys and patient self-report (Robbins 1994). The epidemiological evidence as to whether many of the commonly reported migraine triggers actually do trigger migraine attacks has been reviewed, and strict scientific evidence is lacking for many putative triggers (Friedman and De Ver Dye 2009). Some migraine triggers, for example, some specific weather changes, have been rigorously studied and confirmed as a trigger factor in a significant proportion of the migraine population (Piorecky et al. 1997; Cooke et al. 2000). More research including randomized trials which assess the ability of specific trigger factors to bring on migraine headaches are needed.

The mechanisms whereby triggers might bring on a migraine attack are not understood, although a number of theories have been proposed (Levy et al. 2009). Recent concepts that cortical spreading depression, or a related phenomenon, may be the initiating factor which triggers the pain phase of the migraine headache (Ayata 2009) suggest that many migraine triggers might affect the balance of inhibition and excitation in the cerebral cortex in a way that makes cortical spreading depression more likely to occur.

Conclusions

Although there is little evidence from scientifically conducted trials as to which factors have the ability to trigger migraine headaches in susceptible individuals, careful surveys carried out in a number of countries over several decades would appear to provide considerable clinical guidance. Patients with significant disability from their migraines, and in particular those whose frequent medication use is placing them at risk for medication overuse headache, should be strongly encouraged to carefully investigate which avoidable triggers and lifestyle factors are influencing their migraine frequency. Patient education, careful use of a headache diary, and behavioral treatment strategies directed at better stress management have the potential to make a significant improvement in migraine frequency. Many of the lifestyle factors which can have an important impact on a patient's migraine were again recognized more than half a century ago by John Graham (Spierings 2002). In his list of errors in living which migraine patients often make, he mentioned overcrowded schedules, lack of breaks, and aiming for impossible goals. A particularly difficult one for migraine sufferers to avoid is one that he called, "making up for lost time," where as soon as the migraine attack is over, the patient rushes to repair the losses and make up for the lost time. Consequently, the next attack comes sooner.

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