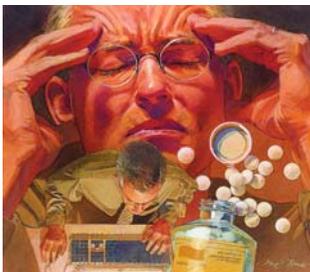


Tension-Type Headache

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Tension-type headache typically causes pain that radiates in a band-like fashion bilaterally from the forehead to the occiput. Pain often radiates to the neck muscles and is described as tightness, pressure, or dull ache. Migraine-type features (unilateral, throbbing pain, nausea, photophobia) are not present. All patients with frequent or severe headaches need careful evaluation to exclude any occult serious condition that may be causing the headache. Neuroimaging is not needed in patients who have no worrisome findings on examination. Treatment of tension-type headache typically involves the use of over-the-counter analgesics. Use of pain relievers more than twice weekly places patients at risk for progression to chronic daily headache. Sedating antihistamines or antiemetics can potentiate the pain-relieving effects of standard analgesics. Analgesics combined with butalbital or opiates are often useful for tension-type pain but have an increased risk of causing chronic daily headache. Amitriptyline is the most widely researched prophylactic agent for frequent headaches. No large trials with rigorous methodologies have been conducted for most non-medication therapies. Among the commonly employed modalities are biofeedback, relaxation training, self-hypnosis, and cognitive therapy. (Am Fam Physician 2002;66:797-804,805. Copyright© 2002 American Academy of Family Physicians.)

▶ A patient information handout on tension headaches, written by the authors of this article, is provided on page 805.



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Tension-type headache, formerly called tension headache or muscle contraction headache, is a common condition usually self-treated with over-the-counter (OTC) analgesics. Prevalence rates of tension-type headaches vary among studies from 29¹ to 71² percent of patients examined, because of differences in research study design.³

Headaches are classified into two categories: primary and secondary. Primary headaches (including migraine, tension-type, and cluster headaches) have no apparent underlying organic disease process. Secondary headaches are caused by an underlying organic disease and are a symptom of a recognized disease process. The International Headache Society's criteria for diagnosing tension-type headache and chronic tension-type headache,⁴ and some commonly used criteria for chronic daily headache,⁵ are listed in *Table 1*.⁴

See editorial on page 728 and definitions of strength-of-evidence levels on page 893.

Primary headache is treated symptomatically, with the goal being relief and preventing recurrence. Although secondary headache may also require symptomatic relief, treatment of the underlying disease process is the focus of care.

Pathophysiology

Although tension-type headaches are common, the pathophysiology and likely mechanism remain unclear. Current knowledge of the nociceptive (pain receptor) system suggests that the derivative pain of tension-type headaches has a muscular origin. Muscular or myofascial pain tends to be dull and aching, poorly localized, and radiating, whereas pain originating from cutaneous structures is sharp, localized, and nonradiating. The supposition that the pain is muscular in origin and related to increased resting muscle tension corresponds with the current clinical understanding of tension-type headache and derived treatment approaches.

Controversy arises because an electromyogram (EMG) often cannot detect increased resting muscle tension in

Tension-type headache pain is usually experienced as a band extending bilaterally back from the forehead across the sides of the head to the occiput and may extend to the posterior neck muscles.

patients diagnosed with tension-type headache. A recent review article⁶ noted that the relationship between EMG level and pain is complex enough to warrant further investigation. Muscle hardness (measured by external probing of resting muscle) has been found to be increased in the pericranial muscles of patients with chronic tension-type headache.⁷ These findings indicate that muscle hardness was similar during periods with and without headache and that muscle hardness is “permanently altered” in patients with chronic ten-

sion-type headache.⁷ Further research suggests that nitric oxide may be the local mediator of tension-type headache. Infusion of a nitric oxide donor reproduces tension-type headache in patients previously diagnosed with chronic tension-type headache.⁸ [Evidence level B, lower quality randomized controlled trial (RCT)]. Also, blocking nitric oxide production with an investigative agent (L-NMMA) reduces both muscle hardness and pain associated with tension-type headache.⁹ [Evidence level B, lower quality RCT]

Evaluation of the Headache Patient

HISTORY

Tension-type headaches can last from 30 minutes to several days and can be continuous in severe cases. The pain is mild or moderately intense and is described as tightness, pressure, or a dull ache. The pain is usually experienced as a band extending bilaterally back from the forehead across the sides of the head to the occiput.¹⁰ Patients often report that this tension radiates from the occiput to the posterior neck muscles. In its most extensive form, the pain distribution is “cape like,” radiating along the medial and lateral trapezius muscles covering the shoulders, scapular, and interscapular areas.¹⁰

In addition to its characteristic distribution and intermittent nature, the history obtained from patients with tension-type headache discloses an absence of signs of any serious underlying condition.¹¹ Patients with tension-type headache do not typically report any visual disturbance, constant generalized pain, fever, stiff neck, recent trauma, or bruxism. *Table 2*⁴ lists disease processes that may have headache as a symptom.

A thorough headache history should include questions about the type, amount, effect, and duration of self-treatment strategies. Patients typically self-treat their tension-type headaches with OTC analgesics, caffeinated products, massage or chiropractic therapy for symptom relief. A headache his-

TABLE 1

Diagnostic Criteria for Tension-Type, Chronic Tension-Type, and Chronic Headache

Tension-type headache

- A. At least 10 previous headache episodes fulfilling criteria B through D; number of days with such headaches: less than 180 per year or 15 per month
- B. Headaches lasting from 30 minutes to 7 days
- C. At least two of the following pain characteristics:
 - 1. Pressing or tightening (nonpulsating) quality
 - 2. Mild to moderate intensity (nonprohibitive)
 - 3. Bilateral location
 - 4. No aggravation from walking stairs or similar routine activities
- D. Both of the following:
 - 1. No nausea or vomiting
 - 2. Photophobia and phonophobia absent, or only one is present

Chronic tension-type headache

Same as tension-type headache, except number of days with such headaches: at least 15 days per month, for at least six months

Chronic daily headache

Features of tension-type headache
Occurs at least 6 days per week

Adapted with permission from Classification and diagnostic criteria for headache disorders, cranial neuralgias and facial pain. Headache Classification Committee of the International Headache Society. Cephalalgia 1988;8(suppl 7):1-96, with information from reference 12.

tory should also include discussion of any lifestyle changes (e.g., smoking) that may have preceded or exacerbated the headache.¹¹

Patients who have chronic daily headache present with the typical pain characteristics of tension-type headache but have symptoms that occur daily or almost daily. A careful history will generally reveal that the daily tension-type headache was preceded by intermittent migraine-type headaches rather than intermittent tension-type headaches.

The progression of either migraine or tension-type headache into chronic daily headache can occur spontaneously but often occurs in relation to frequent use of analgesic medication. Repeated use of analgesics, especially ones containing caffeine or butalbital, can lead to “rebound” headaches as each dose wears off and patients then take another round of medication. Common features of chronic daily headache associated with frequent analgesic

Repeated use of analgesics, especially ones containing caffeine or butalbital, can lead to “rebound” headaches.

use are early morning awakening with headache, poor appetite, nausea, restlessness, irritability, memory or concentration problems, and depression.¹²

Patients should be screened for psychiatric comorbidity, because anxiety, depression, and psychosocial stress can be prevalent in patients with tension-type headaches.¹³

PHYSICAL EXAMINATION

Clinical signs of headache secondary to hypertension may be similar to tension-type headaches. Although patients often attribute headaches to any degree of hypertension, only severe hypertension (values greater than 200/120 mm Hg) is definitely associated with

TABLE 2
Acute Secondary Headache Disorders

Headache associated with head trauma Acute post-traumatic headache	Headache associated with substance use or withdrawal Acute use or exposure Chronic use or exposure
Headache associated with vascular disorders Subarachnoid hemorrhage Acute ischemic cerebrovascular disorder Unruptured vascular malformation Arteritis (e.g., temporal arteritis) Carotid or vertebral artery pain Venous thrombosis Arterial hypertension	Headache associated with noncephalic infection Viral infection Bacterial infection
Headache associated with nonvascular intracranial disorder Benign intracranial hypertension (pseudotumor cerebri) Intracranial infection Low cerebrospinal fluid pressure (e.g., headache subsequent to lumbar puncture)	Headache associated with metabolic disorder Hypoxia Hypercapnia Mixed hypoxia and hypercapnia Hypoglycemia Dialysis Other metabolic abnormality
	Headache or facial pain associated with disorder of cranium, neck, eyes, ears, nose, sinuses, teeth, mouth, or other facial or cranial structures Cranial neuralgias, nerve trunk pain, and deafferentation pain

Adapted with permission from Classification and diagnostic criteria for headache disorders, cranial neuralgias and facial pain. Headache Classification Committee of the International Headache Society. Cephalalgia 1988;8(suppl 7):1-96.

Patients with chronic tension-type headache should limit their use of analgesics to two times weekly to prevent the development of chronic daily headache.

headache. Headache resolution with blood pressure control confirms the diagnosis.¹¹

Physical examination of a patient with headache should include a neurologic evaluation to rule out any serious intracranial pathology. Specifically, cranial nerve defects, cerebellar dysfunction, papilledema or absent venous pulsations on fundal examination, visual field defects, or motor or sensory deficits should be considered. These findings may suggest occult brain tumors, hemorrhage, or increased cerebrospinal fluid pressure.

Temporal mandibular joint dysfunction often complicates headache and should be screened for by palpating the temporal mandibular joints for tenderness and asking the patient about habits such as bruxism and gum chewing. If signs suggestive of secondary headache are present, appropriate diagnostic studies should be done before making a definitive diagnosis of tension-type headache [Reference 15—Evidence level C, expert opinion]. *Table 3*^{14,15} lists indications for the use of neuroimaging in patients with progressive or continuous headache symptoms. Palpation of the head in patients with tension-type headache

TABLE 3

Indications for Neuroimaging in Patients with Headache Symptoms

Focal neurologic finding on physical examination
Headache starting after exertion or Valsalva's maneuver
Acute onset of severe headache
Headache awakens patient at night
Change in well-established headache pattern
New-onset headache in patient >35 years of age
New-onset headache in patient who has HIV infection or previously diagnosed cancer

HIV = human immunodeficiency virus.

Information from references 14 and 15.

may reveal tenderness in the pericranial muscles and tension in the nuchal musculature or trapezius.

Treatment

Treatment goals for patients with tension-type headache should include recommending effective OTC analgesic agents and discovering and ameliorating any circumstances that may be triggering the headaches or causing the patient concern. Tension-type headache is most commonly self-treated with OTC non-steroidal anti-inflammatory drugs (NSAIDs) and acetaminophen. A telephone survey¹⁶ found that 98 percent of responders with tension-type headache reported using analgesics. The most common agents used were acetaminophen (56 percent), aspirin (15 percent), or other agents (17 percent).¹⁶

Research confirms that NSAIDs and acetaminophen are effective in reducing headache symptoms; however, this research offers limited guidance about which one to choose for individual patients. A large, randomized controlled trial¹⁷ assigned patients with tension-type headache to treatment with doses of placebo, 400 mg of ibuprofen, or 1,000 mg of acetaminophen. Both medications were well tolerated and significantly more effective than

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placebo at relieving the symptoms of headache. Ibuprofen was more effective than acetaminophen.¹⁷ [Evidence level A, RCT]

A similar trial¹⁸ comparing 25 mg of ketoprofen with 1,000 mg of acetaminophen reported that both agents were significantly more effective than placebo at two hours after dosing but no better than placebo in achieving total pain relief at four hours after dosing. This result probably reflects the short duration and self-limiting nature of the episodic tension-type headache.¹⁸ [Evidence level A, RCT]

In patients with chronic tension-type headache, the treatment goals are to initiate effective prophylactic treatment and to manage any residual headaches in a manner that prevents the frequent use of analgesics and the risk for progression to chronic daily headache syndrome.

Patients with chronic tension-type headache should limit their use of analgesics to two times weekly to prevent the development of chronic daily headache. If the patient requires analgesic medication more frequently, adjunctive headache medications can be initiated.

Analgesics can be augmented with a sedating antihistamine, such as promethazine (Phenergan) and diphenhydramine (Benadryl), or an antiemetic, such as metoclopramide (Reglan) and prochlorperazine (Compazine). If this regimen is inadequate, the patient can try acetaminophen or aspirin combined with caffeine and butalbital. This combination is usually quite effective but is also the most frequent cause of chronic daily headache. Before initiating this regimen, patients should be informed of the possibility of chronic daily headache and instructed to limit their use of the combination to twice weekly. The physician should carefully monitor the patient's progress and prescribe only enough medication to support this limited usage.

PROPHYLAXIS OF FREQUENT HEADACHES

A wide variety of prophylactic agents have been researched in the management of

Amitriptyline (10 to 75 mg, one to two hours before bedtime) is the most researched of the prophylactic agents for chronic tension-type headaches.

chronic tension-type headache, and comprehensive reviews are available for interested readers.¹⁹

Amitriptyline (Elavil) is the most researched of the prophylactic agents for chronic tension-type headache. It is typically used in doses of 10 to 75 mg, one to two hours before bedtime to minimize grogginess on awakening. Double-blind randomized controlled studies confirm its use in patients with chronic tension-type headache.²⁰ [Evidence level A, RCT] Anticholinergic side effects (dry mouth, blurred vision, orthostasis) and weight gain can limit its usefulness in some persons.

Selective serotonin reuptake inhibitors (SSRIs) cause fewer side effects, and several of these agents (paroxetine [Paxil], venlafaxine [Effexor], and fluoxetine [Prozac]) have shown their efficacy in the prophylaxis of chronic tension-type headache in small studies.^{21,22} One small study²³ showed that 20 mg of citalopram (Celexa) had no beneficial effect on tension-type headache, while another small trial²⁴ noted that amitriptyline and fluoxetine were equally effective in reducing the number of days with headache pain each month. The beneficial effect of fluoxetine only manifested after two months of treatment and was slightly inferior to the effect of amitriptyline.²⁴

Smoking cessation is an important issue to address in patients with chronic tension-type headache. The number of cigarettes smoked has been "significantly related" to the headache index score and to the number of days with headache each week.²⁵ Higher levels of nicotine are also correlated with trends toward higher measures of anger, anxiety, and depression.

CHRONIC DAILY HEADACHE

The first decision in treating patients who have chronic daily headache is to ascertain how often they are using OTC analgesics. "Rebound" headache is particularly common with use of narcotics and combination products containing butalbital and caffeine. Patients with rebound headache will improve if their daily analgesic medication can be withdrawn, although this is not easily accomplished.²⁶ The initial task is to assure patients that, although they will experience increased discomfort during the analgesic withdrawal period, their headache frequency and intensity will begin to reduce within two weeks after their withdrawal is complete.

For nonpregnant patients using fewer than seven to 12 tablets or capsules of analgesic daily, the simplest method is to abruptly stop the analgesic and initiate prophylaxis with amitriptyline. Patients will typically experience withdrawal symptoms for several days to weeks. These symptoms include nervousness, restlessness, increased headaches, nausea, vomiting, insomnia, diarrhea, and tremor.²⁷ Patients who cannot tolerate complete cessation may taper the analgesic dosage over four to six weeks and begin amitriptyline prophylaxis when they have completely stopped taking the analgesic.

In patients using more than 12 tablets or capsules of analgesic daily, particularly those containing butalbital, abrupt cessation is not appropriate because of the possibility of more serious withdrawal symptoms, including seizure or delirium.²⁸ [Evidence level C, expert opinion] Pregnant patients may be at risk for miscarriage caused by withdrawal symptoms.

A recent approach to discontinuing daily analgesics using a short steroid taper has been reported from a large, open-label trial.²⁹ [Evidence level B, uncontrolled study] Only patients taking simple analgesics were studied; persons dependent on barbiturates, benzodiazepines, or opiate medications were ex-

cluded. Participants immediately ceased all analgesics and began a short course of tapering prednisone (60 mg for two days, 40 mg for two days, and 20 mg for two days), combined with ranitidine (300 mg once daily for six days). Amitriptyline was instituted on the day following the last dose of prednisone. Over 400 patients with chronic daily headache successfully withdrew from their analgesics using this regimen.

After stopping daily analgesic use, patients often revert to the headache pattern that preceded the chronic daily headache (typically, sporadic migraine headache). If this does occur, prophylactic treatment should continue, and migraine-specific treatment should be given for the acute headache.³⁰

Nonmedication Therapies for Headache

Although medication is the most commonly used treatment for chronic tension-type headache, a number of other methods have some evidence of efficacy. No large trials with well-designed methodologies have been conducted for most nonmedication therapies; reports of beneficial effects need to be tempered by the high rates of placebo effects for pain treatment.

The most frequently used nonmedication treatments for headache are biofeedback, relaxation training, self-hypnosis, and cognitive therapy. One study³¹ showed improvement in 39 percent of 94 patients with headache using relaxation training alone. Adding biofeedback increased the portion of patients experiencing improvement to 56 percent.³¹ One small, long-term study³² of relaxation and EMG biofeedback showed that improvement was maintained at five years' follow-up.

Numerous small studies have investigated cognitive psychotherapy alone and in combination with other behavioral treatment for chronic tension-type headache. Among these trials, at least 50 percent of patients had reduced symptoms when treated with progressive relaxation, cognitive therapy, or a combination of the two.³³ This study³³ com-

pared patients who self-administered treatments at home with patients receiving therapy in the office and noted a trend toward greater symptom reduction in patients receiving in-office treatment; however, this difference was not statistically significant.

A recent systematic review of acupuncture treatment for headache found 40 randomized controlled studies, but only one study was categorized as “rigorous.” In all of the trials of tension-type headache that were examined, patients receiving acupuncture had superior outcomes, compared with patients in the control groups. The authors of the review concluded that, “overall, the existing evidence suggests that acupuncture has a role in the treatment of recurrent headaches”,³⁴ [Evidence level A, systematic review of RCTs]

Studies have also been conducted investigating the role of spinal manipulation for headache relief.³⁵ [Evidence level A, RCTs] In a trial comparing manipulation with the use of amitriptyline, both modalities showed improvement in headache intensity, frequency, and medication usage. However, headache intensity was significantly less in the amitriptyline group. Four weeks after cessation of therapy, patients in the spinal manipulation group continued to experience benefits from the intervention.³⁵

The use of traditional physical therapy for headache has been investigated in a randomized controlled trial.³⁶ [Evidence level B, uncontrolled study] Study participants received weekly sessions of education in proper posture and instruction in a home exercise program, and used ice packs, massage, and “passive mobilization” of the cervical facets. Both headache frequency and psychologic well-being improved significantly in the group receiving physical therapy at the end of six weeks and at the 12-month follow-up.³⁶

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