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Chronic tension-type headache: Advice for the viselike-headache patient

ABSTRACT

About 3% of people experience daily viselike headaches without other associated symptoms, a condition called chronic tension-type headache. Therapy consists of tricyclic antidepressants, biofeedback, and stress management, although compelling data from randomized controlled trials are lacking.

KEY POINTS

The combination of antidepressant medication with nonpharmacologic approaches (relaxation, biofeedback, stress management, guided imagery) provides greater benefit than either approach alone.

Chronic tension-type headache appears to be a disorder of abnormal central pain processing.

Evidence supporting effective therapeutic approaches is limited to specific tricyclic antidepressants, muscle relaxants, and nonpharmacologic approaches.

Prophylactic therapy is warranted for most patients; medications with central pain-modulating effects tend to be most effective.

TENSION-TYPE HEADACHE is the most common form of headache in Western populations. This paper reviews the epidemiology, pathophysiology, and treatment of chronic tension-type headache, including recent studies that indicate that the combination of pharmacologic and nonpharmacologic therapies provides greater benefit than either approach alone.

DEFINITIONS

Tension-type headache is typically described as a band-like pressure headache without associated symptoms. The International Headache Society (IHS)¹ defines it as being bilateral and having a pressing or tightening quality of mild to moderate severity. More important than the specific quality of the headache, however, is that it is not accompanied by associated symptoms. Unlike migraine, tension-type headache is not aggravated by physical activity, nor is it associated with vomiting. Sensitivity to either light or sound may be present, but not both.

Tension-type headaches can be episodic or chronic.

Chronic tension-type headache by definition occurs at least 15 days per month for at least 6 months,¹ although in clinical practice it usually occurs daily or almost daily.

Although the headaches themselves are not accompanied by symptoms, patients with chronic tension-type headache often have other somatic complaints. For example, in chronic tension-type headache, but not episodic tension-type headache, patients may experience nausea. They also commonly report constant headache, generalized myalgias and arthralgias, difficulty falling asleep and staying asleep, chronic fatigue, carbohy-



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*The author has indicated that he is an employee of Merck & Co., Inc. This paper discusses treatments that are not approved by the Food and Drug Administration (FDA) for the use under discussion.

TABLE 1

Chronic tension-type headache vs migraine and cluster headache

	CHRONIC TENSION-TYPE HEADACHE	MIGRAINE	CLUSTER HEADACHE
Frequency	Daily or near daily	Intermittent	1–8/day
Duration	Constant	4–48 hours	15–120 minutes
Quality	Pressure or band-like	Throbbing	Boring
Intensity	Mild to moderate	Moderate to severe	Very severe
Location	Bifrontal, holocranial	Unilateral	Unilateral, orbital
Associated symptoms	None	Nausea and vomiting Photophobia, phonophobia Worse with movement	Partial Horner syndrome Lacrimation Rhinorrhea
Triggers	Stress	Menses, red wine	Alcohol, nitrates
Gender distribution	Female \geq male	Female 3 X male	Male 6 X female
Age of onset	Teens to 30s	Childhood to 20s	20s

The disorder may have a genetic basis

drate craving, decreased libido, irritability, and disturbed memory and concentration.² Therefore, this disorder is similar to depression; however, in chronic tension-type headache, anhedonia is not present, the mood disturbance is less marked or may even be absent, and the primary symptom is headache pain. It also resembles fibromyalgia, with generalized myofascial pain and sleep disturbance.

Chronic daily headache usually refers to frequent headaches that meet the IHS criteria for chronic tension-type headache with intermittent attacks of migraine (usually without aura). These headaches are often lumped together under the rubric “transformed migraine.” This group often includes headaches caused by analgesic abuse or ergotamine rebound.

Other well-defined headaches can occur on a daily basis—ie, cluster headache, chronic paroxysmal hemicrania, idiopathic stabbing headache—but are not considered “chronic daily headache” (TABLE 1).

■ TENSION HEADACHES ARE COMMON

In surveys of the general population, the prevalence of tension-type headache has

ranged from 30% to about 80%. This wide range may reflect that tension-type headache can vary in frequency and severity from rare episodes of head discomfort to frequent, severe, and debilitating episodes.

In the Danish Glostrup Population Studies,³ the most detailed epidemiologic study of headache to date, the 1-year prevalence of episodic tension-type headache was 63% (56% in men and 71% in women). The prevalence of chronic tension-type headache was 3% (2% in men and 5% in women). The gender difference was statistically significant, with a male-to-female ratio of 4:5. The prevalence of tension-type headache decreased with increasing age.

Compared with the general population, the parents, siblings, and children of patients with chronic tension-type headache have a higher prevalence of chronic tension-type headache by a factor ranging from 2.1 to 3.9.⁴ In contrast, the spouses of patients with chronic tension-type headache do not have an increased prevalence, suggesting the disorder has a genetic rather than environmental basis.

In the Danish study,³ most people with tension-type headaches experienced no more than one headache per month, but about 40%



had several per month. About 4% said they had headaches at least half the days of the year. The severity of tension-type headache increased significantly with its frequency. Some 59% of people with tension-type headache said it interfered with their daily activities.

Yet, relatively few people with tension-type headache sought medical attention. Only 16% consulted a general practitioner and 4% consulted a specialist. Women were more likely than men to see a doctor; in addition, people were more likely to see a doctor if their headaches were more frequent.³

Because so many people experience tension-type headaches, the indirect costs are enormous. On average, 5% of the total employed population between the ages of 25 and 64 were absent for 4 days per year, 2% for 11 days, and 2% for about 20 days because of headache. The number of days lost from work that was attributable to tension-type headache was 820 per 1,000 employed persons per year.³

■ WHAT CAUSES TENSION-TYPE HEADACHE?

The pathophysiology of tension-type headache is poorly understood; however, episodic tension-type headache probably is predominantly a disorder of peripheral mechanisms, while chronic tension-type headache reflects a central pain disturbance.

Previous names for tension-type headache reflected its presumed cause, including muscle contraction headache, psychogenic headache, stress headache, and chronic daily headache. The term “muscle contraction headache” was abandoned because electromyographic evidence failed to show consistent changes in muscle tone in affected patients. Further, it suggested a pathophysiologic mechanism for the headache that has never been proven.

The concept that tension-type headache is psychogenic has also been questioned. Patients with chronic tension-type headache, like patients with other chronic pain disorders, have about a 25% likelihood of developing secondary depression. Half of these patients develop depression simultaneously with the pain, while in the other half, the depression develops more insidiously.⁵

Tension-type headache may be present in almost all psychiatric disturbances.⁶ This should not suggest, however, that most tension-type headache is associated with psychiatric or psychological disorders.

Episodic tension-type headache is thought to be caused by increased nociception from strained muscles (as occurs with inadequate rest or poor posture), or increased muscle tension (as occurs with stress). Increased pain impulses may increase the sensitivity of neurons of the trigeminal tract, and pain may then propagate itself to some extent.⁷ Recurrent bouts of tension-type headache may lower the threshold for new episodes by altering the myofascial tissues, potentiating nociceptive neurons, or decreasing the activity of the antinociceptive system.

Chronic tension-type headache, like other chronic pain disorders, is associated with hypofunction of the central opioid system.⁸ Research is ongoing to determine the relative contribution of peripheral nociceptor sensitization, central neuronal sensitization (trigeminal nucleus caudalis), and a defective central antinociceptive system in its pathogenesis.

■ PROPHYLACTIC TREATMENT

Even though tension-type headache is common and has great impact on society, very few well-controlled studies of its treatment have been done. Many earlier trials included patients with combined tension-type and migraine without aura and patients with medication-overuse headache.

No drugs are currently approved by the Food and Drug Administration specifically for the treatment of chronic tension-type headache. However, given the chronic nature of the disorder and the risk of medication-overuse headache in patients with frequent headaches, prophylactic therapy seems warranted for most patients. Since chronic tension-type headache is a disorder of central pain processing, medications with central pain-modulating effects tend to be most effective.

Antidepressant medications

Tricyclic antidepressants are the drugs of choice for preventing chronic tension-type

In adults,
start
amitriptyline
at 25 mg
at bedtime

headache, and several of them are also effective in migraine prophylaxis. Antidepressants tested in double-blind, placebo-controlled studies include amitriptyline, doxepin, and maprotiline.⁹

Amitriptyline reduced the number of headache days or the duration of headaches by about 50% in about one third of patients in some studies,^{10–12} although another study found it to be no better than placebo.¹³

In children and elderly patients, the usual starting dose of amitriptyline (or a similar drug) is 10 mg at bedtime. In adults, the usual starting dose is 25 mg at bedtime. The dosage can be increased until a therapeutic result is obtained or side effects become intolerable. Antidepressants usually take from 4 to 6 weeks to show beneficial effects.

Other tricyclic antidepressants may also be effective, as suggested by clinical experience, although they have not been studied in chronic tension-type headache.

The selective serotonin reuptake inhibitors (SSRIs) fluoxetine, paroxetine, and citalopram have not shown efficacy in controlled studies.^{14–16} They are often used, however, because they have a lower incidence of side effects.

Muscle relaxants

Cyclobenzaprine is a muscle relaxant structurally related to amitriptyline. In a 1972 double-blind study,¹⁷ 10 of 20 patients receiving cyclobenzaprine experienced a 50% or greater improvement in tension-type headache, compared with only 5 of 20 patients receiving placebo. The usual dose of cyclobenzaprine is 10 mg at bedtime.

Tizanidine, an alpha-adrenergic blocker, was reported to be effective for chronic tension-type headache in a single placebo-controlled trial.¹⁸ The dosage is usually titrated from 2 mg at bedtime to 20 mg per day, divided into three doses. Sedation is the most common adverse effect of this agent.

Valproate

Valproate, a gamma-aminobutyric acid (GABA) agonist anticonvulsant, has been evaluated for efficacy in migraine^{19,20} and "chronic daily headache."²¹ Mathew and Ali²² evaluated the efficacy of valproate 1,000 to

2,000 mg per day in 30 patients with intractable chronic daily headache (migraine without aura and chronic tension-type headache) in an open-label trial. Blood levels were maintained between 75 and 100 µg/mL. By the third month of therapy, two thirds of the patients had improved significantly. The side effects most often reported were weight gain, tremor, hair loss, and nausea.

Nonsteroidal anti-inflammatory drugs

Nonsteroidal anti-inflammatory drugs (NSAIDs) are widely prescribed both as adjunctive therapy of tension-type headache and for prophylaxis of migraine.⁷ There are no randomized controlled trials of their efficacy in the prophylaxis of chronic tension-type headache, although they are often used for this purpose.²¹

Botulinum toxin

Botulinum toxin injections in the muscles of the head and neck have been found effective for the relief of chronic tension-type headache in small series of patients. Results from small clinical trials have been mixed, and two large placebo-controlled trials are currently being conducted.^{23–25}

■ ACUTE THERAPY

Acute treatment of daily, tension-type headaches is difficult.

NSAIDs may be useful as analgesics for daily headache and lack the potential for causing medication-induced headache.

Muscle relaxants such as chlorzoxazone, orphenadrine citrate, carisoprodol, and metaxalone are commonly used by patients with chronic tension-type headache, but they have not been shown to be effective for acute pain relief.

Sumatriptan has been evaluated in several studies in tension-type headache.^{26,27} The drug was no more effective than placebo for acute attacks in patients with chronic tension-type headache; however, severe episodic tension-type headache in patients with coexisting migraine appears to respond to this agent.²⁸

Agents to avoid. Benzodiazepines, butalbital combinations, caffeine combinations, and

Rebound headaches can occur with ergotamine, butalbital, opiates, and caffeine



narcotics should be avoided, or their use carefully controlled, because of the risk of habituation and medication-induced headache.

MEDICATION OVERUSE

An extremely important condition contributing to the development of headaches in a chronic daily pattern is overuse of medication. This is most likely to occur in patients with frequent headaches, especially chronic tension-type headache.

The most common medications associated with analgesic-rebound headache are ergotamine preparations, butalbital combination analgesics, opiates, and caffeine-containing combination analgesics. Simple analgesics such as aspirin, acetaminophen, and NSAIDs probably do not induce analgesic-rebound headache.²⁹

The diagnosis of medication overuse depends on a careful history of medication ingestion, including over-the-counter medications. Effective treatment requires stopping the offending agents.

NONPHARMACOLOGIC THERAPY

Many clinical studies have supported the utility of relaxation and electromyographic biofeedback therapies in chronic tension-type headaches.³⁰

Studies have not found any one technique (relaxation, biofeedback, or the combination) to be preferable to the others. Averaging the results of 37 trials that used

daily headache recordings to evaluate relaxation or electromyographic biofeedback therapies, Holroyd³⁰ found that each therapy or the combination reduced tension-type headache activity by about 50%.

Stress management using cognitive-behavioral therapy is as effective as relaxation or biofeedback in reducing tension-type headache. Cognitive therapy may be most likely to enhance the effectiveness of relaxation or biofeedback when chronic stress, depression, or adjustment problems aggravate the patient's headaches.⁶

The combination of nonpharmacologic and pharmacologic therapy provides greater benefit than either therapy used alone. The addition of guided imagery to pharmacologic therapy resulted in significant improvements in both health-related quality of life and headache-related disability.³¹ In a placebo-controlled trial comparing tricyclic antidepressant medication with stress management therapy, Holroyd et al³² found that both were modestly effective by themselves in treating chronic tension-type headache, but that combined therapy was better than monotherapy.

Nonpharmacologic therapy is particularly useful for patients who are reluctant to take medications owing to previous adverse reactions to medications, concomitant medical problems, or desire for pregnancy.

While biofeedback and stress management therapy usually require referral to psychologists, guided imagery and relaxation therapy can be learned from audio tapes available at most bookstores.

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REFERENCES

1. Headache Classification Committee of the International Headache Society. Classification and diagnostic criteria for headache disorders, cranial neuralgias, and facial pain. *Cephalalgia* 1988; 8(suppl 7):1-96.
2. Solomon GD. Pharmacology and use of headache medications. *Cleve Clin J Med* 1990; 57:627-635.
3. Rasmussen BK, Jensen R, Olesen J. Epidemiology of tension-type headache in a general population. In: Olesen J, Schoenen J, editors. *Tension-type Headache: Classification, Mechanisms, and Treatment*. New York: Raven Press; 1993:9-13.
4. Russell MB, Stergaard S, Endtzen L, Olesen J. Familial occurrence of chronic tension type headache. *Cephalalgia* 1999; 19:207-210.
5. Bech P, Langemark M, Loidrup D, et al. Tension-type headache: psychiatric aspects. In: Olesen J, Schoenen J, editors. *Tension-type Headache: Classification, Mechanisms, and Treatment*. New York: Raven Press; 1993:143-146.
6. Gonzales JA, Monteiro P. Psychiatric analysis of patients with tension-type headache. In: Olesen J, Schoenen J, editors. *Tension-type Headache: Classification, Mechanisms, and Treatment*. New York: Raven Press; 1993:167-172.
7. Olesen J, Schoenen J. Synthesis. In: Olesen J, Tfelt-Hansen P, Welch KMA, editors. *The Headaches*. New York: Raven Press; 1993:495.
8. Schoenen J. Session IV discussion summary: central mechanisms of tension-type headache. In: Olesen J, Schoenen J, editors. *Tension-type Headache: Classification, Mechanisms, and Treatment*. New York: Raven Press; 1993:207-208.
9. Mathew N, Bendtsen L. Prophylactic pharmacotherapy of tension-type headache. In: Olesen J, Tfelt-Hansen P, Welch KMA, editors. *The Headaches*. Philadelphia: Lippincott, Williams and Wilkins; 2000:667-673.
10. Lance J, Curran DA. Treatment of chronic tension headache. *Lancet* 1964; 1:1236-1239.
11. Diamond S, Baltes BJ. Chronic tension headache treated with amitriptyline—a double blind study. *Headache* 1971; 11:110-116.
12. Gobel H, Hamouz V, Hansen C, et al. Chronic tension-type headache: amitriptyline reduces headache duration and experimental pain sensitivity but does not alter pericranial muscle activity readings. *Pain* 1994; 59:241-249.



13. **Pfaffenrath V, Diener HC, Isler H, et al.** Efficacy and tolerability of amitriptylinexide in the treatment of chronic tension-type headache: a multi-centre controlled study. *Cephalalgia* 1994; 14:149–155.
14. **Saper J, Silberstein S, Lake A, Winters M.** Double blind trial of fluoxetine: chronic daily headache and migraine. *Headache* 1994; 34:497–502.
15. **Foster CA, Bafaloukos J.** Paroxetine in the treatment of chronic daily headache. *Headache* 1994; 34:587–589.
16. **Bendtsen L, Jensen R, Olesen J.** A nonselective (amitriptyline), but not a selective (citalopram), serotonin reuptake inhibitor is effective in the prophylactic treatment of chronic tension-type headache. *J Neurol Neurosurg Psychiatry* 1996; 61:285–290.
17. **Lance JW, Anthony M.** Cyclobenzaprine in the treatment of chronic tension headache. *Med J Aust* 1972; 2:1409–1411.
18. **Fogelholm R, Murros K.** Tizanidine in chronic tension-type headache: a placebo controlled double-blind cross-over study. *Headache* 1992; 32:509–513.
19. **Sorensen K.** Valproate: a new drug in migraine prophylaxis. *Acta Neurol Scand* 1988; 78:346–348.
20. **Herring R, Kuritzky A.** Sodium valproate in the prophylactic treatment of migraine: a double-blind study versus placebo. *Cephalalgia* 1992; 12:81–84.
21. **Frame JR, Solomon GD, Kunkel RS.** Differences in prescriptions given to patients diagnosed with tension headache according to patient gender [abstract]. *Headache* 1993; 33:274.
22. **Mathew N, Ali S.** Valproate in the treatment of persistent chronic daily headache. An open label study. *Headache* 2001; 31:71–74.
23. **Carruthers A, Langtry J, Carruthers J, Robinson G.** Improvement in tension-type headache when treating wrinkles with botulinum toxin A injections. *Headache* 1999; 39:662–665.
24. **Smuts J, Baker M, Smuts H, Stassen J, Rossouw E, Barnard P.** Prophylactic treatment of chronic tension-type headache using botulinum toxin type A. *Eur J Neurol* 1999; 6(suppl 4):S99–S102.
25. **Rollnik JD, Tanneberger O, Schubert M, Schneider U, Dengler R.** Treatment of tension-type headache with botulinum toxin type A: a double-blind, placebo-controlled study. *Headache* 2000; 40:300–305.
26. **Brennum J, Kjeldsen M, Olesen J.** The 5-HT 1-like agonist sumatriptan has a significant effect in chronic tension-type headache. *Cephalalgia* 1992; 12:375–379.
27. **Brennum J, Brinck T, Schriver L, et al.** Sumatriptan has no clinically relevant effect in the treatment of episodic tension-type headache. *Eur J Neurol* 1996; 3:23–28.
28. **Cady R, Guterman D, Saiers JA, Beach ME.** Responsiveness of non-IHS migraine and tension-type headache to sumatriptan. *Cephalalgia* 1997; 17:588–590.
29. **Lipton RB.** Frequent headaches: a far too frequent problem. *Headache World* 2000, London, September 2000.
30. **Holroyd KA.** Behavioral treatment strategies. In: Olesen J, Schoenen J, editors. *Tension-type Headache: Classification, Mechanisms, and Treatment*. New York: Raven Press; 1993:245–254.
31. **Mannix LK, Chandurkar RS, Rybicki LA, Tusek DL, Solomon GD.** Effect of guided imagery on quality of life for patients with chronic tension-type headache. *Headache* 1999; 39:326–334.
32. **Holroyd K, O'Donnell F, Stensland M, Lipchik G, Cordingley G, Carlson B.** Management of chronic tension-type headache with tricyclic antidepressant medication, stress management therapy, and their combination. *JAMA* 2001; 285:2208–2215.

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