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Headache (Complementary/ Alternative Medicine)

Author(s):
David B. Matchar, MD;
Rebecca N. Gray, DPhil

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[1] Has no financial relationships with pharmaceutical companies, biomedical device manufacturers, or health-care related organizations.

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1. Definitions

2. General Considerations

2.1 Use of complementary/alternative therapies for headache

Evidence:

- Substantial evidence suggests both that large numbers of Americans use alternative therapies and that they seldom disclose the use of such therapies to their physicians (1).

Comments:

- Ask patients about complementary/alternative therapies they may already be using or may have tried in the past. Patients may be reluctant to discuss the use of complementary/alternative therapies with a physician.
- Investigate the local availability of complementary/alternative therapies before recommending a treatment. Complementary/alternative therapies are not universally available, and the choice of therapy may depend on local availability.
- Counsel/educate patients about what to expect from complementary/alternative therapies. Counseling and educating patients about what to expect from their headache treatment may prevent disappointment and facilitate a more objective appraisal of the treatment's effectiveness.
- Follow up on results of treatment. Following up on results may prevent dissatisfied patients from dropping out of care.

2.2 Target populations

Evidence:

- Little substantial work has been done on predictors of response to complementary/alternative therapies for headache. A few publications have examined possible predictors of response to behavioral therapy, but without reaching any firm conclusions (2; 3).

Comments:

- Consider complementary/alternative therapies particularly for headache patients who are pregnant or nursing and those with:
  - A preference for non-drug interventions
  - Poor tolerance of, or medical contraindications to, specific drug treatments
  - A history of insufficient response to drug treatments
  - A history of long-term, frequent, or excessive use of analgesics or acute headache medication
  - Significant stress or deficient stress-coping skills
  - Headache associated with neck pain, neck dysfunction, or both
- There is little firm evidence as to which patients are likely to respond to complementary/alternative therapies for headache, but these groups are

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reasonable candidates for a trial of such therapy.
- Patients whose headaches are associated with neck pain, neck dysfunction, or both may respond better to cervical spinal manipulation than those with no associated neck problems (see cervical spine manipulation for patients with migraine or tension-type headache and cervical spinal manipulation for patients with headache combined with neck pain or neck dysfunction).

3. Likely Effective

3.1 Behavioral therapies

Evidence:
- A recent systematic review of 39 controlled trials of behavioral treatments for migraine (4) concluded that there is research indicating efficacy. Effect size data from a meta-analysis of 18 trials suggested that relaxation training, thermal biofeedback (with relaxation training), EMG biofeedback, and cognitive-behavioral therapy are all effective for reducing migraine symptoms when compared to wait-list control. Effect sizes for the various treatments were statistically indistinguishable.
- A recent systematic review of 35 controlled trials of behavioral treatments for tension-type headache (5) concluded that there is research indicating efficacy. Effect size data from a meta-analysis of 23 trials suggested that each of the interventions examined—relaxation training, cognitive-behavioral therapy (with or without relaxation training), EMG biofeedback combined with relaxation training, and EMG biofeedback alone—was effective for reducing tension-type headache symptoms when compared to wait-list control. Effect sizes for the various treatments were statistically indistinguishable.
- A recent meta-analysis of studies of biofeedback for migraine (6) and an overview of meta-analyses and systematic reviews of behavioral treatments for migraine and tension-type headache (7) reinforce the above findings.

Comments:
- Consider recommending an 8- to 12-week trial of relaxation training, thermal biofeedback with relaxation, EMG biofeedback (with or without relaxation training) or cognitive-behavioral therapy (with or without relaxation training) as sole or adjunctive treatment for prevention of migraine or tension-type headaches.
- These therapies have all been shown to be effective for the prevention of migraine or tension-type headache in prospective controlled trials. Where available, they may be excellent alternatives for many patients.
- The trials considered in the systematic reviews (4; 5) provide little guidance on choosing among the available behavioral treatments. The fact that the effect sizes for the various interventions were statistically indistinguishable does not imply that these treatments are clinically interchangeable. Because of individual differences in response to treatment, some patients may benefit from one treatment, but not

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another.
- It is unclear whether an incremental benefit is gained by combining two or more behavioral therapies. Six trials included in the two systematic reviews (4; 5) examined this question. None found a statistically significant incremental benefit to the added component; however, all the studies were too small to detect small, but potentially clinically significant differences.
- The length of an adequate trial of these behavioral therapies has not been established. The recommendation of an 8- to 12-week trial is based on the number of sessions typically given in trials receiving a high clinical quality score in the systematic reviews (4; 5).
- The time commitment required for traditional office-based behavioral treatments may constitute a barrier for some patients. The evidence suggests that home-based and minimal-therapist-contact treatment formats may be as effective as traditional office-based formats for headache treatment (8; 9; 10; 11; 12; 13).

3.2 Cervical spinal manipulation for patients with headache combined with neck pain or neck dysfunction

Evidence:
- Four controlled trials have evaluated cervical spinal manipulation for headache combined with neck pain, neck dysfunction, or both (14; 15; 16; 17).
- In one of the positive trials, manipulation resulted in immediate improvement (compared to an attention-placebo control) when used to treat a single episode of headache with posterior cervical discomfort (14).
- Another trial (15) found that cervical spinal manipulation was significantly better than soft-tissue therapy (deep friction massage) at reducing the severity and duration of cervicogenic headache.
- The most recently published trial (17) found that cervical spinal manipulation was significantly better than a no-treatment control at reducing the frequency and severity of cervicogenic headaches. No significant differences were detected between manipulation and a physical therapy intervention combining endurance exercises for the muscles of the neck and scapular regions, postural training, and isometric exercises for the neck. There were also no significant differences between manipulation or physical therapy alone and a combined intervention using both modalities.
- A fourth, methodologically poor, trial (16) failed to find a significant advantage to adding cervical spinal manipulation to a course of NSAID therapy in patients with headache and neck pain or neck dysfunction.

Comments:
- Consider recommending a 6- to 10-session trial of cervical spinal manipulation to patients with headache combined with neck pain or neck dysfunction (sometimes called “cervicogenic” headache).
- Some headaches arise from or are aggravated by neck pain or neck

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dysfunction; it is reasonable to consider that cervical spinal manipulation might positively affect such headaches based on trial evidence.

- No demographic characteristics or headache features have been identified that reliably predict response to cervical spinal manipulation in patients with cervicogenic headache (18).
- The length of an adequate trial of manipulation for headache associated with neck pain or neck dysfunction has not been established experimentally. The recommendation of 6 to 10 sessions is based on the number of sessions given in trials receiving a high clinical quality score (5).
- Cervical spinal manipulation is provided by various practitioners, including chiropractors, osteopaths, and physical therapists. Studies are needed to determine whether the type of practitioner matters.
- Complications arising from cervical spinal manipulation are rare but potentially serious, including vertebrobasilar accidents; other reported complications include spinal cord compression, vertebral fracture, tracheal rupture, diaphragm paralysis, internal carotid hematoma, and cardiac arrest. Such complications occur at a rate of 5 to 10 per 10 million manipulations, and result in major impairment and death at rates of 6 per 10 million manipulations and 3 per 10 million manipulations, respectively (19; 20; 21). Little information is available regarding factors that might increase the risk of complications, such as age, osteoporosis, or osteopenia. Anecdotal evidence suggests that complications are more common with rotation plus extension of the cervical spine than with other types of manipulation (22).

4. Possibly Effective

4.1 Basic dietary and lifestyle modifications

Evidence:

- Survey studies report that 29% to 58% of patients with migraine identify alcohol as a headache trigger (23; 24; 25). Nineteen percent cite chocolate as a trigger, 18% cheese, 11% citrus fruit, and 11% aspartame (23; 24). Other dietary products commonly identified as migraine triggers include sodium nitrite (used in hot dogs and other preserved meats) (26) and monosodium glutamate (used in Chinese food and many prepared foods) (27). Patients with tension-type headache rarely identify foods as headache triggers (28), but in one study 31% pointed to alcohol as a definite trigger (23).
- A study of food intake before 2313 spontaneous migraine attacks suggests that patients with migraine may underestimate the importance of dietary triggers (29). However, double-blind challenge trials of suspected dietary triggers have yielded mixed results (30; 31; 32; 33; 34; 35), and there are few controlled trials of dietary interventions. The most substantial trial to date (36) failed to substantiate the importance of dietary triggers in migraine.
- At least two studies have shown an association between fasting and migraine headaches (29; 36).

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- Both excessive caffeine intake (37) and caffeine withdrawal (38; 39; 40) have been shown to cause headaches, even in patients without primary headache disorders. There is also evidence that so-called “weekend headaches,” often attributed to changes in stress levels, sleep patterns, or alcohol consumption patterns are principally caused by the caffeine withdrawal and delayed caffeine intake associated with sleeping in on the weekends (38). Patients whose weekday consumption of caffeine is relatively high (500-1200 mg/d) appear to be at greater risk for this type of headache (38).

Comments:

- Encourage patients to identify and avoid any obvious dietary “triggers,” and not to skip meals or fast for more than 5 hours during the daytime or 12 hours overnight. Encourage patients who consume caffeine to do so in moderation and on a regular schedule.
- Although not conclusive, evidence suggests that certain foods and beverages (most commonly beer, red wine, chocolate, cheese, citrus fruits, and selected food additives) may trigger headaches; encouraging patients to identify and avoid any obvious dietary triggers may reduce the frequency of headaches.
- Skipping meals or fasting may precipitate headaches in some patients; encouraging patients to eat on a regular basis may reduce the frequency of headaches.
- Excessive caffeine intake and caffeine withdrawal are both well-recognized precipitants of headache; avoiding these extremes may reduce headaches.
- The mechanisms by which commonly identified dietary triggers and fasting precipitate headache are not clear. In some cases, fasting-induced headaches may involve caffeine withdrawal. Patients with migraine are more likely to be susceptible to dietary triggers than are patients with tension-type headache.
- Anecdotal evidence suggests that dietary triggers may be one of several converging factors (hormonal levels, stress, etc.) that precipitate a headache. Although it is reasonable to advise patients about dietary triggers, more extreme dietary interventions (e.g., elimination diets) are not warranted for the average patient.
- Sensitivity to caffeine varies and patients will need to experiment to find the level of consumption best for them. Many OTC and prescription headache remedies contain caffeine. Overuse of these medications may contribute to headaches caused by excessive caffeine intake and caffeine withdrawal.
- There is little evidence that sleeping irregular hours triggers headaches, but it may do so indirectly by affecting eating schedules and caffeine consumption patterns. Patients may benefit from standardizing their sleeping schedule.

4.2 Combining behavioral therapy and preventive medication

Evidence:

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- A single controlled trial examined combining drug and behavioral therapy in patients with tension-type headache (41). Combined antidepressant and behavioral therapy was more likely to produce a 50% or greater reduction in headache index than either antidepressant medication (amitriptyline or nortriptyline) or behavioral therapy (cognitive-behavioral therapy plus relaxation) alone. On most outcome measures, however, the combined therapy was not significantly better than its components.
- Two controlled trials have examined the effect of combining behavioral and drug therapies in patients with migraine. The earlier trial (42) found that combinations of amitriptyline plus biofeedback and propranolol plus biofeedback yielded better results than biofeedback, amitriptyline, or propranolol alone. The more recent trial (43) found that adding propranolol to a behavioral treatment (thermal biofeedback plus relaxation) significantly improved results.

Comments:
- Consider combining one or more behavioral therapies (relaxation training, thermal biofeedback with relaxation, EMG biofeedback with or without relaxation, and cognitive behavioral therapy with or without relaxation) with preventive medication in patients who do not respond adequately to either therapy alone.
- Although the evidence is not conclusive, combined therapy may be better than either drug or behavioral therapy alone for both migraine and tension-type headache, at least for some patients.

4.3 Riboflavin (vitamin B2)

Evidence:
- Migraine may be caused, in part, by a deficient mitochondrial energy reserve in the brain (44; 45).
- One randomized, double-blind, placebo-controlled trial supports the efficacy of high-dose riboflavin for migraine prophylaxis (44). Fifty-five patients with migraine were randomly assigned to receive placebo or riboflavin, 400 mg/d, for 3 months. An intention-to-treat analysis found that riboflavin was significantly better than placebo for most of the outcomes measured. The percentage of patients reporting a 50% or greater reduction in attack frequency was 56% in the riboflavin group and 19% in the placebo group. Adverse effects were minimal (1 patient with diarrhea and 1 with polyuria in the riboflavin group; 1 with abdominal cramps in the placebo group).
- A nonrandomized, nonplacebo-controlled trial involving 26 patients with migraine found that riboflavin, 400 mg/d, was as effective as β-blockers (metoprolol, 200 mg, or bisoprolol, 10 mg/d) at reducing the frequency of migraine attacks over a 4-month treatment period (46). The percentage of patients reporting a 50% or greater reduction in migraine frequency was 53% in the riboflavin group and 55% in the β-blocker group. No information was provided on adverse effects reported during the trial.

Comments:
- Consider a trial of riboflavin supplementation (400 mg/d for a minimum of

2 to 3 months) for the prevention of migraine before progressing to other therapies.
- Riboflavin has been shown to improve mitochondrial energy metabolism when mitochondrial DNA mutation leads to deficient mitochrondrial energy reserve and may prove to be an effective treatment for migraine.
- Doses of riboflavin lower than 400 mg may also be effective. The possibility should be studied because lower doses would be less costly.
- A 2- to 3-month trial may be necessary before significant benefit is achieved.
- Riboflavin's excellent safety profile and low cost make it worth a trial in patients who are candidates for preventive therapy.
- Patients should be advised that high-dose riboflavin will turn their urine bright yellow.

4.4 Oral magnesium

Evidence:
- Magnesium deficiency has been implicated as a possible contributing factor both in migraine (47) and premenstrual syndrome (48; 49).
- Two randomized, double-blind, placebo-controlled trials examined the use of a daily oral magnesium supplement over a 3-month period. The first study (50) (*n*=81) found that a supplement equivalent to 600 mg/d of elemental magnesium was significantly better than placebo at reducing migraine frequency. The second study (51) (*n*=69) detected no significant differences between a supplement providing 486 mg/d of elemental magnesium and placebo for headache intensity, duration, or frequency.
- A small (*n*=20) trial focussed specifically on menstrual migraine. Investigators found that a magnesium supplement equivalent to 360 mg of elemental magnesium, taken daily from the 15th day of the menstrual cycle to the onset of the next menses for 2 cycles, was significantly better than placebo at reducing headache index, number of days with headache, and premenstrual complaints (52).

Comments:
- Consider a 3-month trial of oral magnesium supplementation (equivalent to 240-600 mg/d elemental magnesium) for the prevention of migraine, particularly for patients with low blood levels of ionized magnesium or significant premenstrual symptoms.
- Recent studies of oral magnesium supplements for the prevention of migraine suggest that this relatively low-cost and safe therapy may be effective for some patients.
- There is no simple way of identifying those patients most likely to benefit from magnesium therapy. Testing for magnesium deficiency (by examining blood ionized magnesium levels) may be helpful (47).
- The above trials have used different magnesium preparations (trimagnesium dicitrate, magnesium-L-aspartate-hydrochloride-trihydrate, and magnesium pyrrolidone carboxylic acid) and doses (360 mg/d, 486 mg/d, and 600

mg/d of elemental magnesium). Further research is needed to establish the best preparations and doses for migraine prophylaxis.
- Adverse effects associated with magnesium were generally infrequent and mild. Diarrhea and gastric irritation were the most commonly reported adverse effects (19% and 5% of patients, respectively, in one trial). The use of a chelated or slow-release formulation may alleviate these symptoms.
- Although not yet established, amino-acid-chelated and slow-release forms of magnesium will likely be better absorbed and cause fewer gastrointestinal symptoms than other preparations.
- Although magnesium toxicity is rare, patients should be warned against taking excessive amounts of magnesium (more than 800 to 1000 mg/d). Magnesium supplements should be used with caution in patients with renal insufficiency.

4.5 Butterbur extract (Petasites hybridus)

Evidence:
- The active ingredients in butterbur extract are believed to be petasine and isopetasine, both of which have been shown to exert vasodilatory and anti-inflammatory effects (53). To the extent that vasoconstriction and neurogenic inflammation play a role in migraine, butterbur extract may be a useful preventive agent.
- A small (*n*=60), randomized, double-blind, placebo-controlled trial supports the efficacy of a patented CO_2 extract of the root of the butterbur plant (Petadolex®) given in a dosage of 50 mg twice daily for 12 weeks (53; see also the independent reanalysis in 54). Petadolex® was significantly better than placebo at reducing headache frequency for all time points studied; it was also significantly better at reducing headache intensity but only at the end of the second month of treatment. No adverse events were reported during the trial.
- Another larger (*n*=245), randomized, double-blind, placebo-controlled trial of the same patented extract tested dosages of 75 mg twice daily and 50 mg twice daily (55). Treatment lasted 16 weeks. The investigators reported statistically significant differences between the 150-mg daily regimen and placebo for several frequency outcomes. Differences between the 150-mg daily and 100-mg daily regimens and between the 100-mg daily regimen and placebo were generally statistically insignificant. The most commonly reported adverse events were gastrointestinal disorders (22%, 26%, and 7% of patients taking 150 mg daily, 100 mg daily, and placebo, respectively).

Comments:
- Consider a 1- to 3-month trial of Petadolex® (100 to 150 mg/d), a patented butterbur root extract, for the prevention of migraine headaches.
- The optimal dose of Petadolex® is uncertain, and existing trials offer little firm guidance.
- Butterbur has been used medicinally for centuries, especially in Europe.

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It is known to have both vasodilatory and anti-inflammatory actions and has recently been tested for migraine prophylaxis.
- Petadolex® appears to be safe and well tolerated (56). The butterbur plant and root contain pyrrolizidine alkaloids, chemicals known to be potentially hepatotoxic and carcinogenic. The patented manufacturing process used to produce Petadolex® removes these harmful chemicals. Patients should be advised not to use butterbur preparations with unknown pyrrolizidine alkaloid content.
- A 1- to 3-month trial may be necessary before significant benefit is achieved.

4.6 Coenzyme Q10

Evidence:
- Migraine may be caused, in part, by a deficient mitochondrial energy reserve in the brain (44; 45).
- One randomized, double-blind, placebo-controlled trial supports the efficacy of coenzyme Q10 for migraine prophylaxis. Forty-three patients with migraine were randomly assigned to receive placebo or coenzyme Q10, 100 mg three times daily, for 3 months. An intention-to-treat analysis found that coenzyme Q10 was significantly better than placebo at reducing the number of migraine attachs per month and the number of days with nausea and vomiting. The percentage of patients reporting a 50% or greater reduction in attack frequency was 48% in the coenzyme Q10 group and 14% in the placebo group. Coenzyme Q10 was not significantly better than placebo for the other outcomes measured. The only adverse effect reported in the coenzyme Q10 group was a skin allergy in one patient (57).

Comments:
- Consider a trial of coenzyme Q10 supplementation (300 mg/d for a minimum of 2 to 3 months) for the prevention of migraine.
- Coenzyme Q10 has been shown to improve mitochondrial energy metabolism and may prove to be an effective treatment for migraine.
- Doses of coenzyme Q10 lower than 300 mg/d may also be effective. The possibility should be investigated because lower doses would be less costly.
- A 2- to 3-month trial may be necessary before significant benefit is achieved.
- Coenzyme Q10's excellent safety profile makes it worth a trial in patients who are candidates for preventive therapy; however, avoid use in pregnant women and nursing mothers as controlled safety studies in these populations are lacking.

4.7 Phytoestrogen complex

Evidence:
- Many women regularly experience migraine attacks in the days immediately preceding or following the start of their menstrual period (58;

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59; 60). Evidence suggests that such attacks may be triggered, in part, by the decline in estrogen levels during the late luteal phase of the menstrual cycle (61). Phytoestrogens are weak, estrogen-like compounds found in a variety of plant foods, most notably soybeans and flaxseed; they can also be consumed in more concentrated form as dietary supplements. Anecdotal reports of the success of phytoestrogens in treating other conditions thought to be related to decreasing estrogen levels (e.g., menopausal hot flashes) have led researchers to investigate their potential use for the prophylaxis of menstrually related migraines.

- A single small (*n*=49), randomized, double-blind, placebo-controlled trial supports the efficacy of a daily combination of soy isoflavones, 60 mg, dong quai (*Angelica polymorpha*), 100 mg, and black cohosh (*Cimicifuga racemosa*), 50 mg, for the prevention of migraine headaches regularly occurring around the start of a woman's menstrual period (2 days before to 3 days after the first day of menstrual flow) (62). Treatment lasted 24 weeks. The phytoestrogen preparation was significantly better than placebo at reducing the frequency of menstrually related migraine attacks and reducing the severity of all migraine attacks; it was no better than placebo at reducing the frequency of attacks occurring outside of the perimenstrual period. Only infrequent and minor adverse effects were recorded during the trial.

Comments:

- Consider a 2- to 3-month trial of a phytoestrogen complex (soy isoflavones, 60 mg, plus dong quai, 100 mg, plus black cohosh, 50 mg, daily) for the prevention of migraine headaches regularly occurring around the start of a woman's menstrual period.
- Many women experience migraine attacks in the days immediately surrounding the start of their menstrual period. Phytoestrogen complex may reduce the frequency and severity of such attacks.
- A 2- to 3-month trial may be necessary before significant benefit is achieved.
- Optimal agents, combinations, and doses need to be determined, and possible risks associated with long-term intake of phytoestrogen supplements need to be assessed.
- There is conflicting evidence on the association, if any, between phytoestrogen intake and breast cancer risk (63; 64; 65). Until the situation is clarified, women with a history of breast cancer or those who are at high risk for breast cancer should be advised not to use phytoestrogen supplements (63; 66).

5. Unknown Effectiveness

5.1 Acupuncture

Evidence:

- Three systematic reviews of controlled trials of acupuncture for headache (4; 5; 67) and an NIH Consensus Conference on acupuncture (68) all reached similar conclusions, and more recently published trials

69; 70; 71; 72; 73; 74; 75; 76; 77; 78; 79; 80; 81; 82; 83) do not alter the picture significantly. Acupuncture appears to be safe when administered by qualified providers, and several trials suggest that it may be useful in the treatment of migraine and tension-type headache. However, most existing trials are small and have significant methodologic flaws. In addition, the trials examine different acupuncture interventions and outcome measures. Further study is needed before the treatment can be recommended with confidence.

Comments:
• None.

5.2 Acupressure

Evidence:
• There are no controlled trials of acupressure for migraine or tension-type headache or headache associated with neck pain or neck dysfunction.

Comments:
• None.

5.3 Transcutaneous electrical nerve stimulation (TENS)

Evidence:
• Two systematic reviews (4; 5) found little support for the use of TENS for migraine, tension-type, or cervicogenic headache. Of three controlled trials, one reported positive findings, one negative findings, and the third was so poorly reported that no conclusions could be drawn from it.

Comments:
• None.

5.4 Massage/physical therapy

Evidence:
• Seven controlled trials have evaluated massage/physical therapy for patients with tension-type or cervicogenic headache. Five of the seven trials could not be effectively interpreted due to reporting or methodologic shortcomings or both (84; 85; 86; 87; 88). The remaining two trials were both conducted among patients with cervicogenic headache. One (15) found that deep friction massage was significantly less effective than cervical spinal manipulation. The other showed that a physical therapy intervention consisting of endurance exercises for the muscles of the neck and scapular regions, postural training, and isometric exercises for the neck was significantly more effective than a no-treatment control (17). No significant differences were detected between the physical therapy intervention and cervical spinal manipulation, and no significant advantage was achieved by combining the two active treatments.
• Two small trials found that massage therapy focusing on the neck and head (89) or on the back, shoulders, neck, and head (90) was significantly more effective in reducing migraine symptoms than a

wait-list control. However, results for individual outcomes were inconsistent across the two trials, and neither study included an active treatment or placebo control group.

Comments:
• None.

5.5 Therapeutic touch

Evidence:
• A single trial of therapeutic touch (91) suggested a positive effect on an acute episode of tension-type headache; however, because the only control was sham therapeutic touch, it is possible that nonverbal cues delivered to the subjects by the therapist produced the observed effect, with patients in the genuine therapeutic touch group responding with greater expectancy or placebo response.

Comments:
• None.

5.6 Feverfew

Evidence:
• A review (92) identified five randomized, double-blind, placebo-controlled trials of the herbal remedy feverfew (*Tanacetum parthenium L.*) for the prevention of migraine. Three found that feverfew was significantly more effective than placebo at reducing migraine frequency, severity, or both, but the two trials with the highest methodologic quality scores found no significant differences between feverfew and placebo. Reviewers concluded that there was insufficient evidence to establish that feverfew is more effective than placebo. Another trial (93) does not significantly change this conclusion. Feverfew appears to be safe, but further information is needed on the effects of long-term clinical use. In view of its possible stimulant effect on the uterus and its traditional use as a folk remedy to promote abortion, feverfew should not be used by pregnant women (94; 95).

Comments:
• None.

6. Possibly Ineffective

6.1 Aerobic exercise

Evidence:
• The effect of aerobic exercise on migraine (96) and tension-type headache (97) has been examined. Both trials were small (20 and 18 patients, respectively), and neither found that aerobic exercise significantly improved headache outcomes. Two trials have examined more complex exercise interventions for migraine. One (n=80) compared a combination of group exercise sessions (incorporating aerobic

exercise, stretching, and light weight training) and education sessions (on relaxation, stress management, and lifestyle changes) to usual treatment (98). A smaller (n=40), nonrandomized trial compared a combination of supervised exercise (incorporating aerobic exercise, strength training, and postural exercises) and drug treatment to drug treatment alone (99). Both studies reported better results for the intervention group, but significant methodologic problems make these findings difficult to assess.

Comments:
• None.

6.2 Homeopathy

Evidence:
• A recent systematic review of homeopathy for the prevention of migraine and other types of headache (100) identified four randomized, double-blind, placebo-controlled trials. One trial suggested that homeopathy was significantly more effective than placebo; the other, methodologically stronger trials did not support this finding.

Comments:
• None.

6.3 Hypnosis

Evidence:
• Two recent systematic reviews found little support for the use of hypnosis in the treatment of tension-type headache (5) or migraine (4).

Comments:
• None.

6.4 Cervical spinal manipulation for patients with migraine or tension-type headache

Evidence:
• Cervical spinal manipulation may be effective for headache associated with neck pain or neck dysfunction (see cervical spinal manipulation for patients with headache combined with neck pain or neck dysfunction), but it has not been shown to be effective for ordinary migraine (101) or tension-type headache (5; 101).

Comments:
• None.

6.5 Fish oil

Evidence:
• Two trials have evaluated dietary supplementation with fish oil rich in omega-3 polyunsaturated fatty acids for the prevention of migraine. The smaller of the two trials (n=23) was conducted in adolescents aged 12 to

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21 (102), whereas the larger (n=196), more rigorous trial was conducted in adults (103). Both trials compared fish oil with an olive oil placebo and found no significant differences between treatments. Interpretation of these results is complicated by the unusually strong placebo effect seen in both studies.

Comments:

- None.

7. Likely Ineffective: None.

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1 Studies that meet all of the evidence criteria for that study type

2 Studies that meet at least one of the criteria for that study type

3 Studies that meet none of the evidence criteria for that study type or are derived from expert opinion, commentary, or consensus

Study types and evidence criteria are defined at http://pier.acponline.org/criteria.html

The number in parentheses at the end of the reference citations identify PubMed abstracts, which can be found on the National Library of Medicine's web site http://www.ncbi.nlm.nih.gov/entrez/query.fcgi

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Author(s):
David B. Matchar, MD;
Rebecca N. Gray, DPhil

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David B. Matchar, MD;
Rebecca N. Gray, DPhil

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Author(s):
David B. Matchar, MD;
Rebecca N. Gray, DPhil

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Author(s):
David B. Matchar, MD;
Rebecca N. Gray, DPhil

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Author(s):
David B. Matchar, MD;
Rebecca N. Gray, DPhil

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Author(s):
David B. Matchar, MD;
Rebecca N. Gray, DPhil

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Glossary

Acupressure	A therapy in which specific points on the body (generally the same points used in acupuncture) are stimulated by applying pressure with the hands, fingers, or thumbs. May be self-administered or provided by a practitioner.
Acupuncture	A therapy in which fine needles are used to pierce the skin to relieve pain, induce anesthesia, and achieve therapeutic purposes.
Biofeedback	A therapy in which patients are taught to increase skin temperature (thermal biofeedback) and/or decrease muscle tension (EMG biofeedback) at will. The procedure involves the use of a machine that monitors these physiological parameters and relays information on them to the patient and therapist in the form of auditory or visual signals. Eventually patients learn to control their physiological responses without feedback from the machine.
Cognitive-behavioral therapy	A psychotherapeutic intervention which has as its primary goal the teaching of skills for identifying and controlling stress and the effects of stress. Also called stress-management therapy.
EMG	Electromyographic; see under “Biofeedback,” above.
Homeopathy	A therapy based on two theoretical tenets: the principle of “similars” or “like cures like”; and the principle of infinitesimal dilutions. According to the first principle, patients with particular signs and symptoms can be cured if treated with a remedy that produces the same signs and symptoms in healthy individuals. According to the second principle, if a remedy is repeatedly diluted and shaken, it will become not less but more potent.
Manipulation	A physical modality involving short- or long-lever, high velocity thrusts directed at one or more of the joints of the spine. Normally involves moving the joint beyond its normal range of motion.
Mobilization	Any manual therapy involving movement of a joint within its normal range of motion and directed at joint dysfunction.
NSAID	Nonsteroidal anti-imflammatory agent
OTC	over the counter
Relaxation training	Formal training in relaxation. The most commonly studied relaxation training methods are: a) progressive muscle relaxation, in which patients are trained to alternately tighten and loosen muscle groups; b) the autogenic phrases method, in which patients use self-instructions of warmth and heaviness to promote a state of deep relaxation; and c) meditation or passive relaxation, in which patients use a silently repeated word or sound or guided imagery to promote mental calm and relaxation.
TENS	Transcutaneous electrical nerve stimulation. A treatment in which mild electrical stimulation is applied to areas of the body feeling pain.
Therapeutic touch	A therapy that involves touching or moving the hands over the patient with the intent to help or heal. Explained by practitioners as a direction of life energy through the hands of the therapist to the patient. May or may not involve direct physical contact.