Dietary suggestions for migraine prevention

Pharmacists in ambulatory care settings face many different counseling challenges. Allowing a patient to ask questions during a counseling session provides an opportunity for a pharmacist to hear many different concerns. These involve issues that may not be related to medication, such as diet. This is true for patients who suffer from migraines, as many foods are known to be migraine triggers. Migraine triggers vary among patients; therefore, it is highly recommended that patients maintain a migraine diary to track exposure to these items to help identify these triggers. Common diet-related triggers of migraines include aged cheese, red wine, chocolate, monosodium glutamate, foods containing nitrates (e.g., hot dogs, delicatessen meat, sausage, bacon) or tyramine (e.g., tofu, soy, miso), and citrus fruits or juices. Aspartame, an artificial sweetener, can lower a person’s threshold for migraines and can be found in chewing gum and diet sodas. The consumption of alcohol can also predispose a person to migraine headaches.

Migraine sufferers are counseled on the list of many things that should be avoided (e.g., strong odors, bright lights), but additional information about foods and drinks that might help prevent migraines from occurring would be valuable as well. Despite the limited data focusing on the prevention of migraines via dietary management, dietary supplements, vitamins, and herbal medications have shown promise when added to the regimen of a patient who suffers from migraines. The research reported for these supplements has involved the substances in tablet or capsule form rather than in foods, and pharmacists must keep in mind that the amounts contained in foods can vary.

According to the National Health Interview Survey conducted in 2007 by the Centers for Disease Control and Prevention and the National Center for Health Statistics, approximately 38% of patients reported using some sort of complementary or alternative medicine in the previous year. Recommending dietary additions for migraine prevention may help patients self-manage their disease. The vitamins, supplements, and herbal medications that may be helpful in migraine prevention and are readily found in food sources include riboflavin (vitamin B2), magnesium, and omega-3 fatty acids. Other supplements used in migraine prevention include butterbur (Petasites hybridus), coenzyme Q10, and feverfew (Tanacetum parthenium), but none can be found in safely consumable food or drink products. This article discusses supplements and other diet-related issues of importance to the migraine sufferer.

Potentially beneficial substances. Riboflavin. Investigators have found that adding riboflavin as a medication supplement at a dosage of 400 mg/day resulted in a decreased frequency of headaches and number of headache-days. It is theorized that migraineurs have low mitochondrial riboflavin levels; hence, supplementation would increase these levels and corresponding mitochondrial energy efficiency. A well-designed, randomized controlled trial was conducted to determine the efficacy of riboflavin for migraine prophylaxis.
In the study of 55 patients, 400 mg of riboflavin orally daily for three months was found to be superior to placebo at reducing the frequency of migraines and reduced the number of headache-days by up to 59% compared with 15% in the placebo group. Notable adverse effects with higher doses of riboflavin included increased urine output and diarrhea.3,10,11 Results from reviews on magnesium supplementation for migraine prevention have been mixed.3,12-14 Magnesium may help prevent migraines by counteracting vasospasm and by neuroinflammatory blockade.15-17 It is also believed that magnesium plays a role in the blockade of calcium channels and N-methyl-D-aspartate receptors; the synthesis, release, and activity of glutamate and nitric oxide; and the activity of serotonin.17,18 The magnesium dosage most commonly used for migraine prevention is 400 mg/day orally,17,18,19 which is within the recommended daily allowance of 310–420 mg/day, depending on age and sex.16,19 Mauskop4 recommended adjusting the dosage to effectiveness up to 800 mg/day. The serum magnesium concentration should be monitored routinely to help ensure safety. Diarrhea and gastrointestinal discomfort are the most common adverse effects of magnesium supplementation. Foods high in magnesium include legumes, nuts (especially almonds), spinach, sweet potatoes, white beans, broccoli, almonds, cheese, soy, fortified grains, and dark green vegetables.7,8 One cup of skim milk contains 0.34 mg of riboflavin,8 which is well below the studied daily dose of 400 mg.5

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Eicosapentaenoic acid. The omega-3 fatty acid eicosapentaenoic acid (EPA) has been identified in a few small studies as potentially useful in the prevention of migraines.17 The purported benefit is theorized to be the effect of lowered prostaglandin levels and serotonin activity. The Food and Drug Administration has not recommended a daily allowance for EPA, but, based on the studies conducted, 600 mg/day orally divided into three doses has been suggested.17 Adverse effects of omega-3 fatty acid ingestion include eructation, taste perversion, and dyspepsia. Rare cases of excessive bleeding have been reported. Caution should be exercised when recommending a person with a history of bleeding to eat more foods high in EPA.21 The foods richest in EPA include salmon, tuna, mackerel, and herring.17 Chinook salmon contains 1010 mg of omega-3 fatty acids per 100-g serving.9

Changes in caffeine intake. Caffeine can trigger a migraine in a few different ways.17 If a person is a consistent caffeine user, the ingestion of too little in a day or an abrupt withdrawal of caffeine may cause a migraine. Persons who rarely if ever ingest caffeine but suddenly have a large amount can be prone to a migraine. In individuals who use caffeine infrequently, caffeine may have a beneficial effect in migraine.17 Due to the variable effects of caffeine intake and withdrawal, it may be beneficial for migraine sufferers to keep their daily caffeine intake as consistent as possible. Many beverages contain caffeine. For example, a 12-oz can of regular cola contains 37 mg of caffeine, a 12-oz can of diet cola contains 50 mg, and a regular 6-oz serving of brewed coffee contains 103–115 mg.5,17 For persons who wish to continue drinking caffeinated beverages, their intake should not exceed 200 mg/day.17 Some patients choose to use analgesics in combination with caffeine. These patients should limit caffeinated beverage intake to two days per week to avoid the potential of medication-overuse headaches.17

General health measures. A 12-week study of 54 migraineurs revealed that a low-fat diet (total fat, <20 g/day) was associated with a significant decrease in migraine frequency, intensity, duration, and medication intake (p < 0.0001).22 The supporting literature implies that high-fat diets contribute to high levels of cholesterol and free fatty acids which, in turn, trigger migraines.

Dehydration is a common migraine trigger. Keeping a consistent intake of fluids, specifically water, is important to help stave off a migraine.23-25 Individuals should drink at least eight 8-oz glasses of water a day to stay hydrated.26

Going an extended period of time without eating, skipping meals altogether, or fasting can trigger a migraine.27-29 Studies have revealed that skipping meals or fasting triggered migraines for 40–60% of patients.29 Thus, patients should be counseled to avoid skipping meals and to eat on a regular schedule to help prevent migraines.30 Patients whose migraines are triggered by fasting should notify their healthcare provider to help identify a preventive approach when they are required to fast for medical procedures or to have laboratory samples collected.

Summary and conclusion. In general, avoiding diet-related triggers and eating a healthy and consistent diet can help prevent migraine attacks. Riboflavin and magnesium can be safely added to the migraineur’s meal plan as part of a well-rounded diet. Adding foods rich in omega-3 fatty acids may be most helpful. Migraine sufferers should be counseled to keep their caffeine intake consistent and below 200 mg/day, avoid skipping meals, stay well hydrated, and consider implementing a low-fat diet.

naturaldatabase.therapeuticresearch.com (accessed 2013 Apr 8).